

PRP™-C18 Reversed-Phase HPLC Columns

Product Datasheet

High-Efficiency Separations at Any pH

The Hamilton PRP-C18 is a new HPLC column designed to provide high-efficiency, reversed-phase separations over an extended column life in nearly any mobile phase or pH. The rigid stationary phase has excellent mechanical and thermal stability, does not experience shrinking or swelling, and is completely inert to most conditions commonly encountered in reversed-phase chromatography.

The Hamilton PRP-C18 Column is a durable and effective column for general purpose HPLC and is especially well-suited for specialized applications in the clinical, pharmaceutical, environmental, food, forensics and life sciences industries.

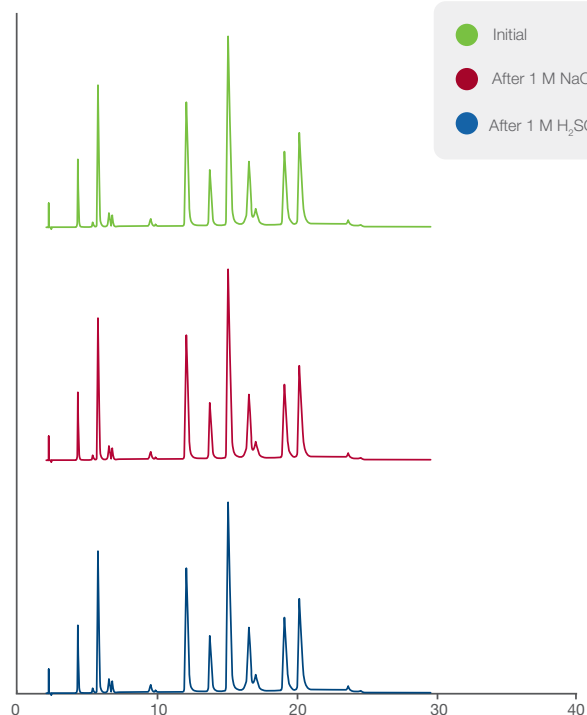
Rugged Design

The PRP-C18 column has similar mechanical stability and separation efficiency to that of a traditional octadecylsilane (ODS); however, the PRP-C18 stationary phase does not strip, bleed or dissolve under the most extreme conditions (e.g., pH 1–13, temperatures > 100°C). It will perform reliably and reproducibly throughout an extended column lifetime, regardless of mobile phase conditions. These characteristics allow for an expanded mobile phase repertoire for use in methods development or aggressive regeneration procedures.

Benefits of the PRP-C18 HPLC Column:

- ▶ Excellent mechanical and thermal stability (> 100°C)
- ▶ Can be regenerated in high acidic or basic concentrations (1 M)
- ▶ High-efficiency reversed-phase separations in nearly any mobile phase or pH
- ▶ Performs extreme applications not possible with traditional ODS C18 columns

Prolonged Exposure to Harsh Conditions



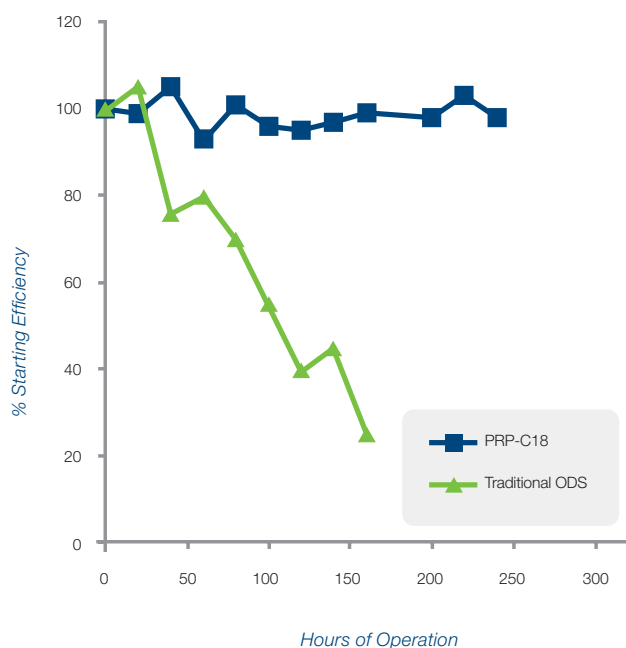
Separation of standard mix after 200 column volumes 1 M NaOH and 1 M H₂SO₄



No pH Limitations

Mobile phase pH is a powerful tool in methods development for ionizable solutes. Separation of amines and other organic bases, which includes more than 70% of all drug compounds, has been a problem for a long time. The PRP-C18 column gives chromatographers the ability to employ an alkaline mobile phase (i.e., pH > 11) that allows for the separation of basic solutes in their neutral forms, expanding the window for elution and often greatly simplifying the process of methods development.

High pH Column Lifetime Comparison

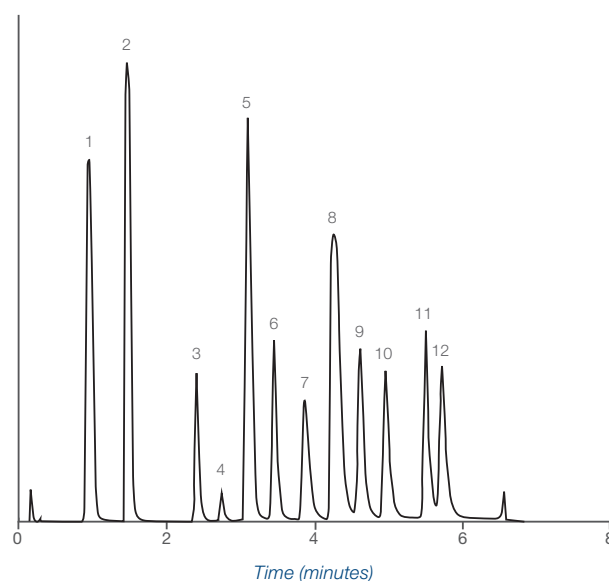


Forced degradation study comparing resilience of traditional ODS C18 and Hamilton PRP-C18 Reversed-Phase HPLC Columns. Efficiency monitored periodically while columns were purged at 1 mL/min with 50% acetonitrile containing 50 mM potassium phosphate, pH 12.

Rapid Separations

In throughput-driven industries such as drug discovery science, routine chromatography should not be a bottleneck. The PRP-C18 column increases productivity by offering a selection of shorter columns packed with smaller particles and operated at elevated flow rates. An HPLC run on a 50 mm, advanced polymer-based column generates well-defined, sharp peaks eluted with short runtimes.

Fast Gradient Elution



Separation of 12 standards in a short, 5 minute linear acetonitrile gradient.

Experimental Conditions

Column: PRP-C18, 4.1 x 50 mm, 5 μ m

Instrumentation: Agilent 1100 quaternary pump with UV detector

Standards: benzamide, nitromethane, methylparaben, ethylparaben, propylparaben, butylparaben, benzene, toluene, ethylbenzene, propylbenzene, pentylbenzene, hexylbenzene

Mobile phase A: Water + 0.2% Phosphoric Acid

Mobile phase B: Acetonitrile + 0.2% Phosphoric Acid

Gradient: 2 to 99% B in 5 minutes

Flow rate: 2.5 mL/min

Temperature: Ambient

Injection volume: 2 μ L

Detection: UV at 255 nm



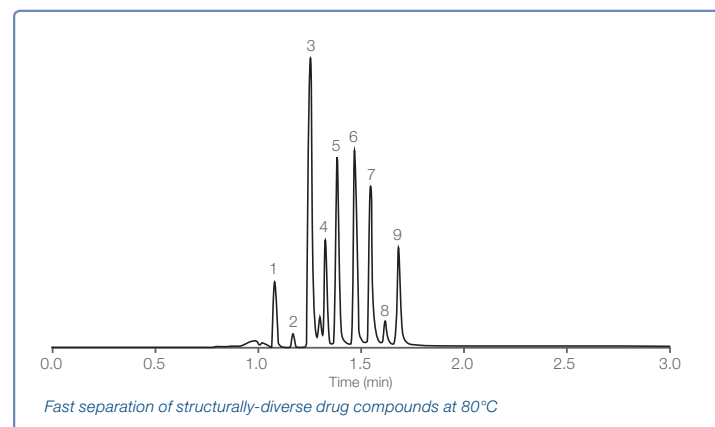
More Application Flexibility

The PRP-C18 provides chromatographers with a major advantage—the flexibility to tailor mobile phase pH according to the chemical nature of the sample. A mobile phase buffered to pH 12 permits separation of strong bases (i.e., pH > 9) in their neutral forms, which greatly simplifies methods development. Oftentimes a simple generic gradient is sufficient to achieve resolution between two solutes that would otherwise co-elute when separated at lower pH.

Increased Thermal Stability

Temperature is an important tool in methods development and routine analytical HPLC. Elevated temperature is commonly used to lower mobile phase viscosity, permitting elevated flow rates to shorten run times. An important property of the PRP-C18 column is that its efficiency increases with high operation temperatures. At 80°C, the plate count for the column more than doubles compared to the same separation performed at ambient temperatures. Unlike traditional ODS columns which experience measurable degradation when operated above the recommended temperature range (40°C), the Hamilton PRP-C18 column performs reliably up to and above 100°C. The PRP-C18 column's ability to perform in high temperatures without prematurely shortening column life is especially useful in situations where improved resolution between two critical peaks is desired.

Easy Separation of Basic Drugs at High pH



Column:	Hamilton PRP-C18, 5 µm, 2.1 x 33 mm
Flow Rate:	1.0 mL/min
Temperature:	80°C
Injection Volume:	5 µL
Flow Rate:	1.0 mL/min
Mobile Phases:	A) 30 mM diethylamine (pH 11.5) B) Acetonitrile + 30 mM diethylamine
Gradient:	2 to 99% B in 1 minute
Detection:	UV at 254 nm

Analytes

1. Ephedrine	6. Doxylamine
2. Norephedrine	7. Diphenhydramine
3. Nicotine	8. Nortriptyline
4. Metoprolol	9. Amitriptyline
5. Quinine	



Ordering Information

Dimensions	Particle Size		
	5 µm	10 µm	12–20 µm
2.1 x 50 mm	79672		
2.1 x 50 mm PEEK	79679		
2.1 x 150 mm	79673		
2.1 x 150 mm PEEK	79680		
2.1 x 250 mm	79674		
2.1 x 250 mm PEEK	79681		
4.6 x 50 mm	79675		
4.6 x 50 mm PEEK	79682		
4.6 x 150 mm	79676		
4.6 x 150 mm PEEK	79683		
4.6 x 250 mm	79677		
4.6 x 250 mm PEEK	79684		
21.2 x 250 mm			79678
Bulk Resin (1 gram)	79791	79792	79793

PRP-C18 Guard Columns Ordering Information

Part Number	Description
79685	Analytical Guard Column Starter Kit (1 holder, 2 cartridges), Stainless Steel
79686	Analytical Guard Column Replacement Cartridges (5/pk), Stainless Steel
79687	Analytical Guard Column Starter Kit (1 holder, 2 cartridges), PEEK
79688	Analytical Guard Column Replacement Cartridges (5/pk), PEEK
79689	Semi-prep/Preparative Guard Column Starter Kit (1 holder, 1 cartridge), Stainless Steel
79690	Semi-prep/Preparative Guard Column Replacement Kit (2/pk), Stainless Steel

For more information on PRP-C18 Reversed-Phase HPLC Columns, visit www.hamiltoncompany.com/PRPC18.

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