

# Simplify GC Analysis of Dioxins and Furans

Successfully monitoring chlorinated dioxins and furans requires the unbiased determination of toxic 2,3,7,8-chlorine substituted congeners. The problem is that other congeners and sample matrix-related compounds often complicate the reliable separation of highly toxic 2,3,7,8-TCDD and 2,3,7,8-TCDF—even when using high-resolution GC/high-resolution MS. Fortunately, Restek offers proven solutions for both initial and confirmatory analyses to help you confidently resolve these problematic substances from other coeluting congeners.

## Initial Analysis — Rxi®-5Sil MS Column

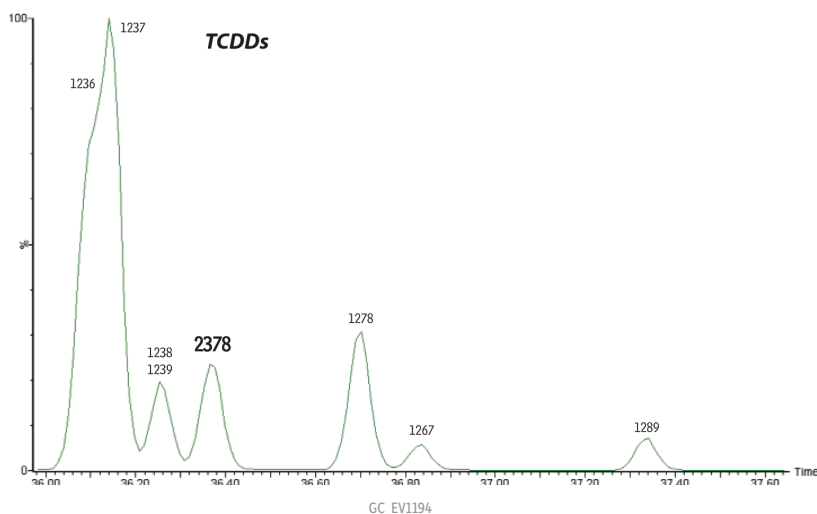
- Provides isomer specificity for 2,3,7,8-TCDD, 2,3,7,8-TCDF, and 1,2,3,7,8-PeCDD with one column!
- Resolves 15 of the 17 tetra- through octa-chlorinated 2,3,7,8-substituted dioxins and furans.
- Known elution orders for all tetra- through octa-chlorinated dioxin and furan congeners.
- Low bleed and high thermal stability up to 350 °C for long life and reproducible retention times.

The 5% diphenyl DB-5 columns conventionally used for initial dioxin and furan analysis can identify the *presence* of furan, but they are incapable of determining *concentration*. The Restek Rxi®-5Sil MS column's increased selectivity provides isomer specificity for 2,3,7,8-TCDD and 2,3,7,8-TCDF, thereby eliminating the need for a confirmatory analysis.

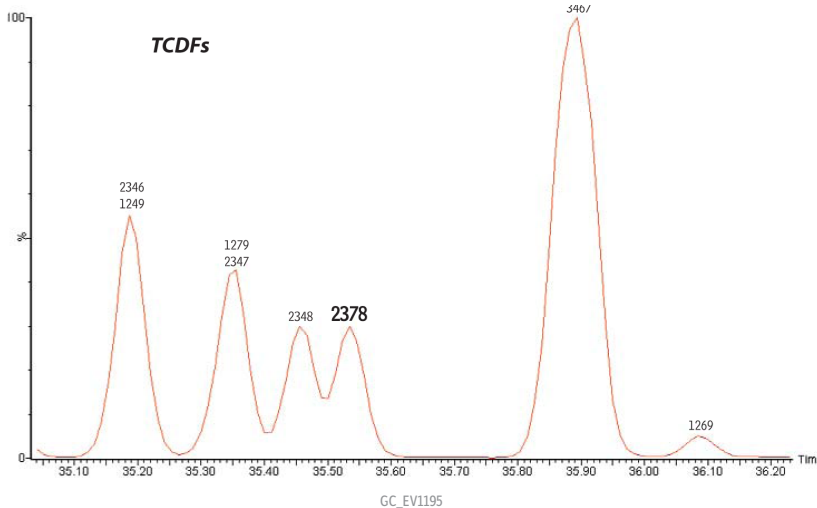


**Figure 1** You can achieve excellent separation of TCDDs and TCDFs on a single Rxi®-5Sil MS column!

### Dioxins (TCDDs) in Fly Ash on Rxi®-5Sil MS column



### Furans (TCDFs) in Fly Ash on Rxi®-5Sil MS



\* For full analysis conditions, visit [www.restek.com](http://www.restek.com) and search for the numbers listed under each chromatogram. Chromatograms courtesy of Karen MacPherson, Li Shen, Terry Kolic, and Eric Reiner at the Ontario Ministry of the Environment.

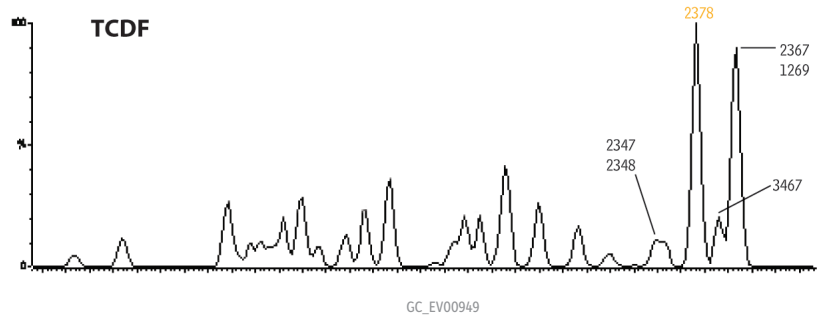
Go to [www.restek.com/enviro](http://www.restek.com/enviro) to view other innovative environmental solutions for GC and LC!

## Confirmatory Analysis — Rtx®-Dioxin2 Column

- Low bleed and high thermal stability up to 340 °C for far greater longevity and reproducibility over cyano columns like DB-225, SP-2330, and SP-2331.
- Provides isomer specificity for 2,3,7,8-TCDD and 2,3,7,8-TCDF with one column.
- Resolves 14 of the 17 tetra- through octa-chlorinated 2,3,7,8-substituted dioxins and furans.
- Known elution orders for all tetra- through octa-chlorinated dioxin and furan congeners.

Because standard 5% diphenyl DB-5 columns are incapable of providing isomer specificity for 2,3,7,8-TCDF, analysts who use them must also perform a confirmatory concentration analysis whenever furans are identified. A cyano-based column is the traditional choice for reanalyzing samples, but the Restek Rtx®-Dioxin2 column is a much better solution. Not only does it offer isomer specificity for 2,3,7,8-TCDF, but the Rtx®-Dioxin2 column also determines 2,3,7,8-TCDD and is thermally stable up to 340 °C—far exceeding the capabilities of cyano-based columns!

**Figure 2** The Rtx®-Dioxin2 column offers excellent resolution of 2,3,7,8-TCDF from other TCDFs and is thermally stable up to 340 °C!



\* For full analysis conditions, visit [www.restek.com](http://www.restek.com) and search for the numbers listed under each chromatogram. Chromatograms courtesy of Karen MacPherson, Li Shen, Terry Kolic, and Eric Reiner at the Ontario Ministry of the Environment.

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

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

ID	df	temp. limits	30-Meter	60-Meter
0.18mm	0.10µm	-60 to 350°C	43605	43607
0.25mm	0.25µm	-60 to 350°C	13623	

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

(proprietary Crossbond® phase)

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

**Contact your Restek representative and order yours today!**

Visit [www.restek.com/Contact-Us](http://www.restek.com/Contact-Us) to find a distributor or representative near you.

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