#59131

RESTEK
environmental

Applications note

Siltek - Deactivation Delivers Inertness to Analyte Breakdown and Reactivity, and Durability to Physical and Chemical Challenges

A common concern in gas chromatographic (GC) analyses is the interaction of analyles with active surfaces in the GC pathway. The injection port is the first source of active sites, often leading to adsorption and breakdown of analytes. However, not all analyses are affected by reactivity within the injection pon. Hydrocarbons, typically, arc not su~eptible to adsorption or breakdown. In contrast, active compounds ~uch as pesticides, drugs, phenok, amine,c, and alcohols, which are often injected via splitless mode, are more prone to these problems. With a splitless injection, carrier gas flow rate through the liner is very slow, increasing the sample residence time in the injector and the chance for reactivity. Complete and effective liner deactivation i~ crucial to minimize available active sites and ensure repeatable results.

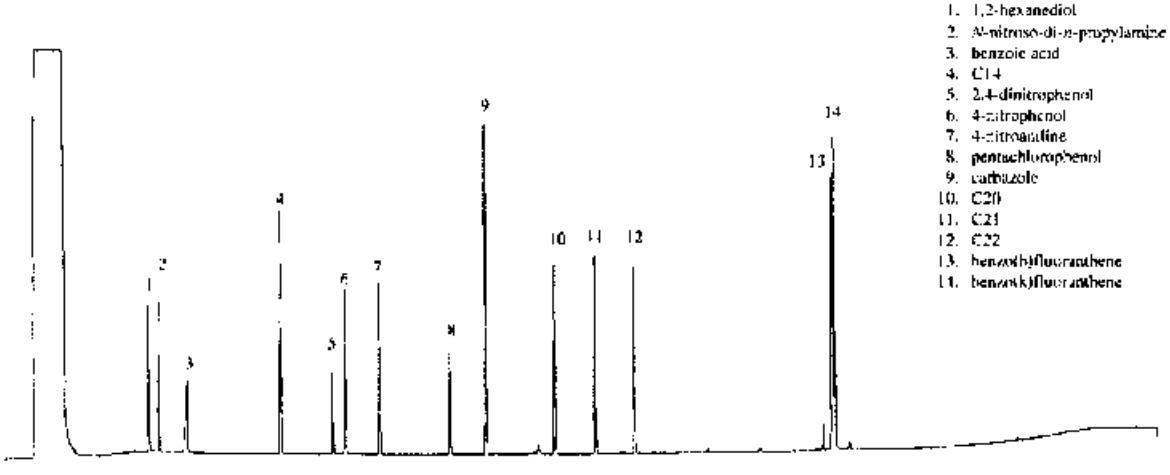
Restek has designed Siltek'~deactivation to deliver both enhanced inertness and durability. Gas chromatography accessories coated with Siltek~ deactivation provide durability for matrices of extreme pH or high-temperature applications,

inertness

Semivolatile analysis places extreme demands on the GC system One key to successfully analyzing semivolatiles is having the capability to handle basic and acidic compounds in the GC system. The analytical column must provide selectivity for both classes without resulting in poor peak shape. Additionally, liner deactivation is critical to analytical success because the vaporized sample comes in contact with the inlet liner first.

The Restek XTI test mix was chosen to evaluate the inertness of a Siltek-deactivated liner. This mix contains both acidic and basic probes, ,some of which are pollutants monitored in US Environmental Protection Agency (EPA) Method 8270 (4-nitroaniline, N-nitroso-di-n-propylamine, 2,4-dinitrophenol, pentachlorophenol benzoic acid. benzo(b)- and benzo(k)fluoranthene). A splifless injeclion of the XTI mix with an on-column concentration of 4-10ng shows an excellent response for all of the probes, includin,e the active compounds dinitrophenol, 1,2-hexanediol, and benzoic acid (Figure I).

Siltek'"-deactivated liner shows excellent inertness/br acidic and basic probes.



30 m, 0.25mm ID. 0.25um XTl-5{cat.# 12223) with Siltek-deactivate 4mm .splitless single gooseneck.,liner (cat.# 20798-214.1). Oven temp.: 44 degC (hold 2 min.to IbXFC@ 30°C/min., to 180C@ 9°C/rain.. to 330°C @ 30°Cmin. (hold 10 rain.): lnj. temp.: 250°C; **Det.**: 330°C; Carrier Gas: He.

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