

# Rxi<sup>®</sup>-5Sil MS

Exceptionally Inert Columns for GC/MS and Trace Level Analyses



- **Low bleed** at high temperatures, for higher sensitivity and lower detection limits.
- **Excellent inertness** for acidic and basic compounds.
- Engineered to assure **column-to-column reproducibility.**

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# NEW! Rxi®-5Sil MS Fused Silica Columns

## Exceptionally Inert Columns for GC/MS and Trace Level Analyses

We are pleased to introduce another high performance capillary column—the Rxi®-5Sil MS column. This column is ultra-low bleed, highly inert, and unsurpassed in performance compared to other columns of similar phase. The technology used to produce these columns results in exceptional column-to-column reproducibility, ensuring every column you receive performs consistently, lot-to-lot and year-to-year. Compare the performance of the Rxi®-5Sil MS column to competitors, and see why the Rxi®-5Sil MS column is the best choice, particularly for GC/MS and trace-level analyses.

### Lowest Bleed Column in the Industry

The Rxi®-5Sil MS column was developed using new polymer chemistry and a specialized cross linking process, creating a column with an exceptionally low bleed profile, even at high temperatures. Compared to other silarylene columns that are marketed as equivalent, the Rxi®-5Sil MS column shows equal or substantially lower bleed levels, even at 350°C (Figure 1).

The low bleed characteristic of the Rxi®-5Sil MS column allows for higher signal-to-noise ratios, thus allowing lower detection limits. This increased sensitivity, in combination with the column's high inertness and reliable performance, is especially beneficial to GC/MS and trace level analyses.

### Proven Inertness for Both Acidic and Basic Compounds

In addition to high temperature tolerance, all Rxi® columns are designed for extreme inertness for both acidic and basic compounds. To demonstrate inertness, Rxi®-5Sil MS columns are tested using both acidic and basic compounds at low concentrations. Two probes are used: pyridine, which exhibits tailing if the column contains active sites for basic compounds, and 2,4-dinitrophenol, which shows a lower response if the column contains active sites affecting acidic compounds.

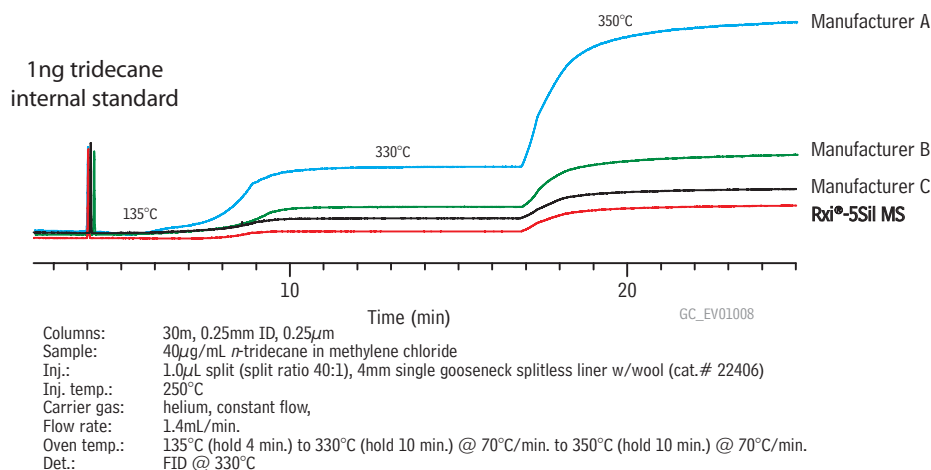
**Table 1** Rxi®-5Sil MS columns produce high response factors for both basic and acidic compounds.

	2,4-dinitrophenol (average RF)	pyridine (average RF)
Rxi®-5Sil MS	0.24	0.74
Manufacturer A	0.20	0.63
Manufacturer B	0.22	0.64
Manufacturer C	0.24	0.65

Response factors are based on phenanthrene. (n=7)

As shown in Figure 2, Rxi®-5Sil MS columns are significantly more inert to pyridine at 2ng on-column than competitor columns A and B, as measured by tailing and peak height. Manufacturer C column inertness is similar, but the Rxi®-5Sil MS column exhibits less tailing and a higher response, as shown in Table I.

**Figure 1** New Rxi®-5Sil MS columns outperform competitors, producing lower bleed at 350°C than any other column on the market.



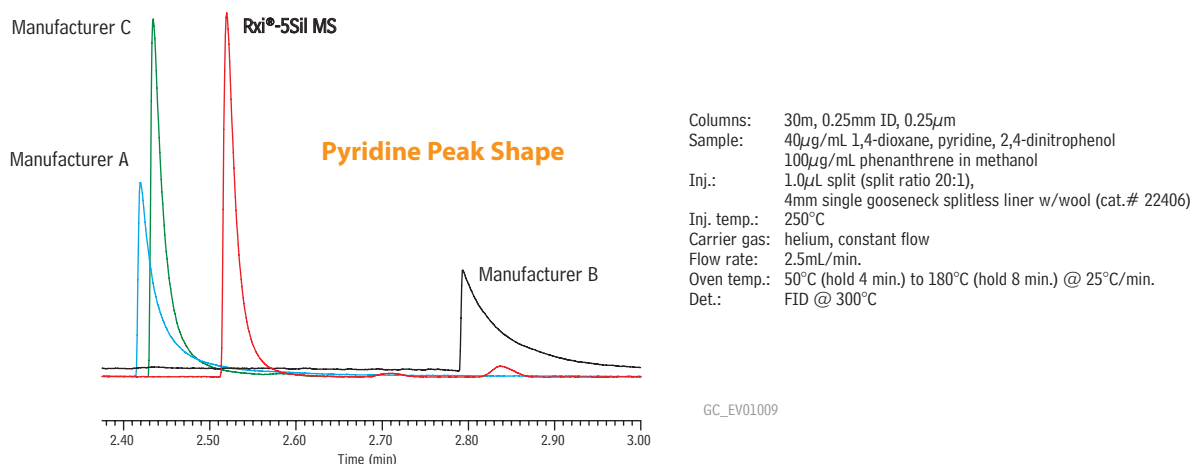
### Exceptional Performance

Rxi®-5Sil MS columns perform well across a broad range of analytes, but are ideal for analysis of low levels of aromatic compounds, such as polycyclic aromatic hydrocarbons (PAH), by GC/MS. As shown in Figure 3, the peak shape and resolution of critical PAH pairs at 5pg on-column is excellent and the analysis time is less than 15 minutes using a 30m x 0.2mm ID column.

### Conclusion

Rxi®-5Sil MS columns consistently outperform competitor columns in terms of bleed, inertness, and reproducibility. These columns are designed to lower detection limits and are ideal for GC/MS and trace-level analyses. For your next application, choose an Rxi®-5Sil MS column, the only column that reliably delivers low bleed and inertness, column-to-column and lot-to-lot.

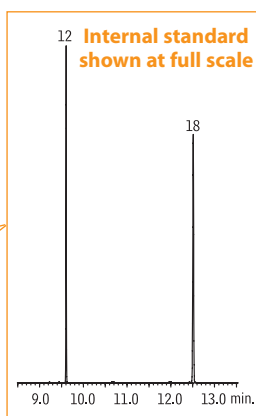
**Figure 2** New Rxi®-5Sil MS columns are more inert than competitor columns, allowing both acidic and basic compounds to be accurately analyzed at low levels.



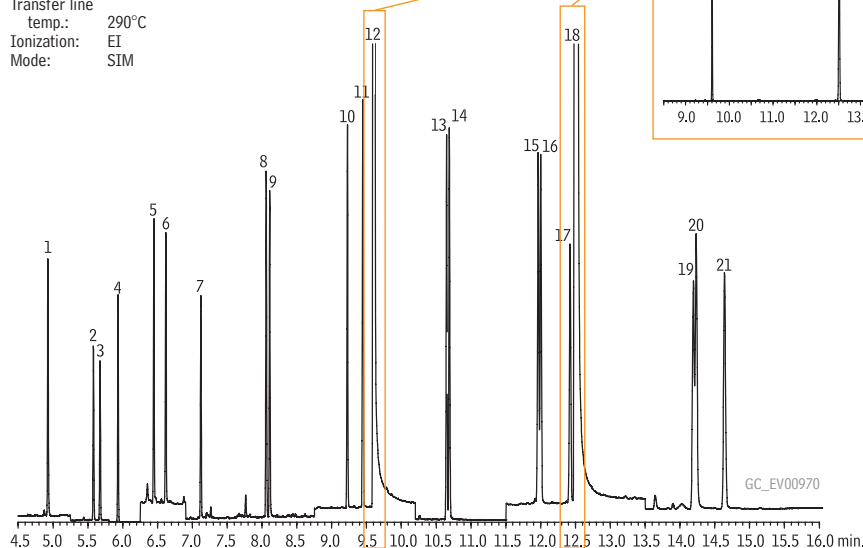
**Figure 3** Outstanding resolution and peak response of PAHs at 5pg on-column.

### Excellent response at 5pg on-column!

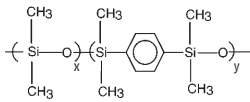
Column: Rxi®-5Sil MS, 30m, 0.25mm ID, 0.25µm (cat.# 13623)  
 Sample: PAH mix, 1µL of 0.005µg/mL (IS 2µg/mL), SV Calibration Mix #5 (cat.# 31011)  
 1-methylnaphthalene (cat.# 31283), 2-methylnaphthalene (cat.# 31285)  
 2-fluorobiphenyl (cat.# 31091)  
 Inj.: 1.0µL (5pg on-column concentration),  
 4mm Drilled Uniliner® (hole near top) inlet liner w/wool (cat.# 21055-200.5),  
 pulsed splitless: pulse 20psi @ 0.2 min., 60mL/min. @ 0.15 min.  
 Inj. temp.: 300°C  
 Carrier gas: helium, constant flow  
 Flow rate: 1.4mL/min.  
 Oven temp.: 50°C (hold 0.5 min.) to 290°C  
 @ 25°C/min. to 320°C @ 5°C/min.  
 Det.: MS  
 Transfer line temp.: 290°C  
 Ionization: EI  
 Mode: SIM



Peak List	Retention Time
1. naphthalene	4.93
2. 2-methylnaphthalene	5.58
3. 1-methylnaphthalene	5.68
4. 2-fluorobiphenyl (SS)	5.93
5. acenaphthylene	6.45
6. acenaphthene	6.62
7. fluorene	7.12
8. phenanthrene	8.06
9. anthracene	8.11
10. fluoranthene	9.23
11. pyrene	9.45
12. p-terphenyl-d14 (IS)	9.61
13. benzo(a)anthracene	10.65
14. chrysene	10.69
15. benzo(b)fluoranthene	11.96
16. benzo(k)fluoranthene	12.00
17. benzo(a)pyrene	12.42
18. perylene-d12 (IS)	12.51
19. indeno(1,2,3-cd)pyrene	14.19
20. dibenzo(a,h)anthracene	14.23
21. benzo(ghi)perylene	14.65



Selected Ion Monitoring Program			
Group	Time	Ion(s)	Dwell (ms)
1	4.00	128	100
2	5.25	142	100
3	5.80	172	100
4	6.25	152	100
5	6.90	166	100
6	7.60	178	100
7	8.75	202, 244	100
8	10.2	228	100
9	11.5	252, 264	100
10	13.5	276, 278	100



**Rxi®-5Sil MS** (low polarity Crossbond® silarylene phase; selectivity close to 5% diphenyl/95% dimethyl polysiloxane)

- Engineered to be a low bleed GC/MS column.
- Excellent inertness for active compounds.
- General purpose columns—ideal for GC/MS analysis of polycyclic aromatic compounds, chlorinated hydrocarbons, phthalates, phenols, amines, organochlorine pesticides, organophosphorus pesticides, drugs, solvent impurities, and hydrocarbons.
- Temperature range: -60°C to 350°C.

similar phases

BPX5, CP-Sil 8 LB/MS, DB-5MS, Rtx-5ms, SLB-5ms, VF-5ms, ZB-5ms, Optima-5ms

**Rxi®-5Sil MS Columns (fused silica)**

(Crossbond®, selectivity close to 5% diphenyl/95% dimethyl polysiloxane)

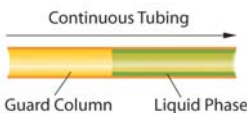
ID	df (µm)	temp. limits	15-Meter	30-Meter	60-Meter
0.25mm	0.10	-60 to 330/350°C	13605	13608	
	0.25	-60 to 330/350°C	13620	13623	13626
	0.50	-60 to 330/350°C	13635	13638	
	1.00	-60 to 325/350°C	13650	13653	13697
0.32mm	0.25	-60 to 330/350°C	13621	13624	
	0.50	-60 to 330/350°C		13639	
	1.00	-60 to 325/350°C		13654	
0.53mm	1.50	-60 to 310/330°C		13670	

ID	df (µm)	temp. limits	10-Meter	20-Meter
0.10mm	0.10	-60 to 330/350°C	43601	
0.18mm	0.18	-60 to 330/350°C		43602
	0.36	-60 to 330/350°C		43604



**Integra-Guard™**  
built-in guard column



Restek Trademarks:  
Crossbond, Integra-Guard,  
Restek logo, Rtx, Rxi, Siltek,  
Uniliner.

**Integra-Guard™ Columns**

Description	cat.#	price
30m, 0.25mm, 0.25µm Rxi-5Sil MS with 5m, 0.25mm ID Integra-Guard	13623-124	
30m, 0.25mm, 0.25µm Rxi-5Sil MS with 10m, 0.25mm ID Integra-Guard	13623-127	
30m, 0.25mm, 0.50µm Rxi-5Sil MS with 10m, 0.25mm ID Integra-Guard	13638-127	

**Splitless Liners for Agilent**

ID* x OD & Length	qty.	cat.#	price
Gooseneck Splitless (4mm) w/ Wool			
4.0mm x 6.5mm x 78.5mm	ea.	22405	
4.0mm x 6.5mm x 78.5mm	5-pk.	22406	
4.0mm x 6.5mm x 78.5mm	25-pk.	22407	

**DI Liners for Agilent GCs**

(For 0.25/0.32/0.53mm ID Columns)

ID* x OD & Length	qty.	cat.#	price
Drilled Uniliner (hole near top) w/ Wool			
4.0mm x 6.3mm x 78.5mm	ea.	21054-200.1	
4.0mm x 6.3mm x 78.5mm	5-pk.	21055-200.5	

\*Nominal ID at syringe needle expulsion point.

**SV Calibration Mix #5 / 610 PAH Mix**

(16 components)

acenaphthene	chrysene
acenaphthylene	dibenzo(a,h)anthracene
anthracene	fluoranthene
benzo(a)anthracene	fluorene
benzo(a)pyrene	indeno(1,2,3-cd)pyrene
benzo(b)fluoranthene	naphthalene
benzo(k)fluoranthene	phenanthrene
benzo(ghi)perylene	pyrene
2,000µg/mL each in methylene chloride, 1mL/ampul	
cat. # 31011 (ea.)	

**1-Methylnaphthalene**

1,000µg/mL in methanol, 1mL/ampul  
cat. # 31283 (ea.)

**2-Methylnaphthalene**

1,000µg/mL in methylene chloride, 1mL/ampul  
cat. # 31285 (ea.)

**2-Fluorobiphenyl**

2,000µg/mL in methylene chloride, 1mL/ampul  
cat. # 31091 (ea.)



Lit. Cat.# GNFL1061

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