

SPME Portable Field Sampler with 100µm PDMS Fiber

Product Specification

Solid phase microextraction, using the Supelco™ SPME Portable Field Sampler, is an economical and reliable way of concentrating, storing, and transporting samples of volatile and semivolatile compounds in the field. After sampling, the SPME fiber is retracted into a protective outer needle. The needle is drawn within a replaceable sealing septum in the nosepiece and locked into place. The sampler – or samplers – then can be transported safely to the laboratory for analysis. The user has the option of immediately desorbing the analytes from the fiber and conducting the analysis, or storing the analytes on the fiber for analysis at a later time.* The replaceable sealing septum in the nosepiece and the highly retentive 100 µm PDMS (polydimethylsioxane) fiber ensure that extracted pesticides remain on the fiber until they are thermally desorbed (Table 1). The fiber can be reused many times – typically 50-100 extraction/desorption cycles – then the entire sampler is disposed of when the fiber is no longer usable.

Most of the components of the portable field sampler are made from a durable polymer, but the nosepiece is aluminum, to act as a temperature shield during thermal desorption in the gas chromatograph. The five slots in the needle guide/depth gauge provide precise control over how deep the needle is inserted into a sample container, or into the injection port during the fiber desorption process.

Table 1. Recovery of Pesticides Extracted/Stored in SPME Field Sampler is Much Higher than for Stored Water Samples

Analyte	% Loss on Storage*		Analyte	% Loss on Storage	
	SPME Fiber [∇]	Stored Water*		SPME Fiber	Stored Water
Atrazine	- 15	- 57	Methoxychlor	- 14	- 88
DDE	- 12	- 98	Methyl parathion	- 7	- 68
Disulfoton	- 8	- 93	Parathion	- 15	- 83
Endrin ketone	- 10	- 82	Phorate	- 3	- 84
Famphur	- 3	- 60	Simazine	- 10	- 53
Heptachlor epoxide	- 12	- 83	Sulfotep	+ 4	- 81
Lindane	- 2	- 74	TEPP	- 8	- 54
Malathion	- 6	- 74	Thionazin	- 3	- 68
			Mean	- 8%	- 75%

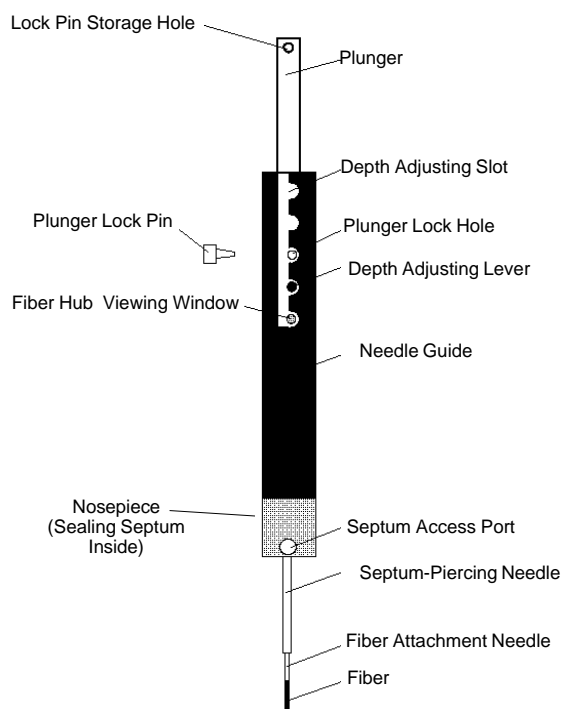
*Relative to immediate analysis. 10ppb each pesticide in water.

[∇]Pesticides extracted by SPME and stored on fiber (24 hours / 4°C).

*Water sample stored in a silanized vial (24 hours / 4°C), then extracted by SPME.

* If the fiber will be stored for more than 1 day before desorption, it should be stored at a subambient temperature to reduce the chance of cross-contamination or analyte breakdown. We recommend you determine the storage conditions for analytes of interest prior to sampling.

SPME Portable Field Sampler



797-0174

Operation

Step-by step instructions for using the SPME Portable Field Sampler are included with the sampler.

Fiber Conditioning

Before each sampling, the PDMS fiber should be conditioned in the GC injection port at 280°C for at least 30 minutes, to remove any impurities.

Sampling

If the sample is in a vial, the vial should have a hole cap with a suitable septum. The sample level should be several millimeters from the top of the vial. For faster sampling of liquids, the sample should be gently agitated during the extraction, using a small magnetic stirring bar and a magnetic stirrer. For headspace sampling, the sample should be both stirred and gently heated as required.

The portable field sampler also can be used to sample from a sampling bomb or Tedlar® bag equipped with a septum port.

Storage

The PDMS fiber retains analytes tightly during storage, and can be desorbed immediately or stored for analysis at a later time. In experiments conducted in our laboratories, there was little or no loss of any of the extracted analytes when the fiber was sealed and stored for 3 days at ambient temperature. If the fiber will be stored for more than 1 day before desorption, however, we recommend that it be stored at a subambient temperature. This reduces the chance of cross-contamination or breakdown and loss of sample that could occur at higher temperatures.

The locking mechanism ensures there will be no damage to the fiber, nor consequent loss of sample, during transport or storage.

Injection

During analyte desorption, the fiber should be located in the hottest part of the injection port. Determine this depth from the manufacturer's literature, or by experiment, using the procedure described on the data sheet. To ensure reproducibility, the fiber should be desorbed consistently at the same depth in the injection port, and for the same length of time, for all standards and samples of the same type.

Before making any injections, make careful measurements to ensure that the fiber will totally clear the injection port septum and will not touch the inlet liner when the plunger is pushed down. The fiber will be damaged if it does not fully clear the septum or strikes the liner.

Changing the Sealing Septum

Although the sealing septum in the nosepiece of the sampler can be used for more than one extraction/desorption cycle, we recommend replacing the septum following each sample desorption, to prevent cross-contamination. The sampler uses 5mm diameter Thermogreen™ LB-2 septa (Cat. No. **20638**). Using the SPME septum tool (Cat. No. **504858**) is the simplest way to change the sealing septum.

Ordering Information:

Description	Cat. No.
SPME Portable Field Sampler 100µm PDMS fiber, pk. of 2	504823
Thermogreen LB-2 Septa 5mm, pk. of 50	20638
SPME Septum Tool	504858

Trademarks

Supelco, Thermogreen—Sigma-Aldrich Co.
Tedlar—E.I. du Pont de Nemours & Co., Inc.

Contact our Technical Service Department (phone 800-359-3041 or 814-359-3041, FAX 800-359-3044 or 814-359-5468) for expert answers to your questions.

For more information, or current prices, contact your nearest Supelco subsidiary listed below. To obtain further contact information, visit our website (www.sigma-aldrich.com), see the Supelco catalog, or contact Supelco, Bellefonte, PA 16823-0048 USA.

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