Zirchrom LC Columns

PBD (USP L49)

- Great peak shapes for basic compounds

ZirChrom®-PBD is produced by coating ultra-stable zirconia particles with an equally stable extremely thin layer of crosslinked polybutadience. The chemical selectivity is similar to that of a traditional C8 or C18 silica based column for non-ionic analytes. In the case of ionizable analytes there are secondary interactions which can be used to fine tune the chromatographic selectivity (band spacing).

The surface chemistry of zirconia is very rich and may be used to change chemical selectivity of the column simply through the addition of mobile phase additives. Consider using ZirChrom®-PBD with a phosphate buffer if either the tailing of amines or their selectivities are problematic on C18 silica, and explore the full pH range (pH 1-14) to optimize your separation. For example, a 20 mM phosphate buffer will produce good peak shapes for many ionizable compounds.

CARB

ZirChrom®-CARB is produced by coating a zirconia particle with an extremely thin layer of elemental carbon. The resulting phase gives very different selectivity than any bonded or polymeric phase, and represents an excellent alternative when bonded phases do not provide the required selectivity.

ZirChrom®-CARB is great for geometric isomer separations, and is superb for separating diastereomers. The selectivity is more different from ODS than phenyl or cyano phases. This makes it an excellent choice for orthogonal screening in drug discovery and impurity profiling. Proper buffer selection helps to ensure the best peak shapes and band spacing. ZirChrom®-CARB is stable from pH 1 – 14, and up to 200 °C.

C18

- Ideal for separating steroids and analogues
- Excellent selectivity for acidic compounds
- pH stable from 1 – 14 for robust methods
- Excellent thermal stability for fast separations

DiamondBond®-C18 is made by covalently bonding C18 ligands to the surface of carbon-clad zirconia. This creates the first truly bonded carbon phases in the industry. Because the surface below the C18 ligands is carbon and not silica, DiamondBond®-C18 has different selectivity from other phases. DiamondBond®-C18 has better peak shapes than unmodified carbon phases, and unique selectivity compared to silica phases. Life for all traditional reversed-phase zirconia products, proper buffer selection helps to ensure the best peak shapes and band spacing.

ZirChrom® Ion Exchangers

- Phases for sugars and proteins
- Wide range of ion exchange selectivity
- No shrinking or swelling—use any organic solvent
- Significantly higher efficiency than polymeric phases

ZirChrom ion exchange phase is produced by coating ultra-stable zirconia particles with an extremely thin layer of an ionic polymer. This method creates phases with much higher efficiency and, oftentimes, higher capacity than pure polymeric phases. Also, ZirChrom's ion exchangers do not shrink or swell as a function of ionic strength or organic modifier content of the mobile phase.

ZirChrom's SAX phase is thermally stable up to 80 °C, which causes different selectivity, allowing high speed separations with lower ionic strength mobile phases. This is very important in the preparation of RNA and DNA samples. If desired, mixed-mode separation modes may be exploited to optimize separations, including Lewis acid-base interactions, hydrophobic interactions and ion-exchange interactions. These modes may be attenuated by adjusting the strong Lewis base content, organic content and ionic strength of the mobile phase, respectively.

WAX (Stable from pH 3 – 9, and to 80 °C)

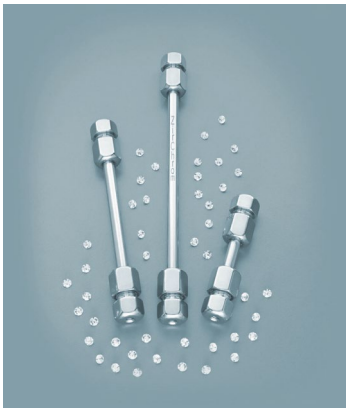
- Cross-linked polyethyleneimine-coated zirconia for weak anion-exchange
- Efficient weak anion-exchanger useful for inorganic and organic anions
- Useful for the separation of bio-molecules such as nucleotides, nucleosides, oligonucleotides, oligodeoxynucleotides, amino acids, peptides, and proteins
- Extremely stable amino phase for normal phase separation of carbohydrates.

SAX (Stable from pH 1 – 2, and to 80 °C)

- Cross-linked polyethyleneimine-coated zirconia for strong anion-exchange
- Useful for inorganic and organic anions
- Ideal for the separation of water-soluble vitamins
- Useful for the separation of bio-molecules such as nucleotides, nucleosides, oligonucleotides, oligodeoxynucleotides, amino acids, and peptides

Zirchrom LC Columns

SIZE (mm)	PARTICLE SIZE (µm)	PBD	CARB	Diamond Bond C18	WAX	SAX
4.6 x 250 mm	5	ZR03-2546-5	ZR01-2546-5	DB01-2546-5	ZR05-2546-5	ZR06-2546-5
4.6 x 150 mm	5	ZR03-1546-5	ZR01-1546-5	DB01-1546-5	ZR05-1546	ZR06-1546-5
4.6 x 100 mm	5	ZR03-1046-5	ZR01-1046-5	DB01-1046-5	ZR05-1546-5	ZR06-1046-5
4.6 x 50 mm	5	ZR03-0546-5	ZR01-0546-5	DB01-0546-5	ZR05-0546-5	ZR06-0546-5
4.6 x 250 mm	3	ZR03-2546	ZR01-2546	DB01-2546	ZR05-0546	ZR06-2546
4.6 x 150 mm	3	ZR03-1546	ZR01-1546	DB01-1546	ZR05-2546	ZR06-1546
4.6 x 100 mm	3	ZR03-1046	ZR01-1046	DB01-1046	ZR05-1046	ZR06-1046
4.6 x 50 mm	3	ZR03-0546	ZR01-0546	DB01-0546	ZR05-1046-5	ZR06-0546
4.6 mm Guard, 3/pk		ZR03-G40	ZR01-G40	DB01-G40	ZR05-G40	ZR06-G40
2.1 x 250 mm	5	ZR03-2521-5	ZR01-2521-5	DB01-2521-5	ZR05-2521-5	ZR06-2521-5
2.1 x 150 mm	5	ZR03-1521-5	ZR01-1521-5	DB01-1521-5	ZR05-1521-5	ZR06-1521-5
2.1 x 100 mm	5	ZR03-1021-5	ZR01-1021-5	DB01-1021-5	ZR05-1021-5	ZR06-1021-5
2.1 x 50 mm	5	ZR03-0521-5	ZR01-0521-5	DB01-0521-5	ZR05-0521-5	ZR06-0521-5
2.1 x 250 mm	3	ZR03-2521	ZR01-2521	DB01-2521	ZR05-2521	ZR06-2521
2.1 x 150 mm	3	ZR03-1521	ZR01-1521	DB01-1521	ZR05-1521	ZR06-1521
2.1 x 100 mm	3	ZR03-1021	ZR01-1021	DB01-1021	ZR05-1021	ZR06-1021
2.1 x 50 mm	3	ZR03-0521	ZR01-0521	DB01-0521	ZR05-0521	ZR06-0521
2.1 mm Guard, 3/pk		ZR03-G20	ZR01-G20	DB01-G20	ZR05-G20	ZR06-G20



Zirchrom ProTain® In-Line Protein Removal System

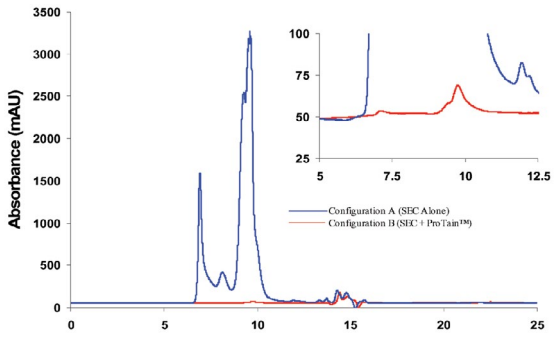
The HPLC analysis of small molecules in matrices containing proteins of variable origin is often problematic because of poor resolution between the analyte of interest and the matrix constituents and potential fouling of the analytical column by matrix proteins and debris. The incorporation of ZirChrom's new ProTain® in-line protein removal system upstream of any type of analytical column offers a selective, cost effective and simple method of reducing matrix interferences for the HPLC analysis of small molecules in bio-samples.

The type of buffer, specifically its strength as a Lewis base, and the pH of the mobile phase play a significant role in determining the actual protein binding capacity of the ProTain® systems.

ZirChrom's ProTain® in-line protein removal system is comprised of one ProTain® system insert and one ProTain® system holder. A section of capillary tubing and all of the necessary nuts and ferrules are included with holder.

ZIRCHROM PROTAIN IN-LINE PROTEIN REMOVAL SYSTEM	
SIZE	PART NO
4.6 mm x 2 cm (3/pk)	PT01-0246
4.6 mm Holder	ZR850-00-2
2.1 mm x 2 cm (3/pk)	PT01-0221
2.1 mm Holder	ZR852-00-2

In-Line Removal of Matrix Proteins in HPLC Analysis of Small Molecules



Column A: TSK G3000 Size Exclusion Column
Column B: ZirChrom's in-line ProTain Removal System installed in front of the TSK G3000 SEC column

Mobile Phase: 10mM Phosphate buffer at pH 6.8, 1.0 mL/min
Detector: UV @ 215 nm