Supelco®
Analytical Products

MERCK

sample smarter with automated SPME

Supelco® Smart Solid Phase Microextraction (SPME) Fibers for the PAL autosampler*

Are you automating your SPME workflow? Now you can use the full range of Supelco® SPME fibers with your PAL system.

Supelco® Smart SPME fibers combine our SPME coating expertise and innovations, including the Carboxen®, dual-coated, and overcoated fibers, with Smart technology for seamless sample preparation. The Smart fibers are equipped with a unique Smart chip that offers the following benefits:

- ***Traceability:*** Monitor usage parameters such as stroke count, dates of operation, and temperature exposure.
- ***Ease-of-Use:*** Automatic application of correct parameters for the specific SPME fiber coating.
- ***Increased Productivity:*** Fully automated sampling for high productivity.

Proven SPME Performance Meets Smart Technology

Our traditional SPME fibers offer sorbent phases engineered to ensure optimal extraction & desorption efficiency, limit sample carryover, and enable sampling of analytes over a wide molecular weight range. The entire portfolio of our traditional Supelco® SPME fibers is now available in the Smart SPME format for accurate, precise and consistent results.

Cat. No.	Coating	Coating Thickness	Core Type	Phase Type
548552-U	PDMS	7 µm	Fused Silica	Nonpolar
548553-U	PDMS	30 µm	Fused Silica	Nonpolar
548575-U	PDMS	100 µm	Fused Silica	Nonpolar
548652-U	Polyacrylate	85 µm	Fused Silica	Polar
548676-U	PEG	60 µm	Metal Alloy	Polar
548576-U	PDMS/DVB	65 µm	Fused Silica	Adsorptive
548650-U	PDMS/DVB	65 µm	StableFlex™	Adsorptive
548651-U	PDMS/DVB-OC (Overcoated)	65 µm/ 10 µm	Fused Silica	Adsorptive
548550-U	CAR/PDMS	75 µm	Fused Silica	Adsorptive
548551-U	CAR/PDMS	85 µm	StableFlex™	Adsorptive
548653-U	DVB/CAR/ PDMS	50 µm	StableFlex™	Adsorptive

All Fibers have a 23 Ga needle.

*PAL3 Series II type autosampler

The life science business of Merck operates as MilliporeSigma in the U.S. and Canada.

Supelco® Smart SPME fiber assembly with color-coded Smart chip for traceability, ease-of-use and increased productivity.

Innovative Coatings Engineered by our Analytical Chemists

We continue to lead the market in the development of innovative SPME coatings of complex/high background matrices designed to solve your analytical challenges:

- **Supelco® SPME-OC (overcoated) PDMS/DVB fibers** were designed to address the challenges associated with immersion SPME of complex/high background matrices. During direct immersion, food samples which contain fats, sugars, pigments, and other macromolecules tend to stick to adsorptive (particle) SPME fibers causing a reduction in fiber life time. Additionally, these matrix components can be transferred to the GC where they may interfere with chromatographic analysis and/or cause more frequent maintenance. Supelco® SPME-OC PDMS/DVB fibers incorporate a protective PDMS overcoating on the fiber making it more physically robust, less prone to chemical fouling, and enable an efficient wash step reducing matrix transfer.
- **Carboxen® (CAR/PDMS) coated fibers** offer the most efficient extraction of small volatile analytes (molecular weight < 150). Due to the greater relative adsorptive strength of the Carboxen® carbon molecular sieve (CMS) for small molecules, compared to spherical graphitized polymer carbon (SGPC) or carbon black (GCB) adsorbents, they can retain volatile analytes more strongly for increased sensitivity and reliable results. This characteristic can be attributed to the Carboxen® tapered pore which results in enhanced thermodynamic properties and kinetics, enabling both efficient adsorption and desorption of low molecular weight or volatile compounds. Carboxen® fibers are ideal for trace level analysis. The Carboxen® material is also used in the dual coated DVB/CAR/PDMS version, which offers the high extraction efficiencies of a particle fiber and expands the molecular weight range that can be sampled.

Unsurpassed Reproducibility and Efficiency

SPME Overcoated PDMS/DVB Fibers

GC/MS/MS Analysis of Bisphenol A (BPA) in Pureed Carrot Baby Food

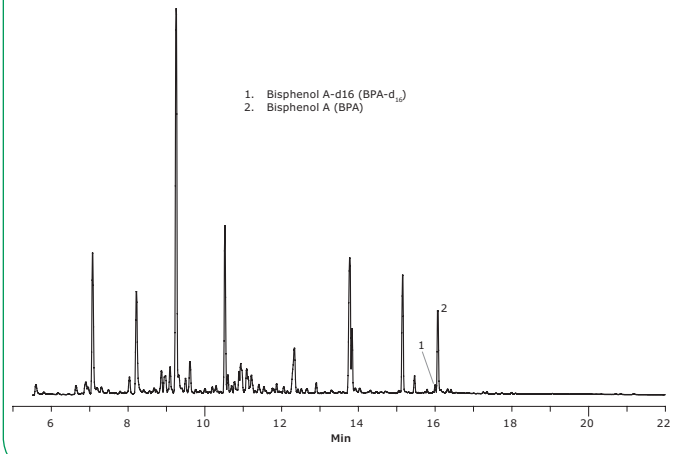
Conditions

SPME procedure

sample/matrix:	10 mL vial containing 0.5g sample (spiked at 10ng/g with BPA and equilibrated for 30-60min), 6.5 mL of water at pH 4 containing 25 % sodium chloride, and 7µL of a 1 µg/mL methanolic solution of BPA-d16 internal standard.
incubation:	10 min, 50 °C, 400 rpm
SPME fiber:	Overcoated PDMS/DVB (57439-U; smart SPME Version: 548651-U)
extraction:	immersion, 50 min, 50 °C, 250 rpm, vial penetration 34 mm
wash:	0.5 min, 250 rpm, vial penetration 34 mm
desorption:	3 min, 260 °C
post bake:	6 min, 270 °C

GC-MS/MS

column:	SLB®-PAHms, 30 m x 0.25 mm I.D., 0.25 µm (28340-U)
oven:	100 °C (3 min), 15 °C/min to 300 °C (10 min)
inj.temp.:	260 °C
carrier gas:	helium, 1 mL/min constant flow
detector:	MRM: BPA: 213/119, 213/91, 119/91
BPA-d16:	224/125, 224/97, 125/97
MSD interface:	325 °C
liner:	0.75 mm I.D. SPME



Smart SPME Carboxen® Fibers

GC Analysis of Terpenes in Cannabis

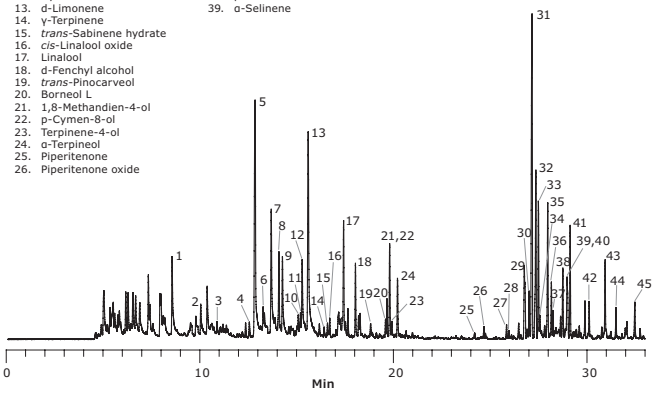
Sample Prep Method

sample/matrix:	0.5 g dried cannabis in 10 mL headspace vial
SPME fiber:	Divinylbenzene/Carboxen/Polydimethylsiloxane (DVB/CAR/PDMS), 50/30 µm (57298-U, smart SPME version: 548551-U)
extraction:	20 min, headspace, 40 °C
desorption process:	3 min, 270 °C
sample preparation:	30 min equilibration at 40 °C prior to extraction fiber post-bake after extraction, 3 min at 270 °C

Primary Analytical Method

column:	Equity®-1, 60 m x 0.25 mm I.D., 0.25 µm (28047-U)
oven:	60 °C (2 min), 5 °C/min to 275 °C (5 min)
inj. temp.:	270 °C
carrier gas:	helium, 1 mL/min constant flow
detector:	MSD
MSD interface:	300 °C
liner:	0.75 mm ID, SPME

1. Hexanal
2. Hexene-1-ol
3. 2-Heptanone
4. α-Thujene
5. α-Pinene + unknown
6. Camphene
7. 6-Methyl-5-hepten-2-one
8. β-Pinene
9. β-Myrcene
10. Δ-3-Carene
11. α-Terpinene
12. Cymene
13. d-Limonene
14. γ-Terpinene
15. *trans*-Sabinene hydrate
16. *cis*-Linalool oxide
17. Linalool
18. d-Fenchyl alcohol
19. *trans*-Pinocarveol
20. Borneol L
21. 1,8-Methandien-4-ol
22. p-Cymen-8-ol
23. Terpinene-4-ol
24. α-Terpineol
25. Piperitenone
26. Piperitenone oxide
27. α-Ylangene
28. α-Copaene
29. γ-Caryophyllene
30. α-Santalene
31. Caryophyllene
32. *trans*-α-Bergamotene + unknown
33. α-Guaiene
34. *trans*-β-Farnesene
35. Humulene
36. Alloaromadendrene
37. α-Curcumene
38. β-Selinene
39. α-Selinene
40. β-Bisobolene
41. α-Bulnesene
42. Selina-3,7(11)-diene
43. Caryophyllene oxide
44. Humulene oxide
45. Caryophylla-3,8(13)-dien-5-ol A



Supelco® Smart SPME fibers for PAL have been developed by analytical chemists, for analytical chemists, so you can be assured of accurate, precise and consistent results – every time.

Accuracy and precision made simple

SigmaAldrich.com/smartSPME

To place an order or receive technical assistance

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