

Hamilton Reversed Phase Columns

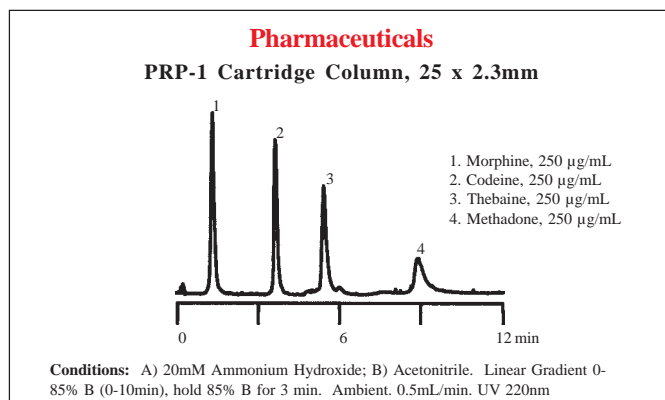
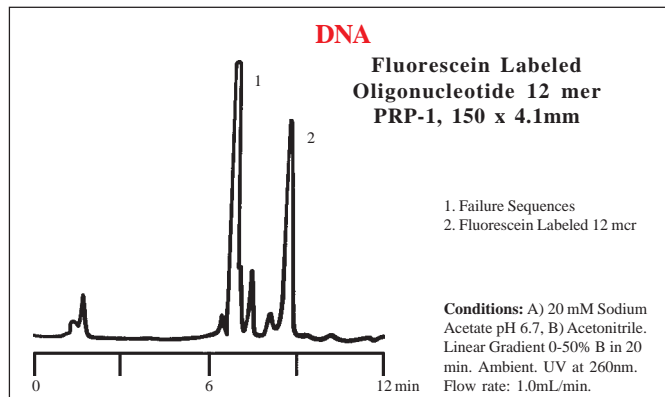
PRP-1

- 100Å pore sized resins designed for general, reversed phase separation modes
- pH stability of 1 to 13 allows the separation of biological samples in their natural state
- Excellent sample recoveries due to the lack of acidic silanol groups
- Superior column-to-column and batch-to-batch reproducibility

PRP-1 reversed phase columns are an excellent alternative to shorter lifetime, silica based HPLC columns. This is particularly true when analyses are run under very acidic (pH 1 to 1.9) or basic (pH 8 to 13) conditions. Other separations benefitting from PRP-1, polymeric columns include: labile or reactive samples, aqueous purifications comprising 80 to 100% water, and sample matrices requiring ion pair reagents.

PRP-1 columns exhibit excellent sample recovery characteristics due to the lack of any acidic silanol groups on the polymer; as are present on silica based materials, such as C8 and C18 columns. The purification of protected oligonucleotides demonstrates the enhanced recoveries possible. Where C18 columns recover only 50 to 80% of oligonucleotide, PRP-1 columns provide recoveries greater than 95%!

Applications requiring a high degree of column-to-column and batch-to-batch consistency can reproducibly be run on PRP-1 columns. The integral reversed phase characteristics of the poly(styrene-divinyl)benzene support material obviates the need for special coating techniques. Since there is no stationary phase to hydrolyze, the column maintains its performance longer than silica based columns.



PRP-1 Analytical Columns

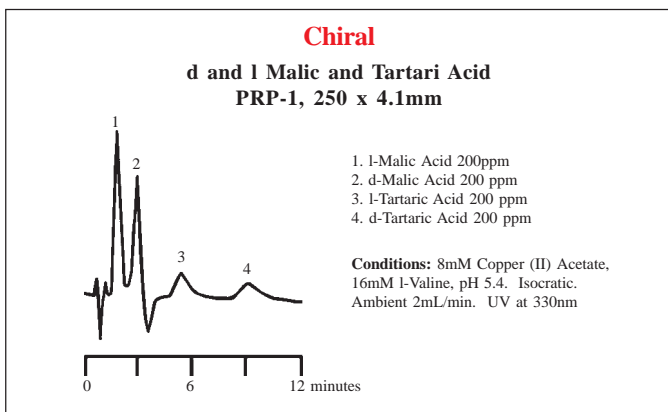
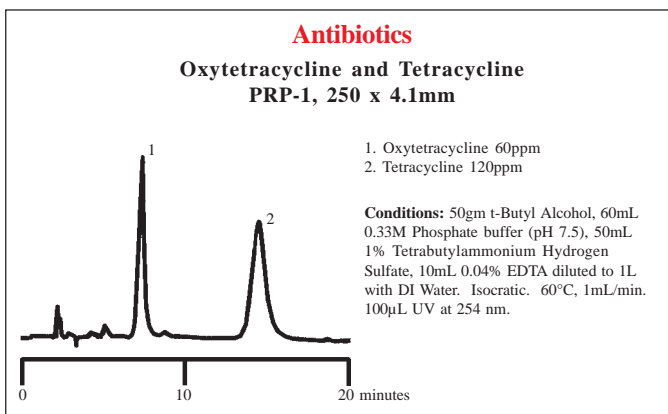
Cat. No.	Description
79804	3µm, 4.1 x 50mm
79805	3µm, 4.1 x 100mm
79806	3µm, 4.1 x 150mm
79443	5µm, 4.1 x 50mm
79479	5µm, 4.1 x 100mm
79444	5µm, 4.1 x 150mm
79558	5µm, 4.6 x 100mm PEEK
79423	5µm, 4.6 x 150mm PEEK
79529	7µm, 4.1 x 150mm
79422	7µm, 4.1 x 250mm
79380	7µm, 4.6 x 250mm PEEK
79565	10µm, 4.1 x 100mm
79425	10µm, 4.1 x 150mm
79427	10µm, 4.1 x 250mm
79351	10µm, 4.6 x 150mm PEEK
79381	10µm, 4.6 x 250mm PEEK

Microbore

79366	5µm, 2.1 x 150mm
79554	7µm, 2.1 x 50mm
79390	7µm, 2.1 x 250mm
79480	10µm, 2.1 x 150mm
79391	10µm, 2.1 x 250mm

Guard Columns

79447	Starter kit (one holder and two cartridges)
79445	Replacement cartridges, 5/pk
79317	PEEK Starter kit (one holder and two cartridges)
79318	PEEK Replacement cartridges, 5/pk



PRP-3 and PRP-Infinity

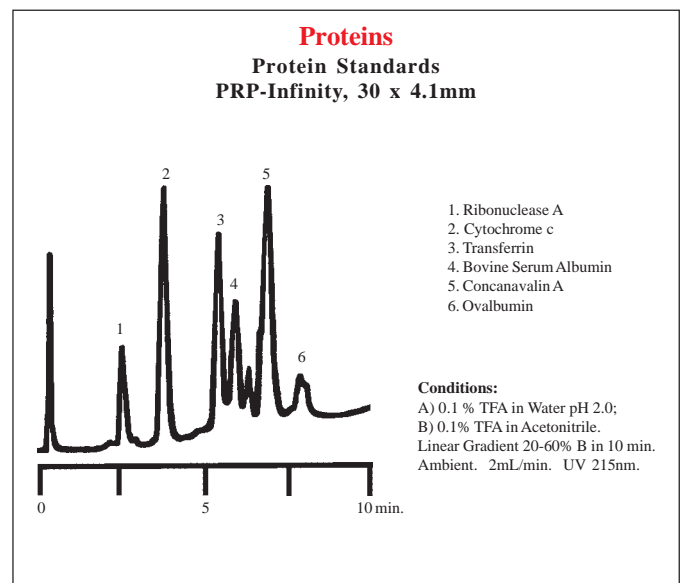
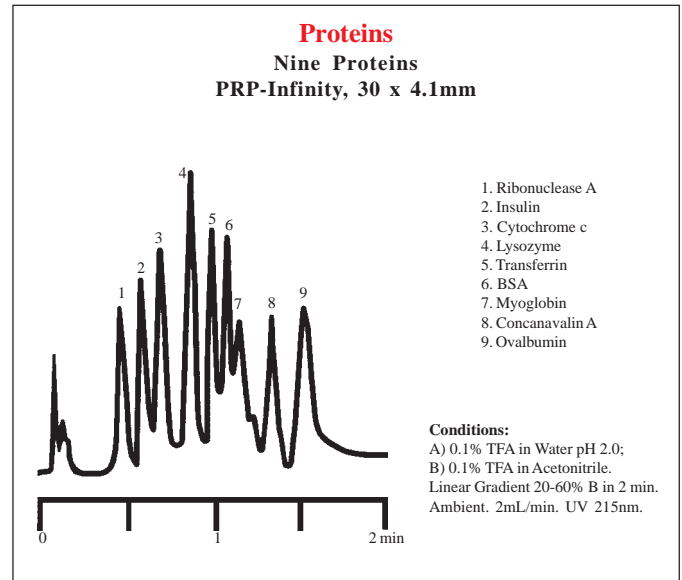
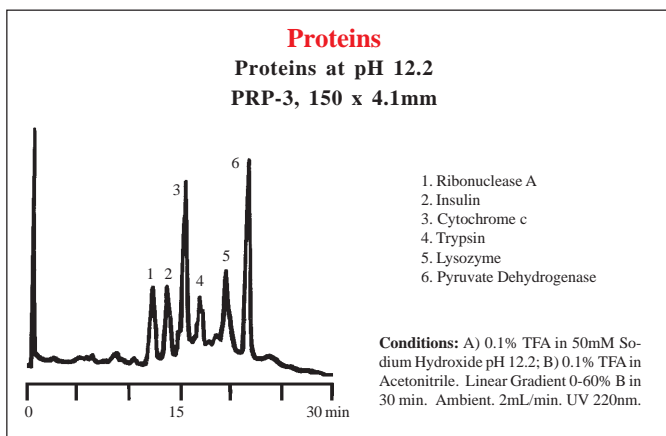
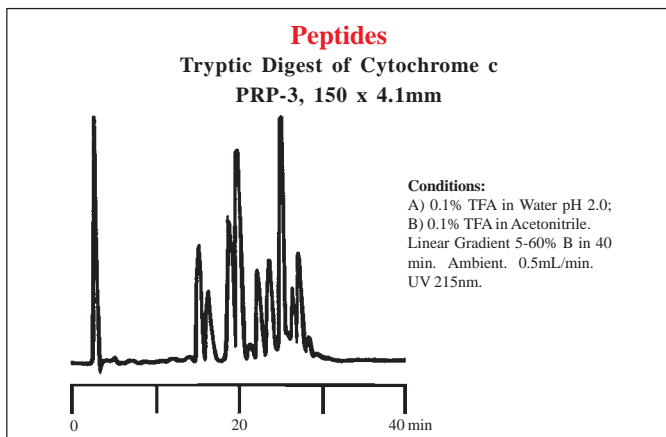
- PRP-3, 300Å pore sized resins designed for the purification and isolation of proteins, peptides, and DNA oligomers
- PRP-Infinity, non-porous resins designed for the fast gradient separation of proteins
- pH stability of 1 to 13 allows the separation of biological samples in their natural state
- Excellent sample recoveries due to the lack of acidic silanol groups

PRP-3 Reversed Phase

PRP-3 columns are able to analyze protein purity quickly at both low and high pH extremes. A single peak on a chromatogram is no guarantee of protein purity. However, when a single peak is found at both pH extremes, chances are that the protein is pure. The highly inert polymeric resin reduces non-specific binding and enhances protein recovery.

PRP-Infinity Reversed Phase

PRP-Infinity columns simplify the separation of high molecular weight proteins. The non-porous resin produces a column capable of fast, high resolution results. The short separation time minimizes band broadening which keeps peaks narrow and detectability high.



PRP-3 Reversed Phase Analytical Columns

Cat. No.	Description
79807	3µm, 4.1 x 50mm
79809	3µm, 4.1 x 150mm
79467	10µm, 4.1 x 50mm
79466	10µm, 4.1 x 150mm

Microbore

79392	10µm, 2.1 x 150mm
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PRP-Infinity Reversed Phase Analytical Columns

79470	4µm, 4.1 x 33mm
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Guard Columns

79461	Starter kit (one holder and two cartridges)
79454	Steel column replacement cartridges, 5/pk
79393	PEEK Starter kit (one holder and two cartridges)
79395	PEEK Replacement cartridges, 5/pk

Hamilton HPLC Columns

HxSil C18 and HxSil C8

• Silica based HPLC Columns

Hamilton HxSil columns exhibit greater retention than most columns. This allows you to separate compounds that are not sufficiently retained on other C18 columns. Choosing the best column to separate your sample can be difficult. Hamilton manufactures both silica based and polymeric reversed phase HPLC columns, providing you with a wide range of column retention selectivities and performance benefits. The applications which follow demonstrate the performance characteristics of Hamilton silica based reversed phase columns.

The Hamilton HxSil C18 column meets the requirements of a USP L1 column and the HxSil C8 column meets the requirements of an L7 column.

HxSil C18, 3µm HPLC Columns

Cat. No.	Description
79872	C18, 3µm, 4.6 x 50mm
79873	C18, 3µm, 4.6 x 150mm
79889	C18, 3µm, 2.1 x 50mm
79892	C18, 3µm, 2.1 x 150mm

HxSil C18, 5µm HPLC Columns

79867	C18, 5µm, 4.6 x 50mm
79868	C18, 5µm, 4.6 x 150mm
79869	C18, 5µm, 4.6 x 250mm
79881	C18, 5µm, 2.1 x 50mm
79884	C18, 5µm, 2.1 x 150mm
79885	C18, 5µm, 2.1 x 250mm

HxSil C8, 3µm HPLC Columns

79113	C8, 3µm, 4.6 x 50mm
79115	C8, 3µm, 4.6 x 150mm
79117	C8, 3µm, 2.1 x 50mm
79120	C8, 3µm, 2.1 x 150mm

HxSil C8, 5µm HPLC Columns

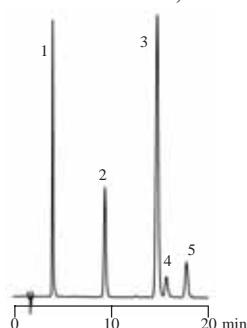
79100	C8, 5µm, 4.6 x 50mm
79102	C8, 5µm, 4.6 x 150mm
79103	C8, 5µm, 4.6 x 250mm
79107	C8, 5µm, 2.1 x 50mm
79110	C8, 5µm, 2.1 x 150mm
79111	C8, 5µm, 2.1 x 250mm

Guard Columns

79459	C18 Starter kit (one holder and two cartridges)
79452	C18 replacement cartridges, 5/pk
79458	C8 Starter kit (one holder and two cartridges)
79451	C8 replacement cartridges, 5/pk

Sunscreen Agents in Lip Balm

HxSil C18, 150 x 4.6mm (79868)



Conditions:
85:15 Methanol:Water
Isocratic. Ambient.
1mL/min. UV at 308nm

PRP-X700 Normal Phase

• Easily separates carbohydrates

Hamilton normal phase aminopropyl columns are used to separate carbohydrates. In isocratic mode, fructose, glucose, sucrose and maltose are resolved. In gradient mode, carbohydrates up to maltooctose are separated. PRP-X700 aminopropyl columns are manufactured to provide the longest life possible while providing reproducible carbohydrate retention. The combination of a proprietary polymeric PSDVB poly(styrene-divinylbenzene) support and a unique chemically bonded aminopropyl compound provides an amino column with:

- Isocratic separation of fructose, glucose, sucrose, and maltose in 7 minutes
- Gradient separation of fructose through maltooctose in 16 minutes
- Reproducible retention of carbohydrates
- Fast equilibration (in 10 column volumes)
- pH stable from 0 to 14
- Pressure stability from 0 to 5,000 psi
- Compatibility with Refractive Index and Evaporative Light Scattering Detectors

PRP-X700 Amino HPLC Columns

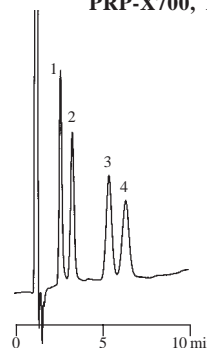
Cat. No.	Description
79834	5µm, 4.1 x 150mm
79837	5µm, 4.6 x 150mm PEEK
79835	7µm, 4.1 x 150mm
79836	7µm, 4.1 x 250mm
79838	7µm, 4.6 x 150mm PEEK
79839	7µm, 4.6 x 250mm PEEK

Guard Columns

79840	Starter kit (one holder and two cartridges)
79842	Replacement cartridges, 5/pk
79841	PEEK starter kit (one holder and two cartridges)
79843	PEEK Replacement cartridges, 5/pk

Mono and Disaccharides

PRP-X700, 150 x 4.1mm, 7µm



Conditions:
8:2 Acetonitrile:Water
Isocratic. Ambient. 1mL/min.
Refractive Index.



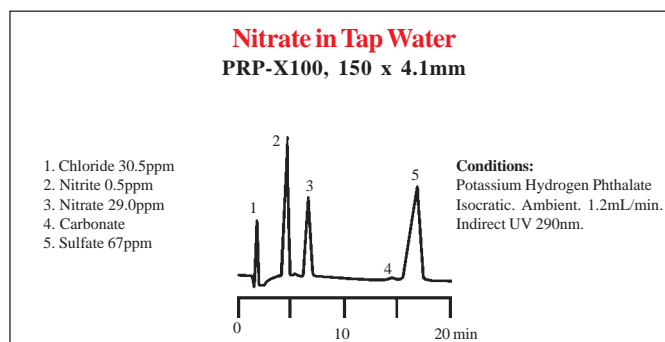
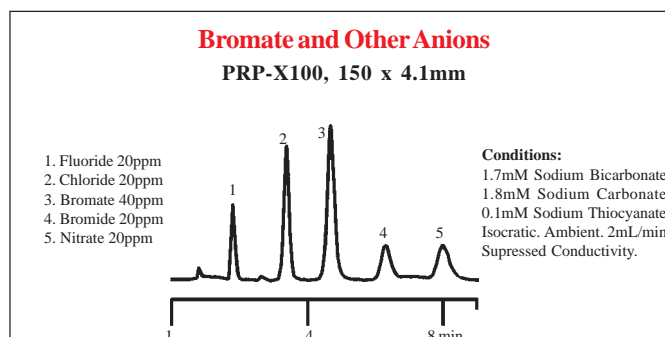
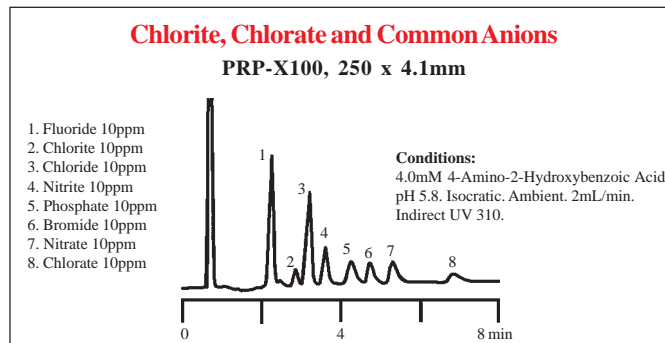
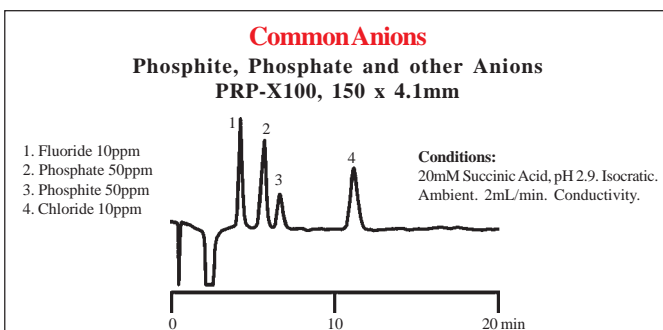
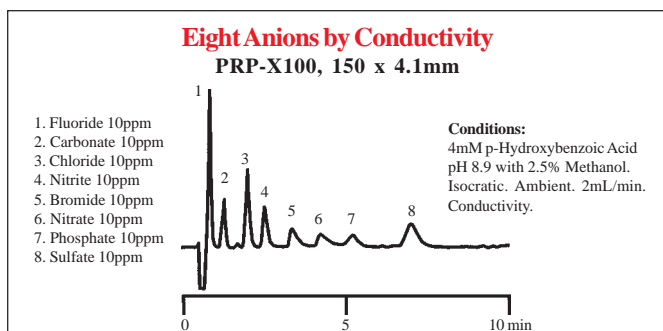
PRP-X100 Anion

- Separates inorganic or organic anions on a single, non-suppressed column
- Easily separates the eight common anions; more complex matrices can be analyzed at pH 11.5
- 0.5 to 150 ppm per anion detection limits are achieved with conductivity or indirect UV detectors
- PRP-X100 columns are compatible with virtually any HPLC system

PRP-X100 columns separate inorganic or organic anions the easy way using non-suppressed mode. Use these columns with any existing HPLC to determine anions in air, food, pharmaceuticals, soil, and water.

PRP-X100 columns quickly and easily separate the eight common inorganic anions: bromide, carbonate, chloride, fluoride, nitrate, nitrite, phosphate, and sulfate. Because of the exceptional pH stability of the polymeric resin, anions in more complex matrices can be analyzed at pH 11.5.

Single column, non-suppressed, ion chromatography uses partially ionized organic acids as modifiers to the mobile phase. They provide a strong counter-ion for elution and have a low equivalent conductance. This allows conductivity detection to be utilized without chemical suppression. When p-hydroxybenzoic acid is the eluent, either conductivity or indirect UV (vacancy) detection can be used. 0.5 to 150 ppm per anion detection limits can be achieved with either of these detection methods.



PRP-X100 Analytical Columns

Cat. No.	Description
79810	3µm, 4.1 x 50mm
79811	3µm, 4.1 x 100mm
79812	3µm, 4.1 x 150mm
79538	5µm, 4.1 x 100mm
79365	10µm, 4.1 x 50mm
79439	10µm, 4.1 x 100mm
79561	10µm, 4.1 x 125mm
79434	10µm, 4.1 x 150mm
79433	10µm, 4.1 x 250mm
79354	10µm, 4.6 x 150mm PEEK
79455	10µm, 4.6 x 250mm PEEK

Microbore

79421	10µm, 2.1 x 150mm
79346	10µm, 2.1 x 250mm

Guard Columns

79448	Starter kit (one holder and two cartridges)
79446	Replacement cartridges, 5/pk
79383	PEEK Starter kit (one holder and two cartridges)
79385	PEEK Replacement cartridges, 5/pk

Hamilton Anion Exchange Columns

PRP-X110 and PRP-X110S

PRP-X110 and PRP-X110S anion exchange packings for separation of inorganic and organic anions from 20ppb to 20ppm.

- Separate the anions in EPA 300.0 Part A
- Good separation of FI from the water dip
- Use with organic solvent up to 100% for elution of hydrophobic anions or column cleaning
- pH stable from 0 to 14
- PRP-X110 columns for nonsuppressed IC
- PRP-X110S columns for chemically suppressed IC
- Compatible with conductivity or UV detectors

PRP-X110 Anion Exchange HPLC Columns

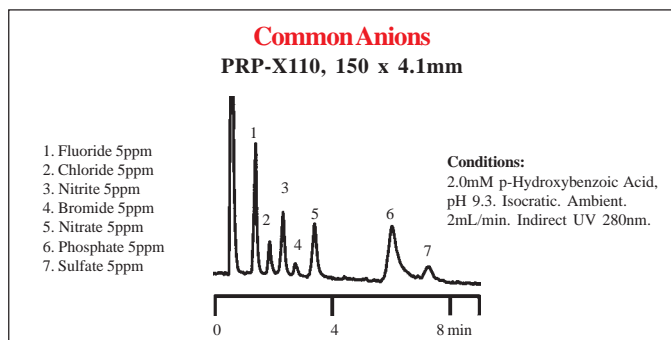
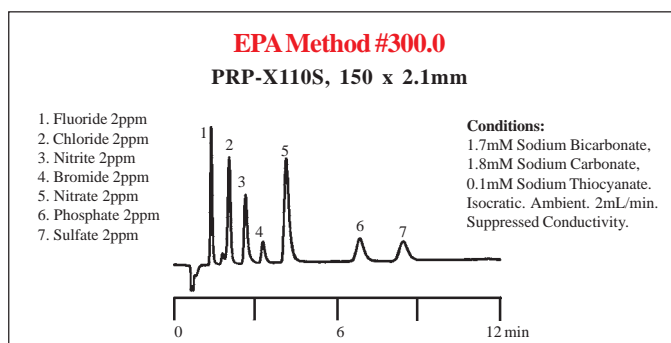
Cat. No.	Description
79815	3µm, 4.1 x 150mm
79732	7µm, 4.1 x 150mm
79734	7µm, 4.1 x 250mm
79738	7µm, 4.6 x 150mm, PEEK
79740	7µm, 4.6 x 250mm, PEEK

PRP-X110 Guard Columns

79726	Steel starter kit (one holder and two cartridges)
79728	Steel replacement cartridges, 5/pk
79727	PEEK Starter kit (one holder and two cartridges)
79729	PEEK Replacement cartridges, 5/pk

PRP-X110S Anion Exchange HPLC Columns

79733	7µm, 4.1 x 150mm
79735	7µm, 4.1 x 250mm
79739	7µm, 4.6 x 150mm, PEEK
79741	7µm, 4.6 x 250mm, PEEK



PRP-X500 and PRP-X600 Anion

Protein Analysis

PRP-X500 is a superficially porous strong-base, anion exchange support that separates proteins and peptides according to charge. Used as a complementary technique to reversed phase chromatography, anion exchange offers unique selectivity differences and the use of less denaturing solvents. The controlled porosity of PRP-X500 columns ensures excellent recoveries without sample ghosting and provides fast separations with higher sample capacities than non-porous supports.

DNA Analysis

PRP-X600 is a superficially porous weak-base, anion exchange support that separates DNA oligomers according to charge. The unique porosity of PRP-X600 columns provides fast separations with higher sample capacities than non-porous supports. The polymeric support material is stable to mobile phases containing inorganic buffers, as well as, high concentrations of organic solvents.

PRP-X500 Protein Analysis Columns

Cat. No.	Description
79474	7µm, 4.6 x 50mm PEEK
79573	7µm, 4.6 x 150mm PEEK
79555	7µm, 2.1 x 250mm

PRP-X500 Guard Columns

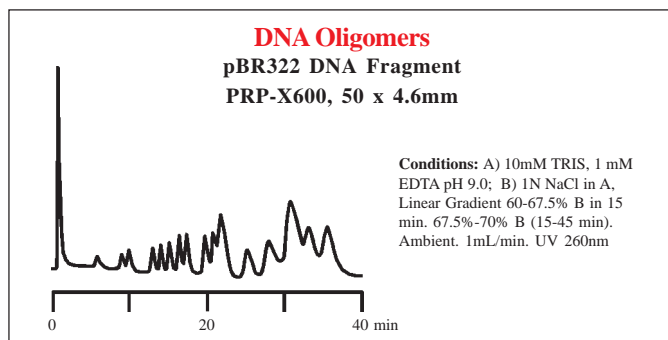
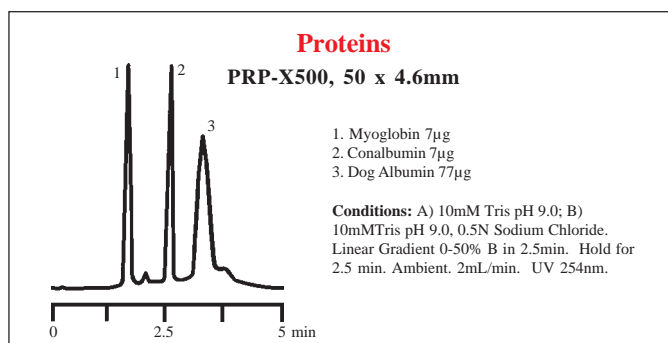
79319	PRP-X500 PEEK starter kit (one holder and two cartridges)
79320	PRP-X500 PEEK replacement cartridges, 5/pk

PRP-X600 DNA Analysis Columns

79360	7µm, 4.6 x 50mm PEEK
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PRP-X600 Guard Columns

79361	PRP-X600 PEEK starter kit (one holder and two cartridges)
79362	PRP-X600 PEEK replacement cartridges, 5/pk



RCX-10 and RCX-30 Anion

- RCX-10 columns separate oligosaccharides up to DP8
- RCX-30 resolves the six constituent monosaccharides of glycoconjugates

RCX-10 and RCX-30 anion exchange columns are designed for the high pH, gradient or isocratic separation of carbohydrates. To utilize the full potential of these columns, a Pulsed Amperometric Detector (PAD) is recommended. The PAD allows either gradient or isocratic elution to be utilized for applications such as the separation of carbohydrates in food products.

RCX-10 and RCX-30 Columns

Cat. No.	Description
79399	RCX-10, 7 μ m, 2.1 x 250mm
79440	RCX-10, 7 μ m, 4.1 x 250mm
79388	RCX-10 PEEK, 7 μ m, 4.6 x 250mm
79370	RCX-30 PEEK, 7 μ m, 4.6 x 150mm

Guard Columns

79462	RCX-10 Starter kit (includes one holder and two cartridges)
79463	RCX-10 Replacement cartridges, 5/pk
79378	RCX-10 PEEK Starter kit (one holder and two cartridges)
79379	RCX-10 PEEK Replacement cartridges, 5/pk
79371	RCX-30 PEEK Starter kit (one holder and two cartridges)
79372	RCX-30 PEEK Replacement cartridges, 5/pk



PRP-X300 Ion Exclusion

- Separates structurally similar alcohols and organic acids
- Selectivities can be altered with a change in the buffer's pH or the addition of an organic modifier to the buffer
- Allows the analysis of highly retentive samples with the addition of organic modifiers

PRP-X300 columns rapidly and easily separate structurally similar alcohols and organic acids. The combination of a mixed mode separation mechanism and a high performance polymeric support provides excellent selectivities with most separations complete within five minutes.

A wide variety of samples can be analyzed with PRP-X300 columns. The selectivity of the column can be altered with a change in the buffer's pH or the addition of an organic modifier, ie: acetonitrile or methanol, to the buffer. The support's stability to organic solvents makes it possible to analyze samples that are highly retained on conventional ion exclusion supports.

PRP-X300 Analytical Columns

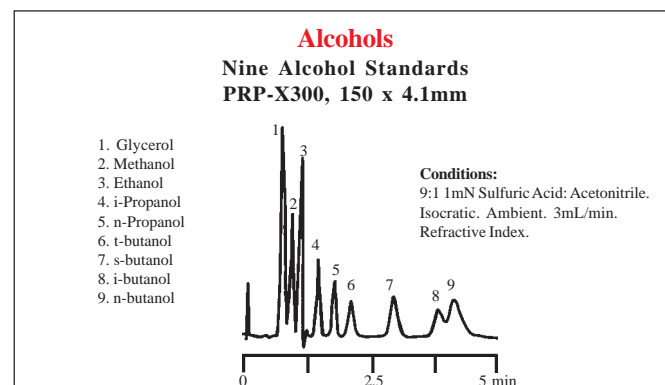
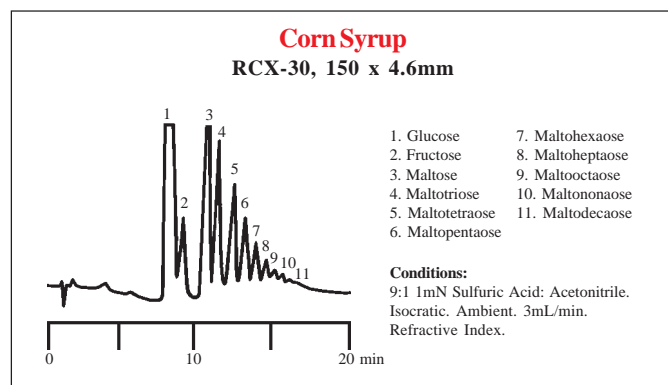
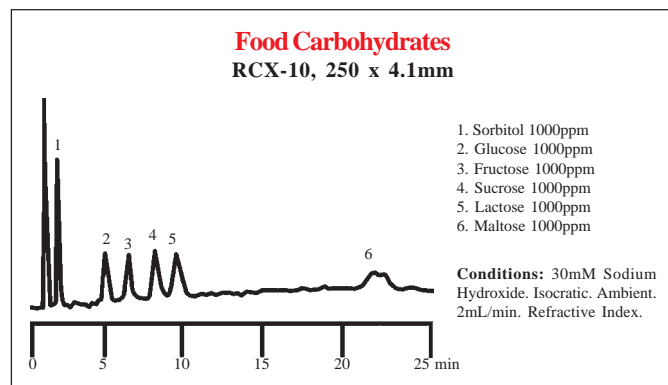
Cat. No.	Description
79818	3 μ m, 4.1 x 50mm
79819	3 μ m, 4.1 x 150mm
79536	7 μ m, 4.1 x 30mm
79356	7 μ m, 4.1 x 50mm
79464	7 μ m, 4.1 x 150mm
79465	7 μ m, 4.1 x 250mm
79475	7 μ m, 4.6 x 150mm PEEK
79386	7 μ m, 4.6 x 250mm PEEK

Microbore

79396	7 μ m, 2.1 x 150mm
79397	7 μ m, 2.1 x 250mm

PRP-X300 Guard Columns

79460	Starter kit (one holder and two cartridges)
79453	Replacement cartridges, 5/pk
79373	PEEK Starter kit (one holder and two cartridges)
79374	PEEK Replacement cartridges, 5/pk



Hamilton Cation Exchange Columns

PRP-X200 Cation

- Separates inorganic or organic cations on a single, non-suppressed column
- Quickly separates mono or divalent cations
- Compatible with mobile phases containing 0 to 100% organic solvent
- PRP-X200 columns are compatible with virtually any HPLC system

PRP-X200 columns separate inorganic or organic cations the easy way using non-suppression mode. Use these columns with any HPLC to determine cations in air, food, pharmaceuticals, soil, and water.

PRP-X200 columns quickly and easily separate five monovalent cations in ten minutes or four divalent cations in eight minutes.

The highly inert poly(styrene-divinyl) benzene resin allows the use of organic modifiers in the mobile phase. By varying the concentration of methanol, the resolution between cations can be optimized.

PRP-X200 Analytical Columns

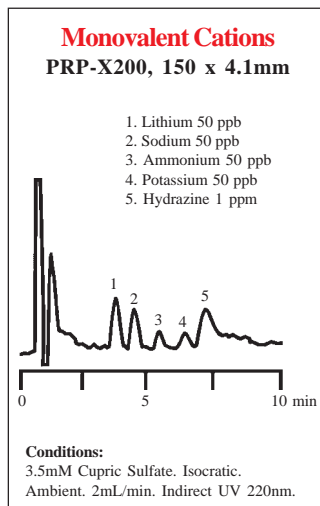
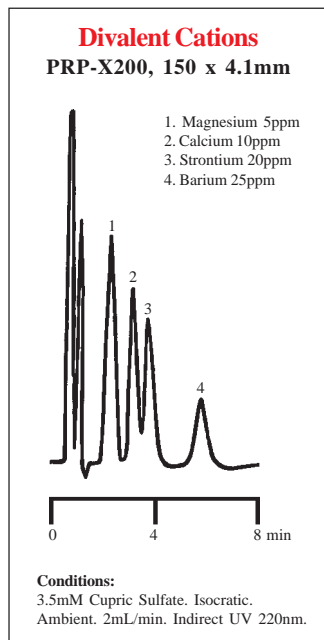
Cat. No.	Description
79363	10µm, 4.1 x 100mm
79441	10µm, 4.1 x 150mm
79442	10µm, 4.1 x 250mm
79384	10µm, 4.6 x 150mm PEEK
79357	10µm, 4.6 x 250mm PEEK

Microbore

79394	10µm, 2.1 x 150mm
79347	10µm, 2.1 x 250mm

Guard Columns

79456	Starter kit (one holder and two cartridges)
79449	Replacement Cartridges, 5/pk
79368	PEEK Starter kit (one holder and two cartridges)
79369	PEEK Replacement cartridges, 5/pk



PRP-X400 Glyphosate/Cation

- Rapid, simple separation of glyphosate and its metabolite, aminomethylphosphonic acid
- No need for column thermostating
- Eight minute faster analysis time when compared to competitive columns
- Detection levels of less than 10 ppb when using a post column, OPA derivatization*
- Other separations include: ethylene glycol and formaldehyde, and sugar alcohols

The PRP-X400 column was developed for the analysis of glyphosate and its metabolite, aminomethylphosphonic acid. Glyphosate, the active ingredient in the herbicide Roundup,[®] is a non-selective, post-emergence herbicide with broad use in weed control. The EPA, under method #547, requires drinking water to be monitored for glyphosate due to runoff from agricultural lands.

PRP-X400 columns can be used in other cation exchange applications, such as the separation of water-based, anti-microbial agents, ethylene glycol and formaldehyde, and sugar alcohols in paper pulping liquors.

*Cowell, et al., J. Agric. Food Chem. (1986) 34, 955-960.

PRP-X400 Cation Analytical Columns

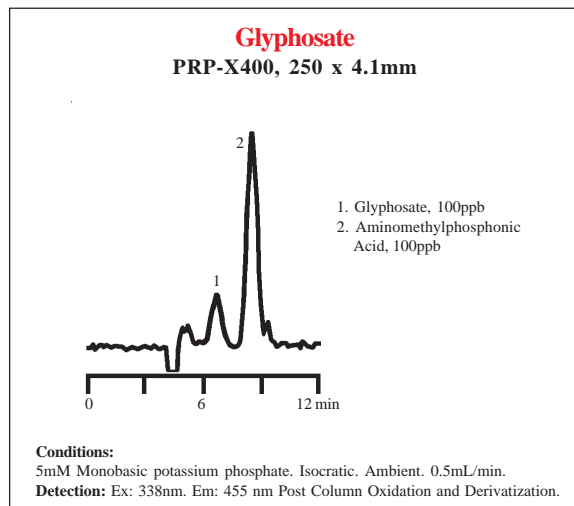
Cat. No.	Description
79473	7µm, 4.1 x 250mm
79387	7µm, 4.6 x 250mm PEEK

Microbore

79398	7µm, 2.1 x 250mm
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Guard Columns

79459	C18 Starter kit (one holder and two cartridges)
79452	C18 Replacement cartridges, 5/pk
79376	PEEK Starter kit (one holder and two cartridges)
79377	PEEK Replacement cartridges, 5/pk



Hamilton Cation Exchange Columns

PRP-X800

Separates Mono and Divalent Cations in 11 Minutes

PRP-X800 columns are designed for the isocratic separation of lithium, sodium, ammonium, potassium, magnesium and calcium. The columns are a proprietary PSDVB poly(styrene-divinylbenzene) support functionalized with itaconic acid. This combination of polymeric support and chemical functionalization provides:

- 11 minute separation of lithium, sodium, ammonium, potassium, magnesium and calcium
- An extremely durable (0 to 100% organic modifier, water), pressure stable (0 to 5,000 psi) column
- pH stability from (0 to 14)
- A column that retains its performance for a very long time

Detection is via conductivity or indirect UV depending on the mobile phase. Mobile phases include: Cupric Sulfate, Nitric Acid, Methanesulfonic Acid and Tartaric Acid/Ethylenediamine to name a few.

Additional Applications

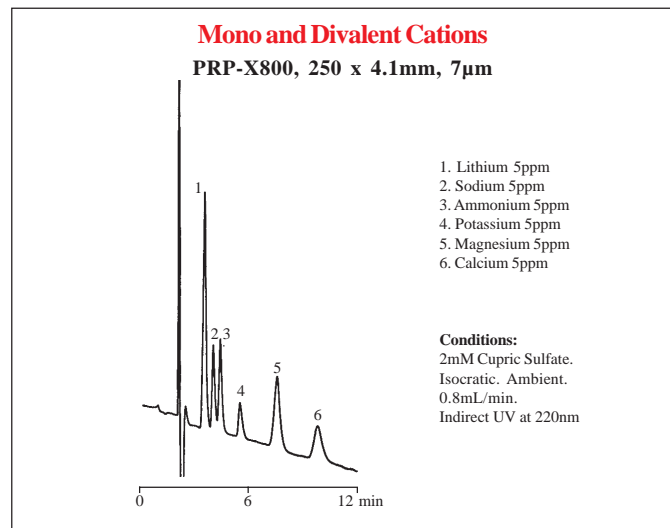
Transition metals (Manganese, Zinc, Cobalt and Cadmium) are also resolved on the column using a Ethylenediamine/Tartaric Acid mobile phase and conductivity detection.

PRP-X800 Cation Exchange HPLC Columns

Cat. No.	Description
79855	7 μ m, 4.1 x 150mm
79828	7 μ m, 4.1 x 250mm
79851	7 μ m, 4.6 x 150mm, PEEK
79829	7 μ m, 4.6 x 250mm, PEEK

Guard Columns

79830	Starter kit (one holder and two cartridges)
79832	Replacement cartridges, 5/pk
79831	PEEK starter kit (one holder and two cartridges)
79833	PEEK Replacement cartridges, 5/pk



HC-40 and HC-75

- For cation, ligand exchange separation of carbohydrates
- HC-40 Ca⁺⁺ form columns separate oligosaccharides up to DP8
- HC-75 Ca⁺⁺ form columns separate mono and disaccharides
- HC-75 Pb⁺⁺ form columns separate sugar alcohols
- HC-75 H⁺ form columns separate organic acids

HC-40 and HC-75 Gel-Type Cation Exchange Columns

Cat. No.	Description
79431	HC-75 Ca ⁺⁺ form, 9 μ m, 4.1 x 250mm
79436	HC-75 Ca ⁺⁺ form, 9 μ m, 7.8 x 305mm
79438	HC-75 Pb ⁺⁺ form, 9 μ m, 7.8 x 305mm
79476	HC-75 H ⁺ form, 9 μ m, 4.1 x 250mm
79544	HC-75 H ⁺ form, 9 μ m, 7.8 x 305mm
79432	HC-40 Ca ⁺⁺ form, 10-15 μ m, 7.8 x 305mm

