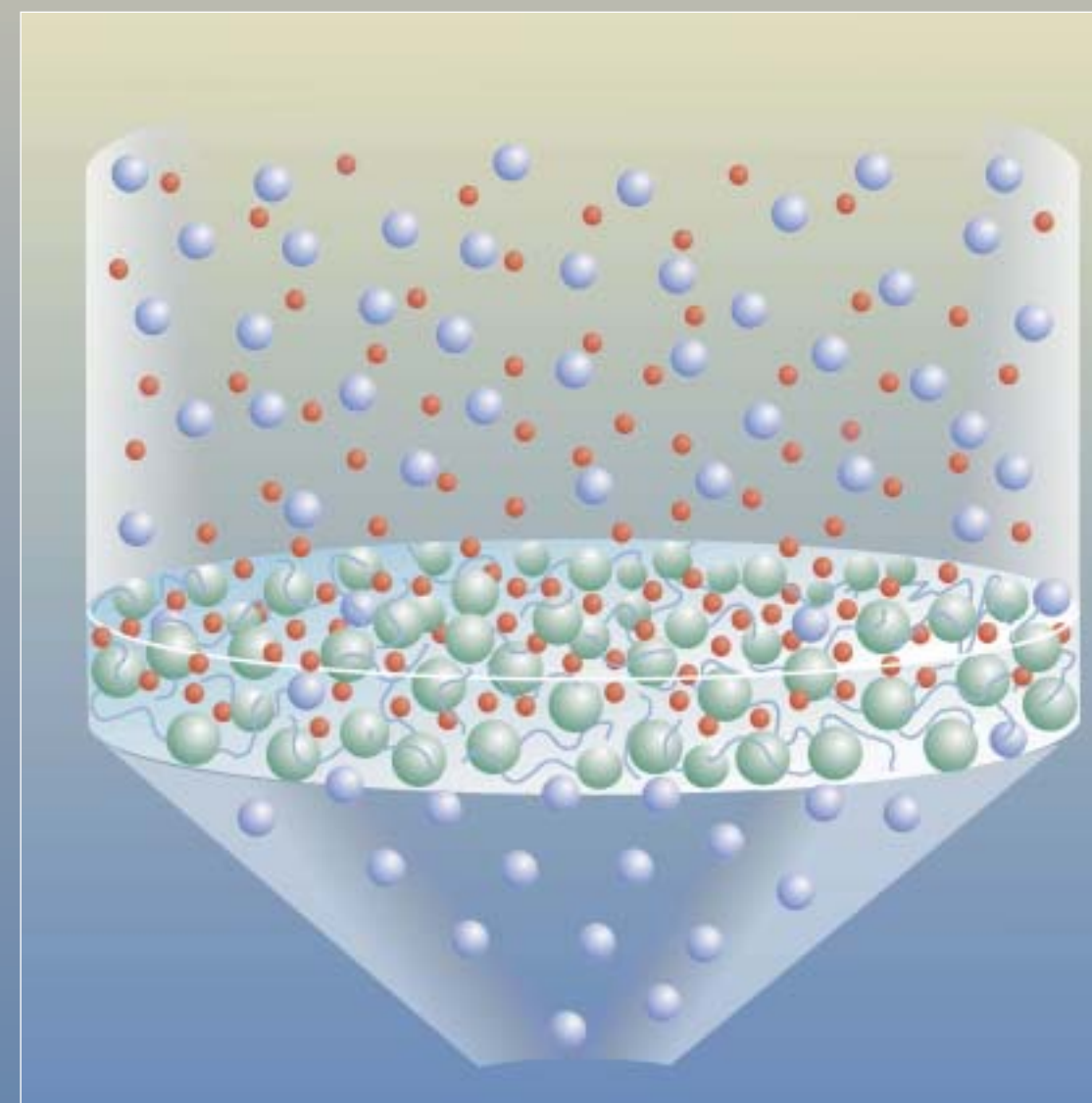


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3M Empore™ High Performance Extraction Disk Cartridges



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Bioanalytical Technologies Project

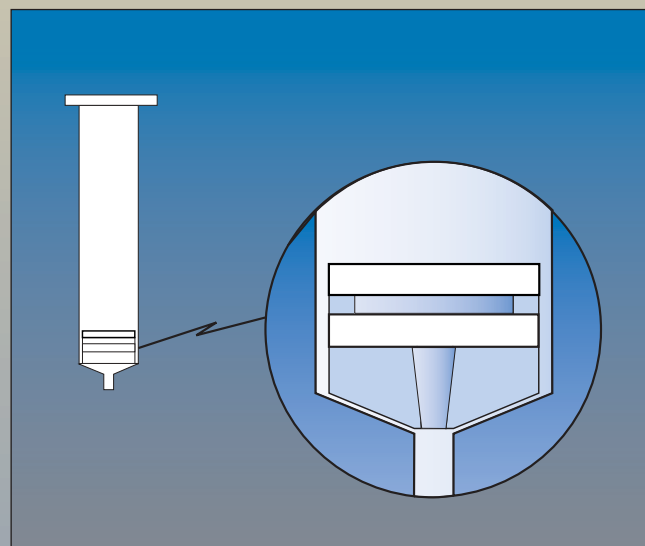
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Innovation in sample preparation

When your analysis is on the line, you can count on Empore™ extraction disk cartridges for better sample preparation



Empore extraction disk cartridges consist of a thin, particle-loaded membrane and a specially designed prefilter, assembled in a plastic barrel with a luer fitting.



Micrograph of an Empore extraction disk cross-section containing 12µm particles. (inset: 10µm magnification). The smaller particles are the key to more efficient sample preparation.

Revolutionary solid-phase extraction technology

Empore™ extraction disk cartridges consist of a thin, particle-loaded membrane (disk) and a specially designed prefilter, assembled in a plastic barrel with a luer fitting. But unlike traditional solid phase extraction (SPE) cartridges, the particles in Empore extraction disks are embedded within a stable, inert matrix of polytetrafluoroethylene (PTFE) fibrils. And since no adhesives or binders are used, the full activity of the particle is retained.

The efficiency of Empore extraction disk cartridges results in sample preparation performance that provides:

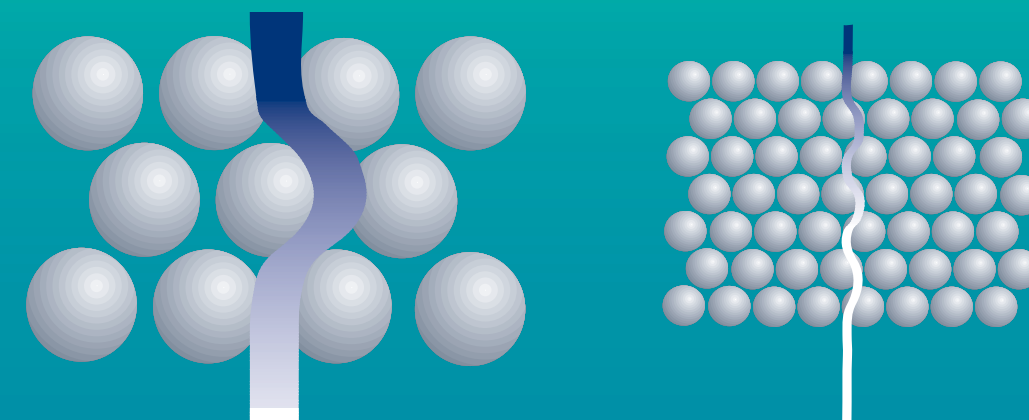
- More reliable results
- Enhanced sensitivity
- Excellent recovery
- Reduced sample prep time

Densely packed particles and uniform distribution mean improved efficiency—enabling you to work with a smaller elution volume and obtain a more concentrated sample.

Greater and more reliable efficiency

Empore disks are able to achieve equal or better performance than columns—with less particle mass. That's because Empore technology allows the use of smaller 12µm particles. This results in dense particle loading and highly uniform particle distribution throughout the membrane for more efficient mass transfer. In addition, since the particles are more densely packed there is less void volume, allowing you to reduce overall solvent usage.

A smaller particle size and highly dense sorbent bed create a tortuous path that allows analytes to be adsorbed more efficiently.



Empore™ technology gives you outstanding solid phase extraction performance

More reliable results

The particle chemistry in Empore extraction disks is the same as that in typical SPE cartridges. But that's where the similarity ends. Because of the smaller particle size, dense packing, and high uniformity, Empore extraction disks are able to adsorb analytes more efficiently. As a result, channeling is virtually eliminated and the potential for breakthrough is reduced. So you can be sure of better and more consistent test results, time after time.

Excellent reproducibility has been shown with equal or superior analyte recovery in side-by-side comparisons with typical SPE column products. Furthermore, recoveries have been shown to be unaffected by sample flow rate.

Enhanced sensitivity

With the improved efficiency of Empore extraction disks, sorbent mass requirements can be greatly reduced. As a result, Empore extraction disk cartridges can be used with smaller sample and solvent volumes.

Comparative Performance Data for Extraction of Flecainide (0.5µg/mL) from Human Plasma*

Parameter	Conventional SPE cartridge 100mg/1mL	Empore disk cartridge 4mm	Empore disk cartridge 7mm	Empore disk cartridge 10mm
Sample Volumes	0.5 mL plasma 0.25 mL Na ₂ CO ₃	0.5 mL plasma 0.25 mL Na ₂ CO ₃	1.0 mL plasma 0.5 mL Na ₂ CO ₃	1.0 mL plasma 0.5 mL Na ₂ CO ₃
Recovery % N=6	86.5	84.3	81.3	83.5
CV% N=6	5.6	1.3	2.6	3.5
Elution Volume(mL)	0.5	0.15	0.3	0.45
Total Solvent Usage	5.25	2.4	4.8	5.4

Empore disk cartridge vs. conventional SPE cartridge, both with C18. Notice the improved precision and reduced solvent usage.

Empore™ Extraction Disk Cartridge vs. Conventional SPE Cartridge

Comparison of Elution Efficiency*

Empore disk cartridge
4mg/1mL

Conventional SPE cartridge
100mg/1mL

Improved efficiency and reduced sorbent mass allow you to use smaller sample and solvent volumes.



Reduce sorbent mass without compromising recoveries.

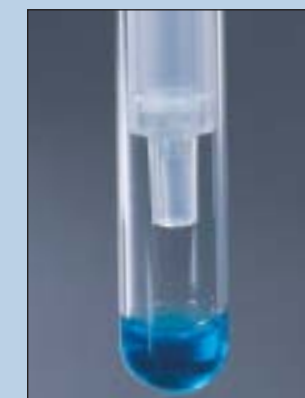
Densely packed particles and uniform particle distribution virtually eliminate channeling and reduce the risk of breakthrough.



Eliminate channeling and reduce breakthrough.

Empore extraction disk cartridges allow you to reduce elution volumes, resulting in:

- more concentrated samples
- less sample prep time
- enhanced sensitivity



Reduce elution volume and eliminate time-consuming steps.

* The sorbents used in the disk and conventional SPE cartridges for these comparisons are chemically identical and differ only in particle size

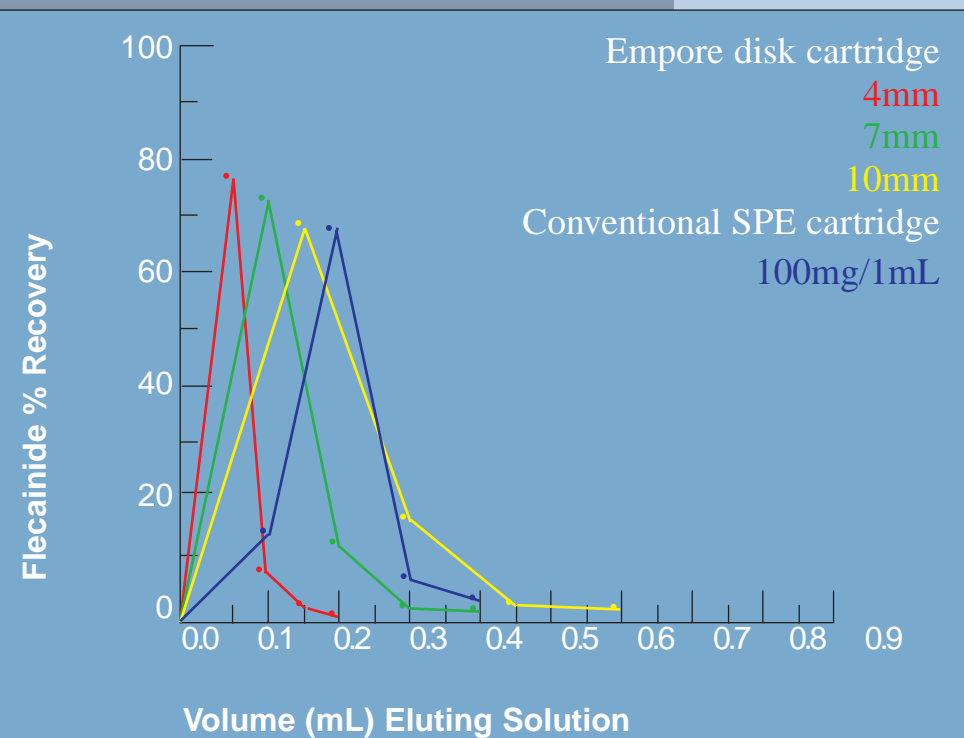
Empore™ technology lets you do more with less—saving you time.

Reduced sample prep time

Empore extraction disks provide a more concentrated sample because they require less solvent for analyte elution. That means there is less volume to evaporate before reconstitution. In addition, with some methods, analytes can be eluted directly with HPLC mobile phase—eliminating the evaporation and reconstitution steps altogether. That's going to save you processing time.

Reduced sorbent mass requirements

Because Empore particle-loaded membranes adsorb analytes more efficiently, you can reduce sorbent mass without compromising recoveries. You'll also be able to maximize the sensitivity of your chromatography and eliminate time consuming steps in the process.



Empore™ technology works with your current testing procedures and your standard equipment.

Empore extraction disk cartridges work with all current forced flow techniques: vacuum manifold, positive pressure, and centrifuge. The extraction disk cartridges are also fully compatible with automated sample preparation workstations. Furthermore, the sorbents used in Empore extraction disk cartridges are specified, based on their long-established performance and quality in other SPE products. So methods can be adapted with little or no modification.



The high-efficiency solution

Empore extraction disk cartridges are available in a variety of diameters, sorbents, and configurations to meet your sample volume and matrix needs. In addition, any method developed for SPE cartridges can be transferred to Empore extraction disks with little or no modification.