

Ion Exclusion HPLC Columns

Hamilton offers one polymeric packing material for ion exclusion separations.

Ion exclusion chromatography is an alternative to ion exchange chromatography in which ionized samples are excluded from the pores of the support and elute first, while the weakly ionized and nonionic compounds elute later. Mixtures of weak acids, like those in fruits and milk products, are frequently not very well separated by pure ion-exchange methods, nor in the reversed-phase mode.

PRP-X300 Columns Ion exclusion for organic acids and alcohols

Pore Size: 100 Å

Support Material: PS-DVB/Sulfonic acid

Hamilton PRP-X300 columns offer an easy, rapid way to separate closely related alcohols and organic acids. The sulfonated poly(styrene-divinylbenzene) support separates samples via a mixed mode mechanism. Separation on the PRP-X300 is accomplished by three modes:

1. **Hydrogen Bonding**—The attraction and retention of sample compounds by the negatively charged sulfonate group.
2. **Reversed-Phase**—The interaction and retention of the sample compounds by the non-polar polymeric support.
3. **Ion Exclusion**—The process in which ionized samples are excluded from the pores of the support and elute first, while the weakly ionized and nonionic compounds elute later.

A wide variety of samples can be analyzed with PRP-X300 columns because their selectivity can be altered by changing the pH of the buffer or adding an organic modifier (e.g., methanol, acetonitrile). The support's stability to organic solvents makes it possible to analyze samples that are too highly retained on conventional ion exclusion supports.

Most separations on PRP-X300 columns are completed within five minutes. The high performance packing ensures narrow peaks under isocratic conditions. The use of isocratic conditions allows samples to be analyzed one after another without waiting for column re-equilibration. Complex samples can be run under gradient conditions if isocratic methods are insufficient. Most samples require only minimal preparation before injection, increasing sample throughput in the lab.

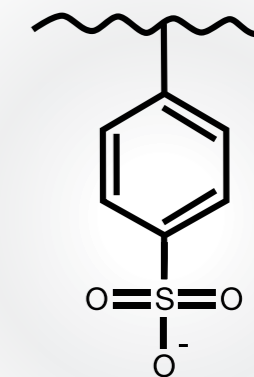
PRP-X300 stationary phase structure and applications

Applications:

Organic acids and alcohols

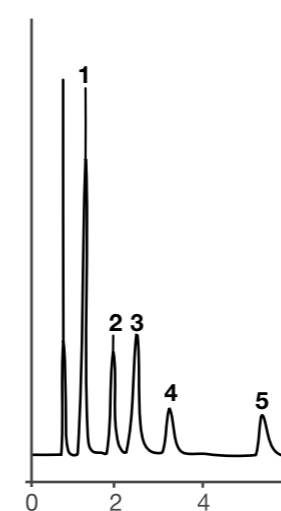
Examples of analytes that can be separated on PRP-X300 columns:

- ▶ Acetic acid
- ▶ Acrylamide
- ▶ Citric acid
- ▶ Oxalacetic acid
- ▶ Ethanol
- ▶ Propanol



PRP-X300 application chromatogram

Organic Acids on PRP-X300



Column: PRP-X300, 3 µm, 4.1 mm x 100 mm
Part number: 79818
Mobile phase: 1 mM Sulfuric acid
Flow rate: 1 mL/min
Gradient: Isocratic
Temperature: Ambient
Injection volume: 20 µL
Detection: UV at 201 nm

Compounds:

1. Tartaric acid
2. Malic acid
3. Citric acid
4. Lactic acid
5. Acetic acid

PRP-X300 Column Ordering Information

Dimensions	Particle Size	
	7 µm	12–20 µm
4.6 x 150 mm PEEK	79475	
4.1 x 250 mm	79465	
4.1 x 150 mm	79464	
Bulk Resin (1 Gram)	79589	79590

View an index of applications possible with Hamilton HPLC columns at www.hamiltoncompany.com/hplcapplicationindex.

