



Sample Elution (continued)

- An intermediate wash with methanol or another organic solvent will remove neutral organics. Electrostatic forces will not be disturbed by this step. If all liquid has left the surface of the disk, a pre-wet with a minimum amount of methanol may be helpful to overcome surface tension effects. Simply wet the disk with enough methanol to cover the surface, then add the elution solvent.

General Information

Handling and Storage
The disks may be handled in the same manner as any filter membrane. Because of the adsorptive properties of the disks, desiccator storage away from laboratory air at room temperature is recommended. Washing the disks prior to sample extraction also removes any contaminants. (See step 2 under Extraction Disk Conditioning.)

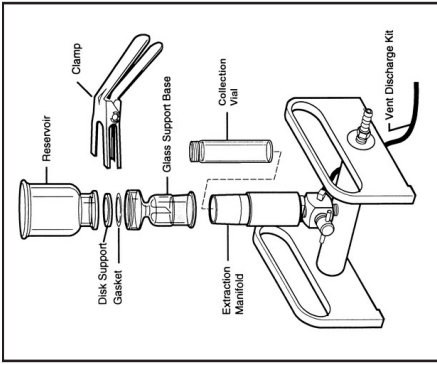
Recommended Usage
CDS Empore™ Extraction Disks are used in a manner similar to membrane filters. Filtration equipment is available from a number of different suppliers and include in-line filter holders, glass filtration apparatus, and multiple filtration manifolds. Buchner funnels are not recommended.

Applications
CDS Empore Extraction Disks are available with a variety of sorbents and can be used for extraction of semi- and non volatile compounds from water samples, food extracts, soil extracts and physiological fluids.

More information

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Suggested Vacuum Apparatus



Important Notice to Purchaser:
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CDS Analytical
Empore™
Extraction Disks For
Environmental Analysis

with Cation Exchange-SR for use with 47 mm and 90 mm extraction apparatus

Instructions for Use
General Product Characteristics

Description
CDS Empore™ Extraction Disks are a unique extraction product. A patented CDS process is used to entrap adsorbent particles into a matrix of inert PTFE to create a mechanically stable sorbent disk.

Formulation
90% ± 2% adsorbent particle
10% ± 2% PTFE

Product Characteristics
Thickness: 0.5 mm ± 0.05 mm
SPE Flow Rate: 10 min/L DI H₂O @ 25°C @ 20 in. Hg (47 mm disk)
Solvents: Compatible with all organic solvents
pH: Stable between 0-14. Range may be extended by short contact times.

CDS Empore Sample Preparation 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. CDS does not warrant the use of these products for any application outside the products' intended use.



Suggested Application Procedures

General: Water Analysis

CDS Empore™ Extraction Disks provide a rapid, efficient alternative to liquid/liquid extraction for sample preparation. The disks can be used for purification and concentration of samples prior to final analysis. Advantages of Empore Extraction Disks include reduced solvent usage and rapid sample throughput.

The enclosed instructions are general guidelines for use. Sample volume, solvent type, pH adjustments and conditioning may be changed to adapt to specific methods as needed. With slight modifications, these instructions can be adapted for use with non-aqueous sample matrices.

Extraction Equipment

- 47 mm or 90 mm CDS Empore Cation Exchange-SR Extraction Disks
- 47 mm or 90 mm glass filtration apparatus or multistation extraction apparatus
- Vacuum source (≤ 20 in. Hg)

Sample Preparation

- Adjust sample pH as necessary to ensure that analytes are ionic. A general guide is to lower sample pH at least two units below the pKa of the analytes being extracted.
- Dilute sample as needed to reduce ionic strength to $<5 \times 10^{-3}$ M.
- CDS Filter Aid 400 and/or prefiltration may be helpful if the sample contains excessive suspended solids.



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 assemble the reservoir.
2. Wash the disk with 10 or 15 mL* of acetone** allow to soak for 30 seconds and evacuate to dryness (optional).
3. Wet the disk with 10 or 15 mL* of methanol** allow to soak for 30 seconds and evacuate to dryness (optional).
4. Add 10 or 15 mL* of reagent water, allow to soak for 30 seconds and evacuate.
5. Add 10 or 15 mL* of 50% (v/v) HNO_3 to the disk, allow to soak for 30 seconds and evacuate.
6. Wash disk with 2 successive 20 mL aliquots of reagent water. (Use 2 successive 10 mL aliquots of acetone if the sample matrix is non-aqueous).

* Note: Suggested solvent volumes will vary according to the disk diameter and the amount of filter aid material. A general guide for solvent volumes is the completely cover the disk and bed of filter aid, such that 2-3 mm of solvent is above the surface. Repeat with second aliquot.

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



Sample Extraction

- Dilute the sample as necessary to keep ionic strength <0.1 M (1 liter maximum sample size.)
- Pour the sample into the reservoir and apply full vacuum. Recoveries are not affected by flow rate. Flow rate is dependent on vacuum source and particulate content of the sample.
- After sample extraction is complete, remove as much residual water as possible from the disk by applying vacuum to dry the disk for 5-20 minutes.

Sample Elution

Eluting twice with 10 or 15 mL* solvent is recommended. (Use 10 mL of solvent for 25 or 47 mm disks and 15 mL of solvent for 90 mm disks.) Smaller volumes of solvent may be used if the elution technique has been perfected. Elution is often encouraged by the selection of high selectivity counterion, high ionic strength and a pH adjusted to at least 2 units above the pKa of the analytes extracted. Very strong bases such as quaternary amines may be difficult to elute from cation exchange disks.

- Place tip of filter base into the collection vessel (see diagram).
- Add 10 mL or 15 mL* elution solvent to sample container, rinsing down the sides. Transfer solvent from sample container to reservoir with a pipette, washing the walls of the reservoir in the process.
- Apply vacuum and pull approximately 1 mL elution solvent through the disk. Vent the vacuum and allow the disk to soak 30-60 seconds before applying vacuum to dry the disk.
- Repeat above process with a second aliquot of eluting solvent.
- A third aliquot of elution solvent may be used as a final rinse of the reservoir and disk to enhance recoveries.

Sample Elution continued on panel 5)

