

## Reduce Inlet Liner ID for Sharper Peaks by SPME/GC

*In rapid screening analyses for volatile organic compounds, it is critical that analyte band broadening be minimized. Extracting these analytes by solid phase microextraction and replacing the standard 2mm ID splitless liner in the splitless/split GC injection port with a 0.75mm ID liner improves peak shape and height. Reduced volume in the 0.75mm ID liner increases the linear velocity through the liner and rapidly introduces analytes onto the column in a narrow band.*

### Key Words:

- volatile organic compounds • solid phase microextraction
- inlet liners • capillary gas chromatography

Inlet liners are designed for optimum sample introductions for specific injection techniques. Typically, 2mm or 4mm ID inlet liners are used in split/splitless injections with capillary column chromatography. The large volumes of these liners are necessary for solvent expansion in liquid injections. However, in direct injection, these large solvent volumes result in band broadening and poor peak shape. Thick film and long capillary columns, and in some cases cryogenics, have been used to reduce band broadening by focusing the sample. Analysis by SPME eliminates these difficulties.

SPME is a solventless extraction method in which a coated fused silica fiber extracts analytes from a sample. The heated injection port of the gas chromatograph thermally desorbs analytes from the fiber directly into the column. Since no solvent is injected and no split is employed in SPME, a 0.75mm ID inlet liner can be used.

Reduced volume in the 0.75mm ID inlet liner increases the linear velocity through the liner and rapidly introduces the analytes onto the column in a narrow band. The sharp peaks obtained with the 0.75mm ID liner also demonstrate that the compounds are rapidly desorbed from the fiber.

It is especially critical that band broadening be reduced when rapid screening is used for VOCs. Performing SPME/GC, and replacing the standard 2mm ID splitless liner in the splitless/split injection port with a 0.75mm ID liner, improves peak shape and height (Figure A). This also will improve linearity for lower concentrations of analytes and shorten analysis time.

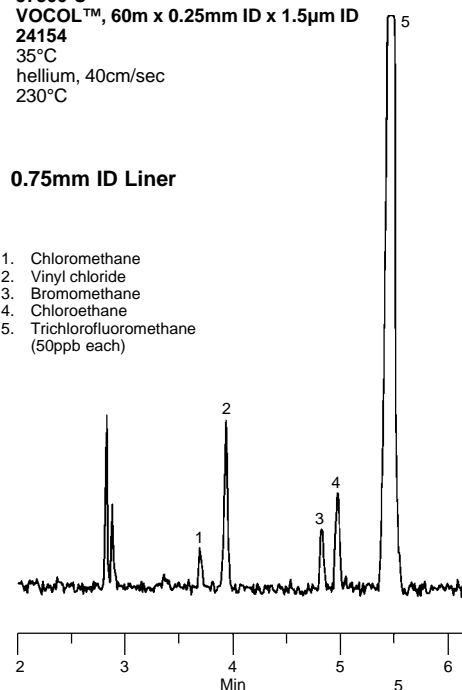
To minimize sample loss or peak tailing, the inlet liner must be inert. Our proprietary, high-temperature technique thoroughly deactivates Supelco™ inlet liners to minimize adsorption of active

**Figure A. Smaller Inlet Liner Volume Greatly Improves SPME/GC Analyses of VOCs**

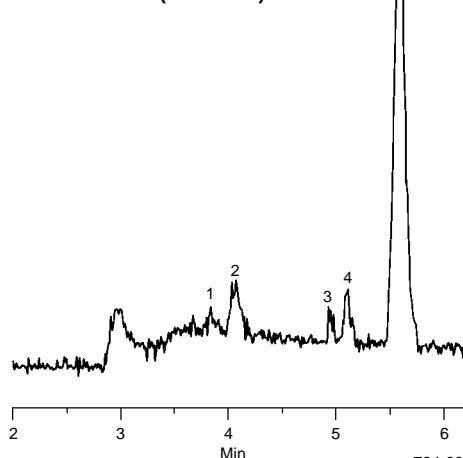
Fiber.: PDMS Fiber, 100µm  
Cat. No.: 57300-U  
Column: VOCOL™, 60m x 0.25mm ID x 1.5µm ID  
Cat. No.: 24154  
Oven: 35°C  
Carrier: helium, 40cm/sec  
Inj.: 230°C

### 0.75mm ID Liner

1. Chloromethane
2. Vinyl chloride
3. Bromomethane
4. Chloroethane
5. Trichlorofluoromethane (50ppb each)



### 2mm ID Liner (Standard)



794-0051,0050

sample components. Additionally, these liners can withstand temperatures of 350°C and higher. Using the appropriate inlet liner, combined with efficient, solvent-free sample introduction by SPME, helps to achieve excellent chromatography.

For more information on analysis of VOCs by SPME/GC, request Application Note 56. For more information on inlet liners, request Bulletin 899.

## Ordering Information:

### 0.75mm ID Inlet Liners for SPME/GC

Description	Cat. No.
<b>Hewlett-Packard® 5880, 5890 series, 6890</b>	
Each	26375,01
pk. of 5	26375,05
pk. of 25	26375,25
<b>Perkin-Elmer® Auto System Split/Splitless Injector</b>	
Each	26312,01
pk. of 5	26312,05
pk. of 25	26312,25
<b>Shimadzu®</b>	
GC Models 9A/15A/16 (SPL-G9/15 Injector)	
Each	26329,01
pk. of 5	26329,05
pk. of 25	26329,25
GC Models 14/15A/16 (SPL-14 Injector)	
Each	26335,01
pk. of 5	26335,05
pk. of 25	26335,25
GC Models 17A (SPL-17 Injector)	
Each	26339,01
pk. of 5	26339,05
pk. of 25	26339,25
<b>Varian</b>	
1075/1077 Injectors	
Each	26358,01
pk. of 5	26358,05
pk. of 25	26358,25
1078 Injectors	
Each	26378,01
pk. of 5	26378,05
pk. of 25	26378,25
1093/1094 SPI Injectors	
Each	26364,01
pk. of 5	26364,05
pk. of 25	26364,25

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