

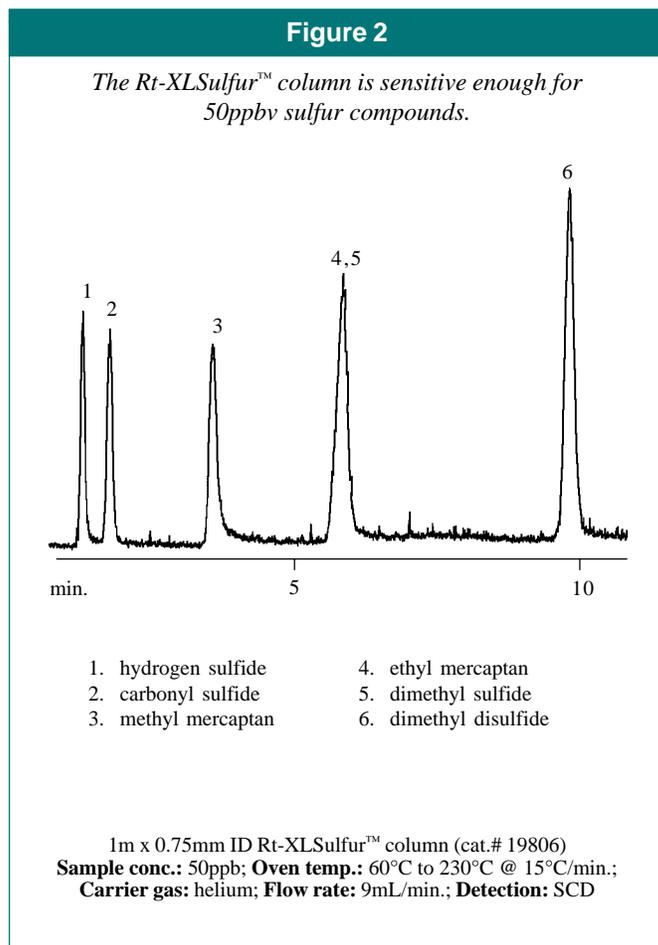
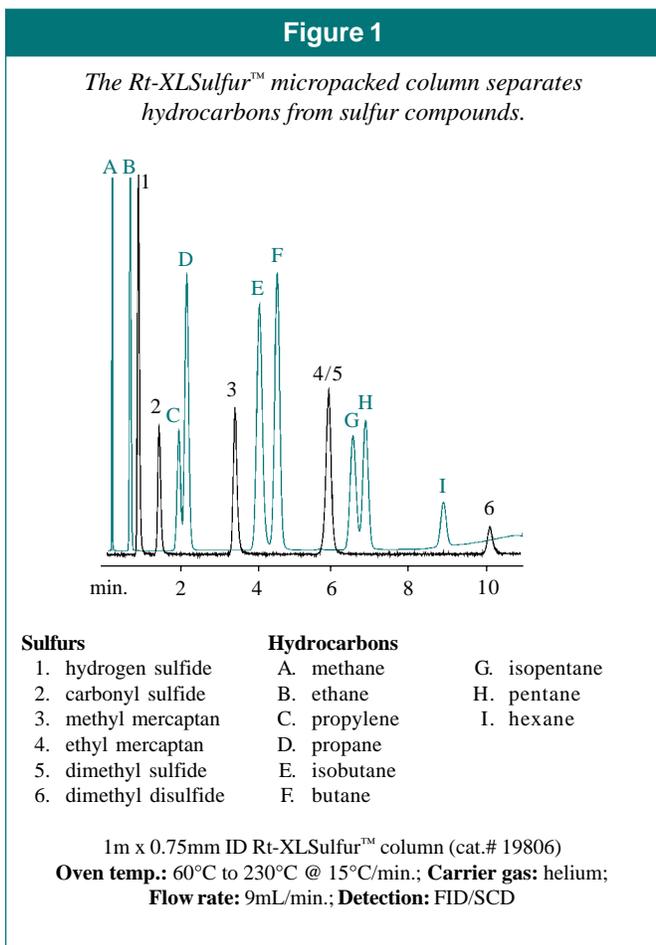
Rt-XLSulfur™ Packed GC Column for Analysis of Low-Level Sulfur Compounds in C1-C6 Hydrocarbon Streams

The analysis of sulfur compounds in C1-C6 hydrocarbon streams by gas chromatography (GC) is an important application in the petrochemical field. The presence of sulfur compounds in petroleum products can affect the longevity and performance of catalysts used in hydrocarbon processing. As requirements for sulfur detection become more stringent, the importance of good chromatographic separation of the hydrocarbons from the sulfur compounds and the inertness of the analytical columns increases.

Detectors used for sulfur determination generally are specific (e.g., sulfur chemiluminescence detection) and help eliminate positive response from chromatographic interferences. Unfortunately, when high levels of hydrocarbons elute through the detector simultaneously with sulfur compounds, the signal for

This is the second generation of packing material for the analysis of sulfur compounds. The first packing material, in the Rt-Sulfur™ column, had inertness characteristics for low ppmv levels of sulfur compounds. Now, with the second generation, the Rt-XLSulfur™ column, it is possible to achieve low ppbv detection of sulfur compounds.

sulfur is quenched and area counts are decreased. For a successful analysis, the analytical column must resolve the hydrocarbons from the sulfurs listed in Figure 1. A packed, micropacked, or PLOT column can be used to achieve this requirement.



packed columns

Hydrocarbons are non-reactive but sulfur compounds, especially hydrogen sulfide and methyl mercaptan, are easily adsorbed by undeactivated surfaces. Therefore, there are two areas of concern when performing this analysis with packed or micropacked columns: one is the inertness and selectivity of the solid support, and the other is the inertness of the tubing walls. Packed and micropacked columns typically use metal tubing for ruggedness but the surface is very adsorptive for sulfur compounds. So, for sulfur analysis, Teflon® tubing is often used. However, this tubing is permeable and will expand and contract during temperature changes.

Sulfinert™ and Silcosteel® treatments adhere a thin, inert layer onto stainless steel and other metal surfaces. The Sulfinert™ coating is the leading passivation technique for the storage and transfer of low-level, organo-sulfur-containing samples.

Restek designed the Rt-XLSulfur™ column to accomplish the sensitive separation of hydrocarbons from sulfur compounds. All components of the column have been tested for inertness. The packing material is extensively deactivated for the analysis of low ppbv-levels of hydrogen sulfide and methyl mercaptan, and then is prepared to achieve the proper selectivity and required resolution (Figure 1). Analysis of 50ppbv sulfur compounds using a 1mL gas loop and Sievers sulfur chemiluminescence detector (SCD) shows excellent sensitivity (Figure 2).

The interior tubing walls of the Rt-XLSulfur™ column are treated with a Sulfinert™ coating, a passivation technique designed to deactivate metal surfaces. This coating is found to be very inert for hydrogen sulfide and methyl mercaptan. (For more information on Sulfinert™ coating, request lit. cat.# 59203.) Another issue that is routinely overlooked with packed columns is that their end plugs are known to adsorb sulfur compounds. So, Restek also treated the end plugs in the Rt-XLSulfur™ column with Sulfinert™ passivation. The extra care taken with the surfaces in this column result in a more accurate analysis of sulfur compounds in hydrocarbon processes.

Product Listing

Rt-XLSulfur™ Packed & Micropacked Columns*

OD (in.)	ID (mm)	1-Meter	2-Meter
0.95mm	0.75	19806	19807
1/16	1.0	19804	19805
1/8	2.0	80484	80485
3/16	3.2	80482	80483

* Installation kit must be purchased with column (no kit needed for 3/16" columns)

For more information on Sulfinert™ coating, call 800-356-1688 or 814-353-1300, ext. 5, and request lit. cat.# 59203.

Installation Kits for 0.75mm ID columns

Description	cat.#
For valve applications	21062
For split applications	21063
For all HP GC split applications	21064

Installation Kits for 1.0mm ID columns

Description	cat.#
For valve applications	21065
For direct injections	21066

Installation Kits for 2mm ID columns

Description	cat.#
For valve applications	21067

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