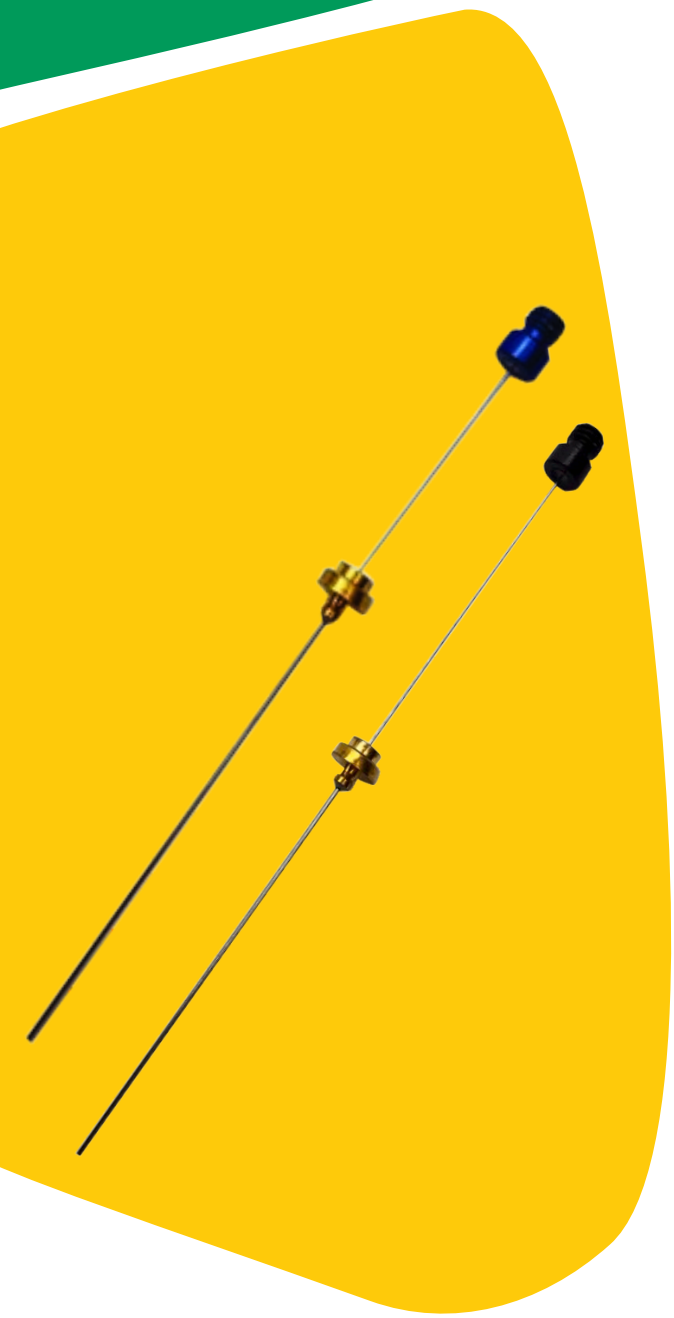
Supelco®
Analytical Products

MilliporeSigma



Rugged and Reproducible Solid Phase Microextraction (SPME) Sampling

Elevate your fiber performance with Supelco® nitinol-core SPME fibers

Supelco® SPME fibers with Carboxen®/ Polydimethylsiloxane (CAR/PDMS) and Polydimethylsiloxane/ Divinylbenzene (PDMS/DVB) coatings are now available on a nitinol core (NIT) in a stainless steel assembly for improved fiber performance. Selectivity of the CAR/PDMS and PDMS/ DVB SPME phases has been maintained for seamless transition of methods from fused-silica core (FS) fibers to the improved NIT technology. NIT fibers offer the following benefits:

- Enhanced reproducibility
- Greater fiber durability
- Unchanged selectivity for method consistency
- Core inertness to ensure analyte stability

Improved Lot-to-Lot and Fiber-to-Fiber Reproducibility

Our nitinol-core SPME fibers provide improved lot-to-lot and fiber-to-fiber reproducibility. This enhanced reproducibility stems from the more stringent coating specifications which significantly reduces fiber variation providing enhanced precision of your chromatographic results.

Greater Fiber Durability

NIT fibers exhibit less to no fiber breakage allowing for extended fiber lifetime. NIT fibers were flexed to 180° without breaking or permanently kinking regardless of coating type.

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Maintained Coating Selectivity and Core Inertness

To facilitate seamless transfer of methods from your fused core silica (FS) fibers to the new NIT fibers of the same coating type, selectivity and inertness were compared to ensure consistency using two sets of indicator compounds:

- Alkyl halides because they are known to breakdown at elevated temperatures upon interaction with exposed active sites.
- Small short chain amines because they can be challenging analytes due to their reactivity with metal which results in oxidative degradation that intensifies at elevated temperatures.

Comparisons were performed on four lots of CAR/PDMS and PDMS/DVB of each core type to confirm repeatability of results.

The difference between responses of halogenated alkanes extracted using coatings on NIT and FS cores was less than 3% for all coatings.

Selectivity and core inertness were maintained between the FS and NIT fibers for the small short chain amines with values statistically equivalent at 5% RSD (Figure 1).

Figure 1: Core Inertness and Analyte Response with Amine Samples on NIT and FS Fibers

Column: SPB®-1 Sulfur (base deactivated), 30 m x 0.32 mm x 4.0 µm (24158)

Sample: 1 ppm each in water with 25% NaCl, 0.05 M phosphate buffer pH 11

Extraction: 10 min immersion

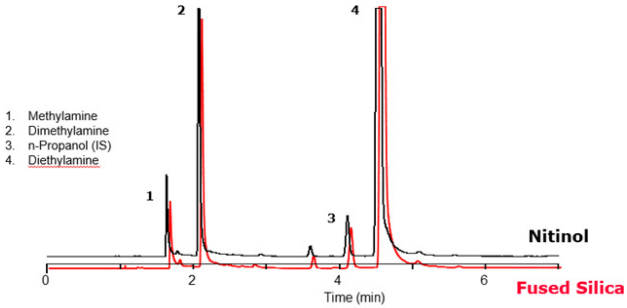
Fibers: PDMS-DVB Fused Silica & NIT cores

Desorb: 3 min @ 250°C

Oven: 45 °C (1.5 min) to 80 °C at 8 °C/min to 200 °C at 20 °C/min

Injector: 250 °C, splitless closed initial 0.75 min

Detector: FID at 300 °C



Sampling and Analysis mode

Fiber Coating and Thickness	Fiber Core/ Assembly Type	Hub Description	Manual Holder/(w/spring)		Autosampler	
			23 Ga*	24 Ga*	23 Ga*	24 Ga*
Carboxen®/Polydimethylsiloxane (CAR/PDMS)						
75 µm CAR/ PDMS	NIT/SS	Black Metallic	57901-U	57904-U	57907-U	57908-U
Polydimethylsiloxane/Divinylbenzene (PDMS/DVB)						
65 µm PDMS/ DVB	NIT/SS	Blue Metallic	57916-U	57921-U	57923-U	57931-U

Read more on SigmaAldrich.com/NITSPME

See our complete SPME offer at SigmaAldrich.com/SPME

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