

## Dioxin & Furan Congeners Analysis

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

(low polarity Crossbond® silarylene phase; selectivity close to 5% phenyl/95% dimethyl arylene polysiloxane)

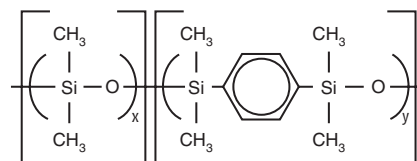
- Engineered to be a low bleed GC/MS column.
- Excellent inertness for active compounds.
- General purpose columns—ideal for GC/MS analysis of polycyclic aromatic compounds, chlorinated hydrocarbons, phthalates, phenols, amines, organochlorine pesticides, organophosphorus pesticides, drugs, solvent impurities,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

The Rxi®-5Sil MS stationary phase incorporates phenyl groups in the polymer backbone. This improves thermal stability, reduces bleed, and makes the phase less prone to oxidation. Rxi®-5Sil MS columns are ideal for GC/MS applications requiring high sensitivity, including use in ion trap systems.

ID	df	temp. limits	30-Meter	60-Meter*
0.18mm	0.10µm	-60 to 320/350°C		43607
0.25mm	0.25µm	-60 to 330/350°C	13623	

\*60m, 0.18mm ID, 0.10µm column (cat.# 43607) intended for dioxin and furan analysis only.

### Rxi®-5Sil MS Structure



### similar phases

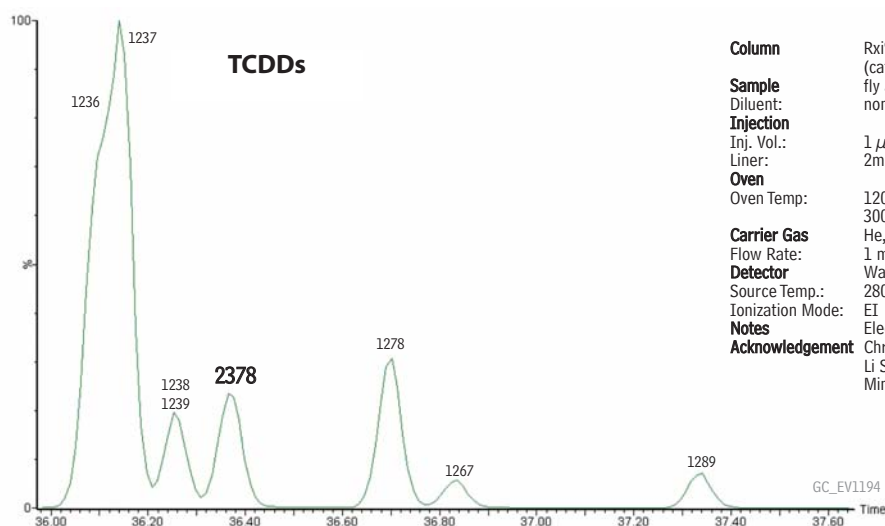
DB-5MS, VF-5ms, CP-Sil 8 Low-Bleed/MS

### also available

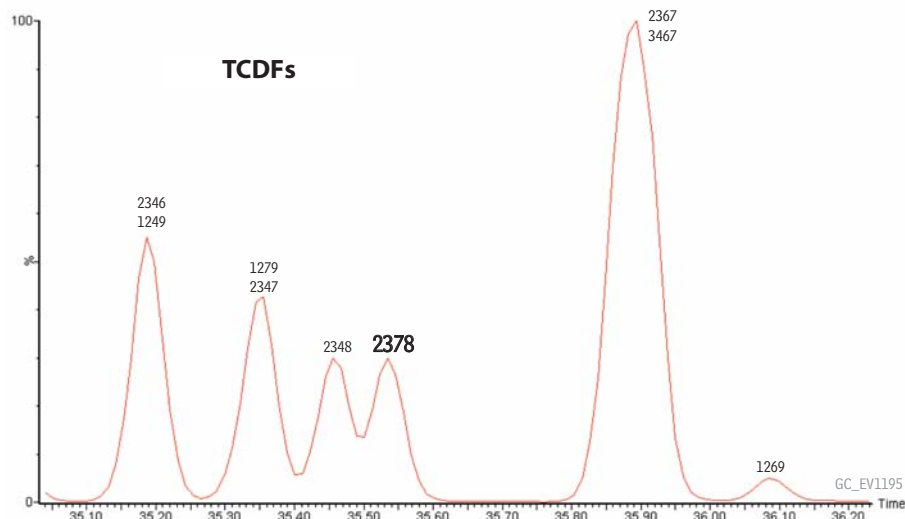
#### Other Dimensions!

See **page 42** for our complete listing of Rxi®-5Sil MS columns.

### Dioxins (TCDDs) and furans (TCDFs) in fly ash on an Rxi®-5Sil MS column.



**Column** Rxi®-5Sil MS, 60 m, 0.18 mm ID, 0.10 µm (cat.# 43607)  
**Sample** fly ash extract  
**Diluent:** nonane  
**Injection**  
 Inj. Vol.: 1 µL splitless  
 Liner: 2mm Splitless liner (cat.# 20712)  
**Oven**  
 Oven Temp: 120 °C (hold 1 min.) to 160 °C at 10 °C/min. to 300 °C at 2.5 °C/min.  
**Carrier Gas** He, constant flow  
 Flow Rate: 1 mL/min.  
**Detector** Waters AutoSpec Ultima Mass Spectrometer  
 Source Temp.: 280 °C  
 Ionization Mode: EI  
**Notes** Electron Ionization at 40eV  
**Acknowledgement** Chromatogram courtesy of Karen MacPherson, Li Shen, Terry Kolic, and Eric Reiner at the Ontario Ministry of the Environment





restek **innovation!**

Excellent for dioxins or furans.

## Dioxin & Furan Congeners Analysis

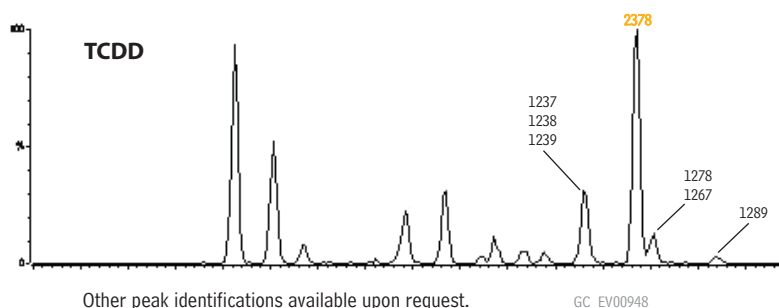
### Rtx®-Dioxin2 Columns (fused silica)

(proprietary Crossbond® phase)

- Isomer specificity for 2,3,7,8-TCDD and 2,3,7,8-TCDF achieved with one GC column.
- Thermally stable to 340 °C for longer lifetime.
- Unique selectivity for toxic dioxin and furan congeners allow use as a confirmation GC column.

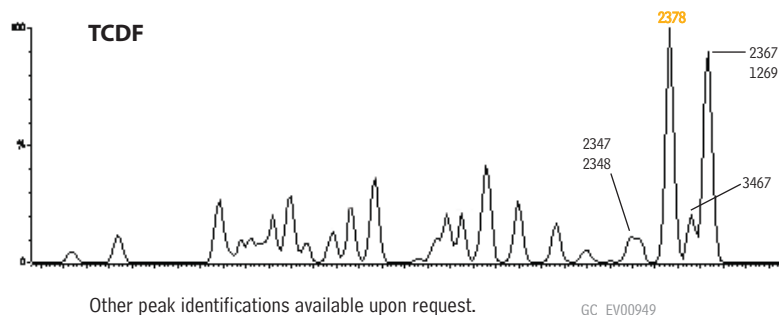
ID	df	temp. limits	40-Meter	60-Meter
0.18mm	0.18µm	20°C to 340°C	10759	
0.25mm	0.25µm	20°C to 340°C		10758

### 2,3,7,8-Tetrachlorodibenzodioxin resolved from other TCDD congeners, using an Rtx®-Dioxin2 column.



Column: Rtx®-Dioxin2, 60m, 0.25mm ID, 0.25µm (cat.# 10758)  
 Sample: WMS-01 Reference Material, Wellington Laboratories  
 Inj.: Splitless  
 Inj. temp.: 250°C  
 Carrier gas: helium, constant flow  
 Flow rate: 1.5mL/min.  
 Oven temp.: 130°C (hold 1.0 min.) to 200°C @ 40°C/min. to 235°C @ 3.0°C/min. to 300°C @ 5°C/min. (hold 10 min.)  
 Det.: Micromass Ultima high-resolution mass spectrometer  
 Ionization: EI  
 Mode: SIR

### Tetrachlorodibenzofuran congeners on an Rtx®-Dioxin2 column.



Column: Rtx®-Dioxin2, 60m, 0.25mm ID, 0.25µm (cat.# 10758)  
 Sample: WMS-01 Reference Material, Wellington Laboratories  
 Inj.: Splitless  
 Inj. temp.: 250°C  
 Carrier gas: helium, constant flow  
 Flow rate: 1.5mL/min.  
 Oven temp.: 130°C (hold 1.0 min.) to 200°C @ 40°C/min. to 235°C @ 3.0°C/min. to 300°C @ 5°C/min. (hold 10 min.)  
 Det.: Micromass Ultima high-resolution mass spectrometer  
 Ionization: EI  
 Mode: SIR

Chromatograms courtesy of Terry Kolic, Karen MacPherson, Eric Reiner, Ontario Ministry of the Environment, Toronto, Ontario, Canada