

Monitor BTEX Compounds and Fuels in Water, Using Solid Phase Microextraction and Capillary GC

BTEX compounds, kerosene, diesel fuel, or gasoline in water or aqueous suspensions of soil can be monitored by solid phase microextraction (SPME) and capillary GC on a short, narrow bore column (1.5m x 0.20mm ID). A sample can be extracted and analyzed in less than 40 minutes. Because no solvent is required, sensitive detection is characteristic of SPME/GC analyses.

Key Words:

- BTEX • aromatic hydrocarbons • gasoline • fuels
- hydrocarbons

In solid phase microextraction (SPME), analytes establish equilibria among the sample matrix, the headspace above the sample, and a polymer coating on a fused silica fiber. Extracted analytes are thermally desorbed from the fiber to a capillary GC column. Because the analytes are not diluted with solvent, minimum detection limits are improved, relative to solvent extraction procedures. Peak symmetry and resolution are maintained.

A 30 μ m polydimethylsiloxane-coated SPME fiber and a short, narrow bore SPB™-1 capillary GC column (1.5m x 0.20mm ID) effectively monitor water and aqueous suspensions of soil for BTEX compounds, kerosene, diesel fuel, or gasoline (Figure A). Extraction and analysis takes less than 40 minutes per sample.

For additional information about solid phase microextraction, for many types of samples, request our SPME information packet (Publication Number T413019).

Figure A. BTEX Compounds and Fuels in Water

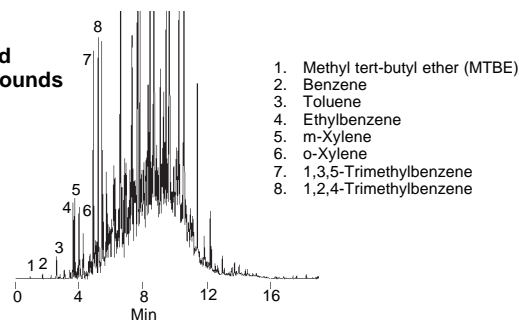
Samples: 4ppm kerosene + 50ppb BTEX in water
1ppm diesel fuel in water
2ppm gasoline in water
(all 4mL samples in 4.6mL vial)

SPME Fiber: 30 μ m polydimethylsiloxane
Cat. No.: 57308 (manual sampling)

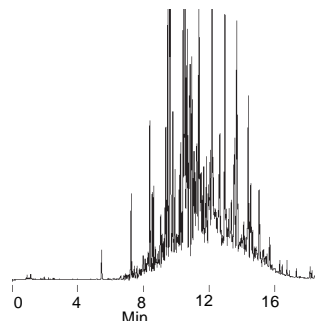
Extraction: direct immersion with rapid stirring, ambient temp., 15 min
Desorption: 5 min, 250°C

Column: SPB-1, 15m x 0.20mm ID, 0.20 μ m film
Cat. No.: 24162
Oven: 40°C (1 min) to 320°C at 15°C/min, hold 15 min
Carrier: helium, 30cm/sec
Det.: FID, 300°C
Inj.: splitless/split (closed 5 min), 250°C

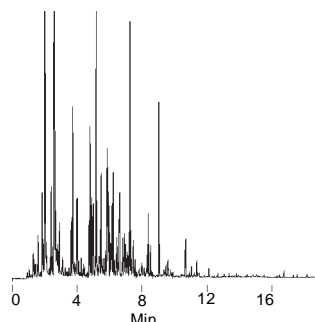
Kerosene and BTEX Compounds



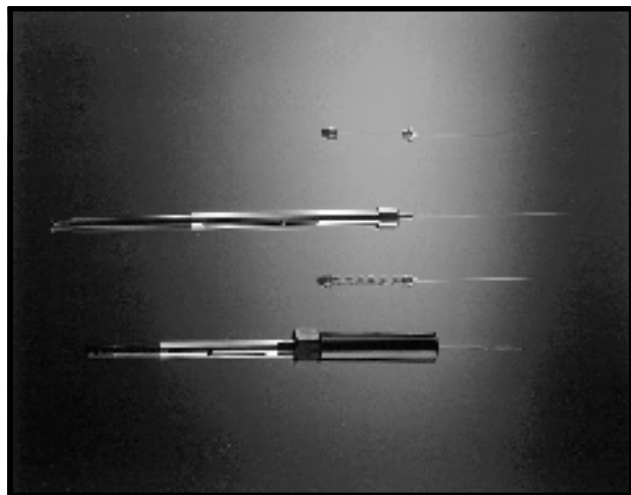
Diesel Fuel



Gasoline



795-0451, 0452, 0453



995-0125

Ordering Information:

Description	Cat. No.
SPB-1 Capillary Column 15m x 0.20mm ID, 0.20µm film	24162
SPME Holder* For manual sampling	57330
For Varian 8100/8200 AutoSampler (requires Varian SPME upgrade kit)	57331
SPME Fiber Assembly (pkg. of 3) 7µm polydimethylsiloxane coating For manual sampling	57302
For Varian 8100/8200 AutoSampler	57303
100µm polydimethylsiloxane coating For manual sampling	57300
For Varian 8100/8200 AutoSampler	57301
30µm polydimethylsiloxane coating For manual sampling	57308
For Varian 8100/8200 AutoSampler	57309
85µm polyacrylate coating For manual sampling	57304
For Varian 8100/8200 AutoSampler	57305
SPME Assortment Fiber Pack One fiber each of 85µm polyacrylate coating and 100µm and 7µm polydimethylsiloxane coating For manual sampling	57306
For Varian 8100/8200 AutoSampler	57307

Description	Cat. No.
SPME Inserts and Inlet Liners	
Inserts, Varian SPI Models 1093-94SP1, Series 3000 GC	
each	26364,01
pk. of 5	26464,05
pk. of 25	26364,25
Inlet Liners, Splitless, 0.75mm ID# For Hewlett-Packard GC - 5700, 5800, 5890	
each	26375,01
pk. of 5	26375,05
pk. of 25	26375,25
For Varian GCs (all)*	
each	26358,01
pk. of 5	26358,05
pk. of 25	26358,25

Vials, Hole Caps, Teflon®/Silica Septa

Screw Top Vials for Varian 8100/8200 AutoSampler	
Clear, 2mL, pk. of 100	27124
Amber, 2mL, pk. of 100	27005
Headspace Vials	
Clear, 4mL, pk. of 10	26901
pk. of 100	27136
Amber, 4mL, pk. of 10	26930
pk. of 100	27006
Thermogreen™ LB-2 Septa, Pre-Drilled*	
11mm, pk. of 25	23167
11mm, pk. of 50	23168
9.5mm, pk. of 25	23161
9.5mm, pk. of 50	23162

*First time users must order both holder and fiber assembly. Holder is reusable indefinitely.

*You can reduce inlet volume by replacing a standard 2mm ID liner with this specially designed liner. This increases sensitivity and provides sharper peaks.

* Pre-drilled septa reduce septum coring that can cause extraneous peaks.

Trademarks

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Teflon – E. I. du Pont de Nemours & Co., Inc.

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