Empore™

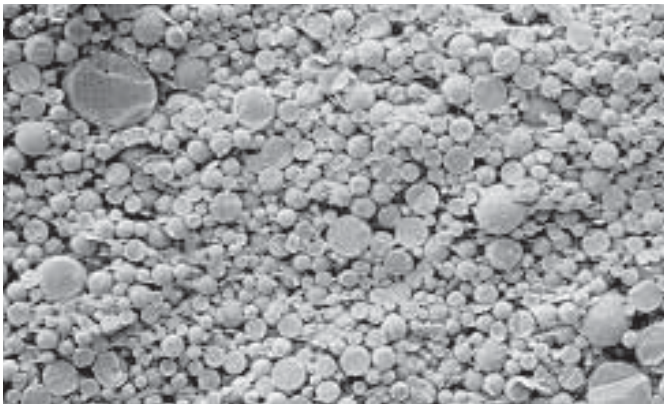
Solid Phase Extraction Disks

SDB-RPS (Styrene Divinylbenzene - Reversed Phase Sulfonate)

General Information

Empore™ Solid Phase Extraction (SPE) Disks provide an efficient alternative to liquid/liquid extraction for sample preparation. A proprietary process is used to entrap adsorbent particles into a matrix of inert PTFE to create a mechanically stable sorbent disk. The disks can be used for purification and concentration of analytes from aqueous samples.

Empore SPE disks provide a sample prep solution for large volume aqueous samples. The disk format provides a large surface area for sorbent/sample contact. Fast flow rates and high throughput may be realized with use of an Empore solid phase extraction disk.



High Density (HD) Empore™ Membrane (10-12 µm particle size)

Product Information

SDB-RPS is a styrenedivinylbenzene resin that has been modified with sulfonic acid groups to make it hydrophilic. Because SDB-RPS displays both reversed phase and cation exchange interactions, both affinities can be considered to design selective extractions. SDB-RPS is a 100% copolymeric particle that is spherical, porous, and cross-linked. The membrane is stable from pH 1 to 14 under normal use conditions. The structure of SDB-RPS allows for a wide range of analytes to be extracted simultaneously. The aromatic nature of the styrenedivinylbenzene allows pi-pi electron interactions with analytes containing aromatic functionality, while the sulfonic acid group aids in the retention of positively charged species.

Suggested Product Applications

Sorbent	Suggested Applications	Product Number	
		47 mm	90 mm
SDB-RPS (Styrene Divinylbenzene–Reversed Phase Sulfonate)	• Drugs and metabolites • Pesticides and metabolites • Drugs of abuse • Explosives • Polar organic compounds • Amine-containing analytes	2241	2341

CDS Analytical

Extraction Method with SDB-RPS Disk

Step A: Sample Preparation

- Microbiological growth can be retarded by lowering sample pH to 2, if needed.
- Filter Aid 400 and/or prefiltration may be helpful if the sample contains excessive suspended solids.
- Adjust sample pH to neutralize analytes and modify ionic strength if needed.

Step B: Extraction Disk Conditioning

Disk conditioning is critical for a successful extraction. Conditioning provides a good interface between the sorbent and the sample matrix. **Failure to condition the extraction disks properly will result in erratic and low recoveries.**

1. Center the extraction disk on the base of the filtration apparatus and clamp the reservoir on the top of the disk.*
2. Wash the disk with 10 mL of acetone and apply vacuum to dry the disk.
3. Wash the disk with 10 mL isopropanol. Apply vacuum and dry the disk.
4. Add 10 mL methanol to the disk. Apply vacuum and pull approximately 1 mL through the disk. Vent the vacuum and allow the disk to soak for 30 seconds.
5. Apply vacuum and draw methanol through the disk leaving a small amount of methanol on surface.
6. Add 50 mL reagent grade water to the reservoir and draw the water through the disk until the water surface just covers the disk surface. If disk becomes dry while conditioning with methanol or water, repeat steps 4 through 6.

* Place a vial in the vacuum apparatus to collect and dispose of wash and conditioning solvents. Remove vial prior to sample extraction.

Step C: Sample Extraction

- Pour the sample into the reservoir and apply vacuum to draw through the disk. Flow rate is dependent on vacuum setting and solids content of the sample. However, recoveries are not affected by flow rate.
- After sample extraction is complete, remove residual water from the disk by applying vacuum to dry the disk for approximately 5-20 minutes.

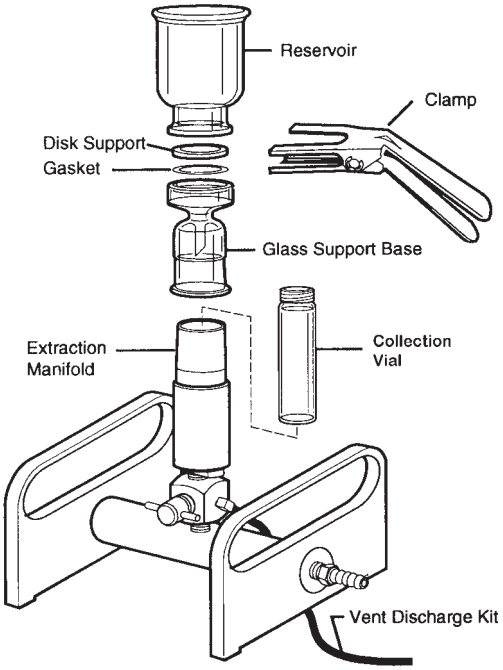
Step D: Sample Elution

Two elutions with 10 mL solvent are recommended.

- Place tip of filter base into the collection vessel (see diagram).
- Add 10 mL elution solvent to sample container, carefully rinsing the sides. Transfer solvent from sample container to reservoir with a pipet, washing the walls of the reservoir in the process.
- Apply vacuum and draw approximately 1 mL elution solvent through the disk. Vent the vacuum and allow the disk to soak for 30 seconds before reapplying vacuum to dry the disk.
- Repeat this process with a second aliquot of eluting solvent.

Note: When using solvents or other chemicals, be sure to read and follow the manufacturer's precautions and directions for use.

Disk Manifold System Setup



Volume Guidelines

The small bed mass of sorbent in the Empore™ membrane allows for the use of smaller solvent volumes compared with traditional SPE products. A general guide to solvent volumes for a disk SPE method using SDB-RPS is listed in the table below.

Each assay will need some further optimization in terms of selecting the best elution solvent (commonly methylene chloride, methanol or acetonitrile).

EPA Methods will require specific reagents; please refer to those methods when using the Empore Disks for agency reporting.

Volume Guidelines: SDB-RPS

Step	Solvent	47 mm disk	90 mm disk
Condition	Methanol	10-15 mL	20-30 mL
Optional:	Reagent water	10-50 mL	20-100 mL
Aqueous	Sample solution	100-1000 mL	500-2000 mL
Elute	Organic	10-15 mL	20-30 mL

Note: Suggested solvent volumes will vary according to the disk diameter, the amount of filter aid material, the analyte, the analyte's affinity for the chosen sorbent, and the strength of the eluting solvent. A general guide for solvent volumes is to completely cover the disk and bed of filter aid, such that 2-3 mm of solvent is above the top surface.

Product Characteristics

Composition	90% or greater sorbent particle 10% or less PTFE
Thickness	0.50 mm ± 0.05 mm
SPE Flow Rate	< 10 min/L DI H_2O @ 25°C @ 20 inHg (47 mm disk)
Particle Size	12 µm (nominal)
Solvents	Compatible with all organic solvents
pH Range	Stable between 1 and 14 under normal use conditions

Note: Empore Solid Phase Extraction Products are intended for solid phase extraction during scientific research only. These products are not intended for use in medical devices or in assessment and treatment of clinical patients.

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