

Rt™-Alumina PLOT Column Characteristics

1. Highly selective adsorbent for C1-C5 hydrocarbons; separates all unsaturated hydrocarbon isomers at temperatures far above ambient.
2. Reactivity of aluminum oxide stationary phase is minimized so that column response for polar unsaturates, such as dienes, is optimized. Column sensitivity or response ensures a linear and quantitative chromatographic analysis for these compounds.
3. Strong bonding prevents particle generation. The column can be used in valve switching operations, without release of particles that can harm the injection and detection systems.
4. The Rt™-Alumina PLOT column is stable up to 200°C. If water is adsorbed on the column, it can be regenerated by conditioning at 200°C. Full efficiency and selectivity will be restored.

did you know?

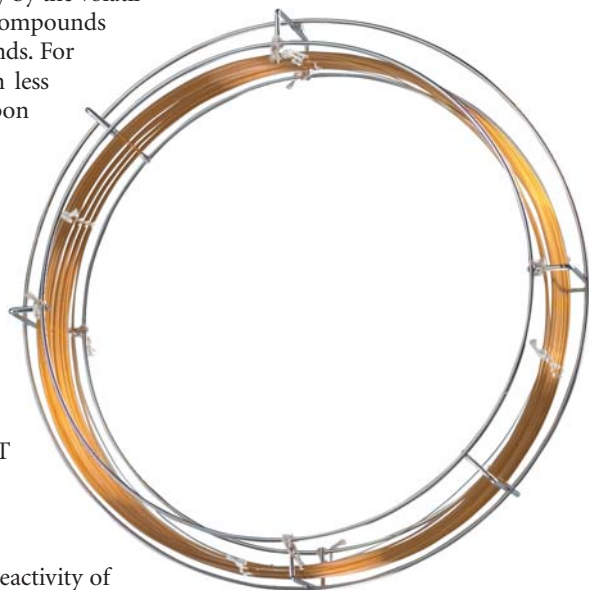
Rt™-Alumina PLOT columns show unique retention characteristics for hydrocarbons.

Selectivity

The selectivity of the Rt™-Alumina PLOT column is measured by the retention indices for acetylene and propadiene. These two components are extremely sensitive for a change in selectivity.

For saturates, retention is determined mainly by the volatility of the compound, with less volatile compounds retained longer than more volatile compounds. For example, isoparaffins are less retained than less volatile normal paraffins of similar carbon number.

For unsaturates, retention is strongly influenced by polarity or degree of unsaturation. In general, hydrocarbons having a higher degree of unsaturation are more polar. This polarity comes from the presence of π electrons; the more π electrons present in a compound, the more polar it behaves and the more strongly it is retained. Retention indices for some unsaturates separated on the Rt™-Alumina PLOT column are listed in Table I.

**Sensitivity**

Proper deactivation is critical to minimize reactivity of the aluminum oxide stationary phase and maximize column sensitivity. Quantitation can be done only if the column exhibits linear response, which results from good stationary phase inertness. Rt™-Alumina PLOT columns are specially deactivated and provide high inertness for unsaturates and saturates. In fact, Rt™-Alumina PLOT columns are almost four times more sensitive for unsaturates than other brands on the market. Column sensitivities for various unsaturated hydrocarbons, measured by the peak height ratio based on *n*-butane, are shown in Table I.

Table I: Retention indices and column response for unsaturates on an Rt™-Alumina PLOT column at 80°C.

	Ethylene	Acetylene	Propylene	Propadiene
Retention Index	255	421	372	407
Peak Ratio (vs. <i>n</i> -butane)	0.65	0.72	0.84	0.54