

# Chromatography Consumables Product Catalog



<http://www.nanochrom.com>

# NANOCHROM



WeChat Official Account



NanoChrom Technologies (Suzhou) Co., Ltd



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## About Company

NanoChrom™ Technologies (NanoChrom) is a technology-driven company, specialized in the research, development, and manufacturing of chromatography consumables and related applications. We serve customers in many industries including pharmaceutical, biotechnology, food & beverage, environmental, chemical, etc.

NanoChrom offers a comprehensive chromatography consumables portfolio, including ChromCore™ columns for separating small molecules, BioCore™ columns for separating biologics, UniChiral™ columns for separating enantiomers, and SelectCore™ products for sample preparation. We also provide extensive services, including technical training, product support, and custom-made products. We are keen to work with our customers in developing solutions to meet separation challenges.

NanoChrom has a team of world-class experts in chromatography separations, synthetic chemistry, and materials science, who are driven to lead the frontier of separation science and develop innovative products to address separation challenges that our customers face. We also have a highly experienced leadership team with a clear vision and strong commitments to serve our customers.

**Vision:** Better Separation Through Innovation, Quality and Service

**Mission:** Become a Trusted Partner and Innovation Leader in Separation

**Core Values:** Innovation, Quality and Teamwork

### Product Portfolio

#### Bio-Molecules



#### BioCore™ LC Columns

SEC  
WCX, SCX, SAX  
HIC  
RP  
Glycan  
Protein A

#### Small Molecules



#### ChromCore™ LC Columns

RP: C18, Polar C18, C8, C4, C30  
Phenyl, PFP, Biphenyl, Phenyl-Hexyl, Phenyl-Ether  
NP: Silica, NH<sub>2</sub>, CN  
HILIC: Diol, Amide, Imidazole  
IEC: SCX, SAX  
Application-specific

#### Chiral Compounds



#### UniChiral® LC Columns

CMD, CMJ, CMS, CMZ  
CND, CNJ, CNZ

#### Sample Preparation



#### SelectCore™ SPE

PVP-DVB: HLB, MAX, MCX, WAX, WCX  
PS-DVB: PSL, PSS, PSCX, X3  
Silica: C18, PSA, NH<sub>2</sub>  
Affinity: Heparin, Protein A, Protein G

#### SelectCore™ QuEChERS

## Technology

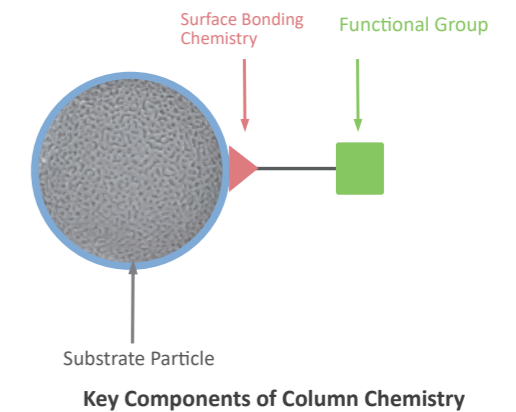
HPLC column technology involves three fundamental aspects: substrate particle, surface bonding chemistry and functional group. NanoChrom's technological advantages are reflected in each of these aspects.

### 01 Substrate Particle

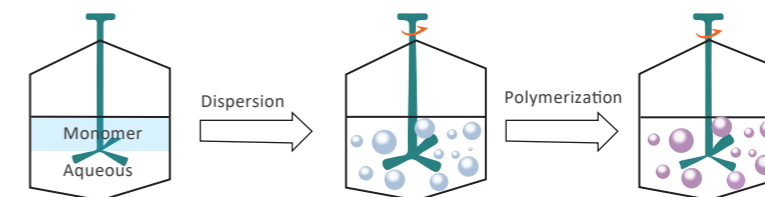
Substrate particles build the foundation of the mechanical and chemical stability in LC columns. The substrate particles used in NanoChrom's LC columns are based on the latest innovation on particle technology:

#### >> UniPS™ Polymer Particle

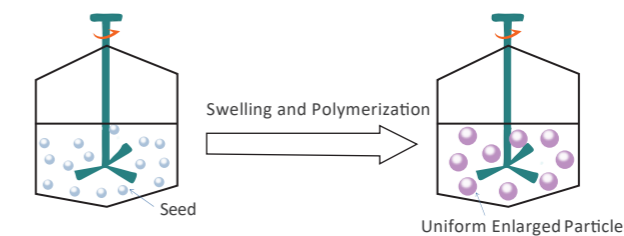
UniPS™ represents a family of monodispersed, spherical, highly crosslinked divinylbenzene (DVB) particles with precisely controlled particle size, pore structure, and surface area. These particles are manufactured with innovative industrial-scale processes (See Figures below). Compared to their poly-dispersed counterparts prepared with traditional processes, this approach results in superior efficiency, consistency, and physical and chemical stability, making UniPS particles suitable for LC columns.



### UniPS Polymer Particle Technology

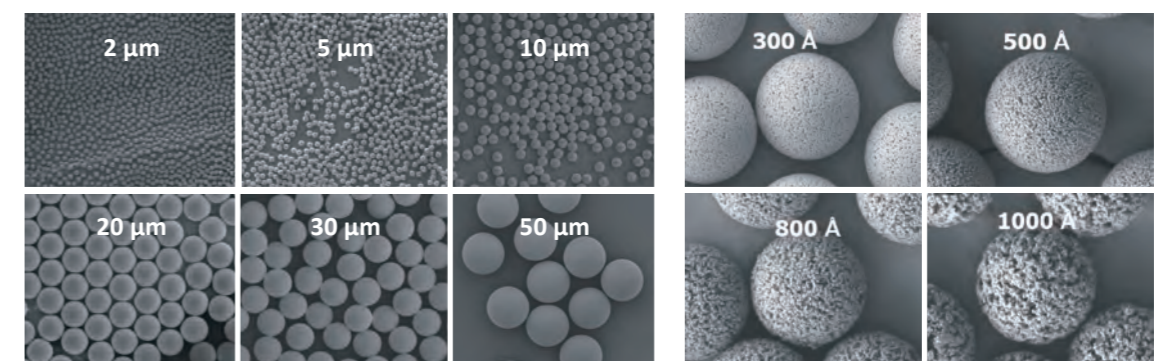


Traditional technology for producing polymer particles with a broad particle size distribution



Innovative technology for producing polymer particles with a narrow particle size distribution

### SEM Images of UniPS Polymer Particles



UniPS particles with different particle sizes

UniPS particles with different pore sizes

### >> UniSil™ Silica Particle

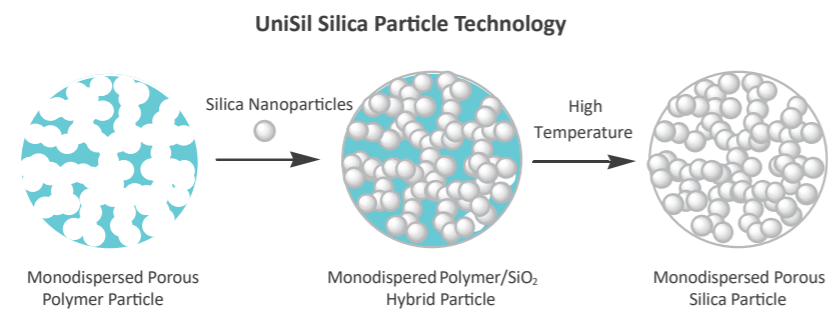
UniSil™ features a family of monodispersed, spherical, silica particles with tightly controlled particle size, pore structure and surface area, manufactured by innovative processes (illustration of the “template” process) at industrial scales. This technology involves three steps:

**Step 1:** forming monodispersed, porous, spherical, polymer particles;

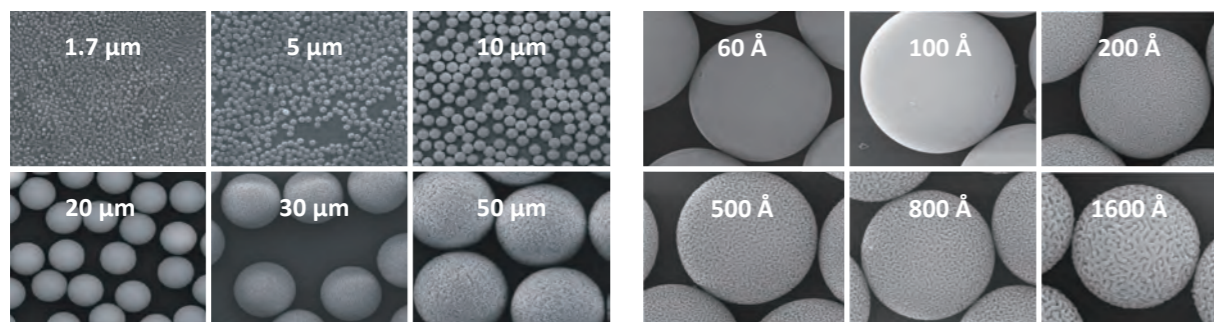
**Step 2:** using as-made polymer particles as the template, fill the pores with silica nanoparticles to form monodispersed silica/polymer hybrid particles;

**Step 3:** treating the “hybrid” particles from **Step 2** at a high temperature to burn off the organic components and form monodispersed, porous, silica particles.

Compared with the silica particles produced by traditional Sol-Gel processes, UniSil particles offer the benefits, including higher column efficiency, higher mechanical strength and improved chemical stability, making them ideal substrates for liquid chromatography columns.

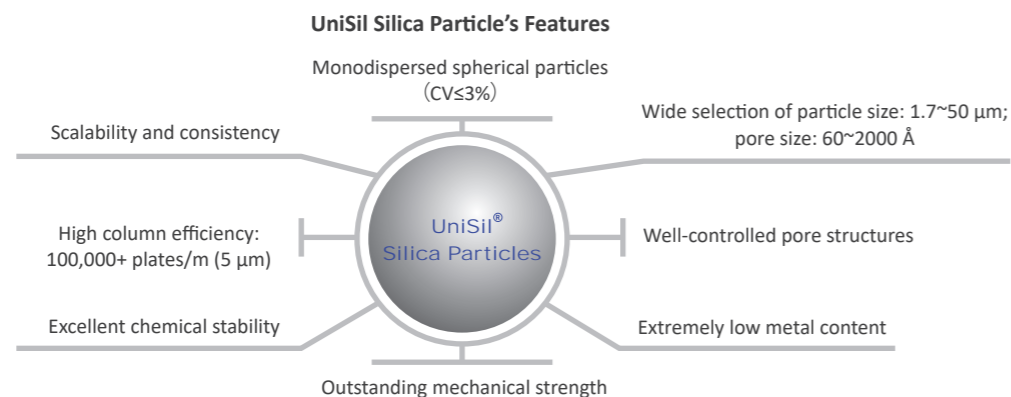


### SEM Images of UniSil Silica Particles



UniSil particles with different particle sizes

UniSil particles with different pore sizes



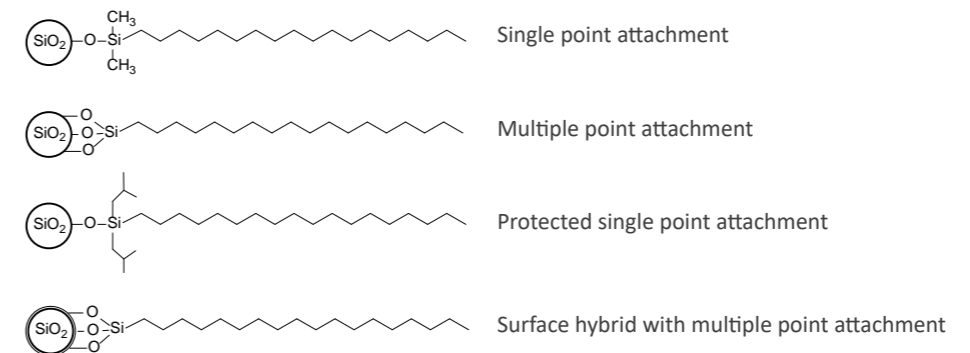
### 02 Surface Bonding Chemistry

The chemistry of a column strongly influences column selectivity, the determining factor in separation.

Two key aspects of column chemistry are its surface bonding chemistry and functional group.

Surface bonding chemistry affects surface coverage and chemical stability. According to specific requirements and/or the intended use, the following types of surface bonding chemistry are adopted in the manufacturing processes of silica-based ChromCore™ columns: single-point Si-O-Si attachment, multiple-point Si-O-Si attachment, sterically hindered single-point Si-O-Si attachment and organo-inorganic hybrid surface combined with multiple-point Si-O-Si attachment. The corresponding features of each bonding type are illustrated.

#### Silica Surface Bonding Chemistry

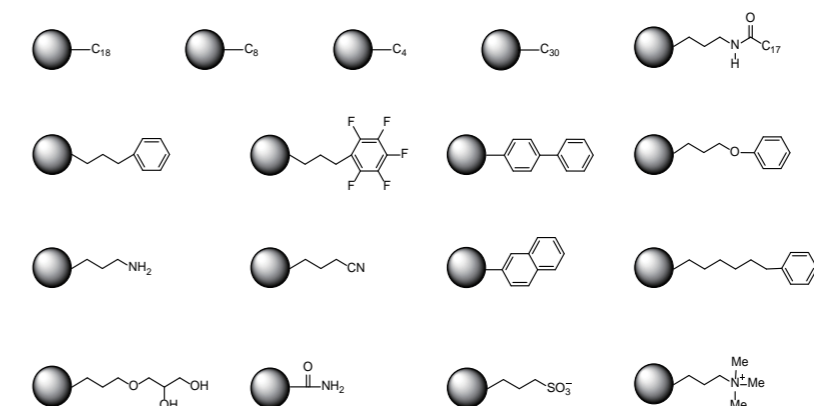


### 03 Column Functionality

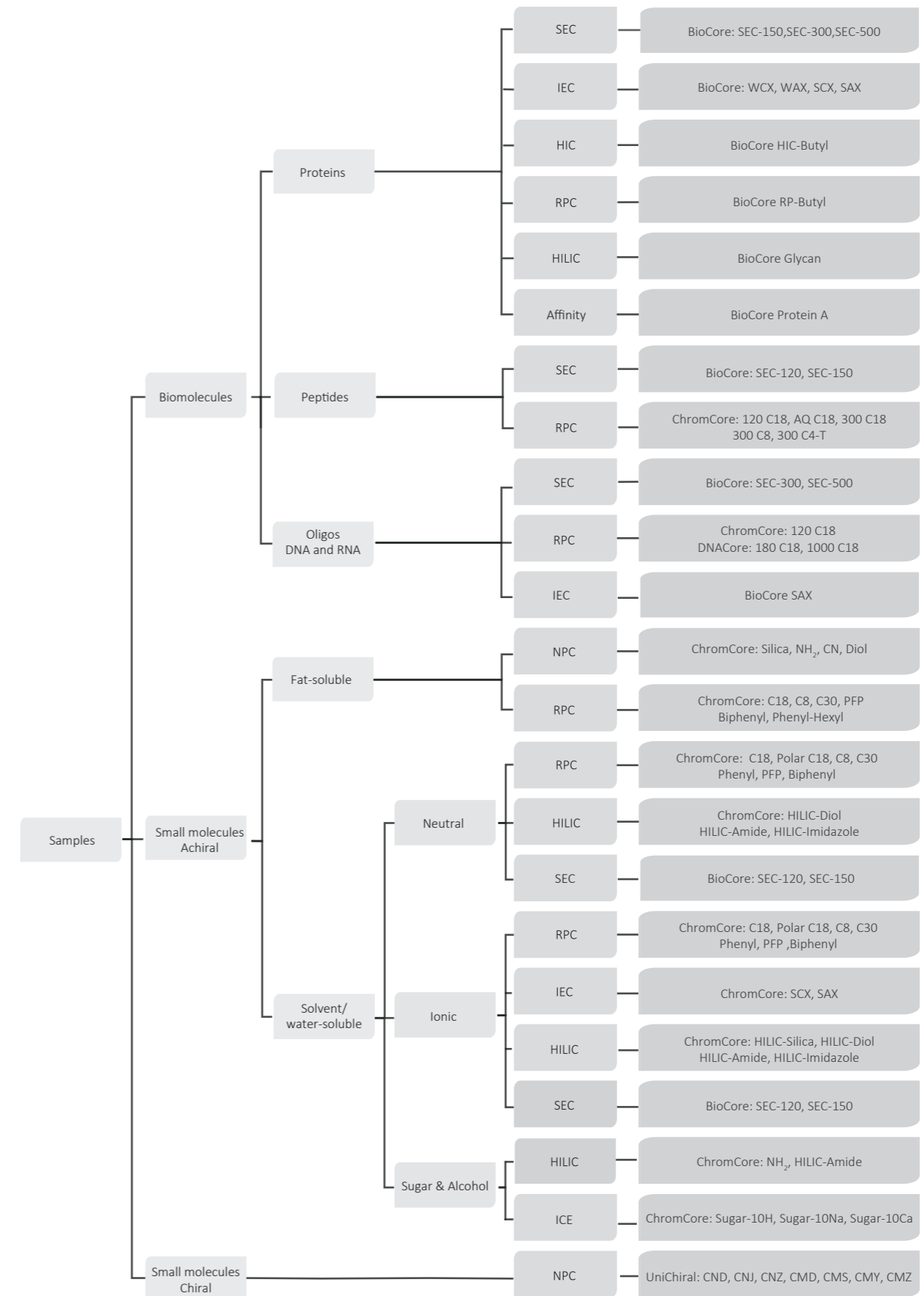
The functional group determines column selectivity. Common functional group classifications include reversed phase (RP), normal phase (NP), hydrophilic interaction chromatography (HILIC), ion-exchange (IEX), size exclusion chromatography (SEC), ion exclusion chromatography (ICE) and affinity chromatography (AC). The ChromCore column family has a variety of functionalities that cover a broad range of selectivity.

For biologics like monoclonal antibodies, column chemistry plays a critical role to ensure desired selectivity and to minimize non-specific binding between the substrate and the analytes. For example, BioCore™ bio-separation columns utilize an innovative technology that involves the formation of a neutral hydrophilic layer on the substrate surface, subsequently on which selected functionalities are grafted. In addition to the type of functional group, the amount and distribution of the functional groups also have significant impact on column selectivity and peak symmetry.

#### Column Functional Groups

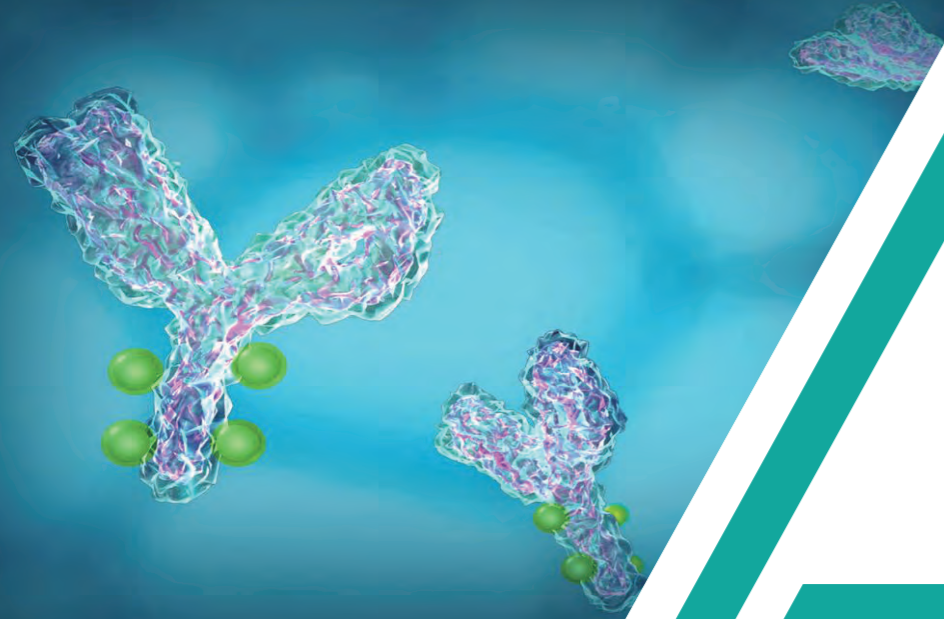


| USP Listing | Packing   | Brand Name  |
|-------------|---|---|
| L1          | Octadecyl silane chemically bonded to porous or non-porous silica or ceramic microparticles, 1.5 to 10 µm in diameter, or a monolithic rod  | ChromCore 120 C18<br>ChromCore AQ C18<br>ChromCore AR C18<br>ChromCore BR C18<br>ChromCore 120 C18-T<br>ChromCore 300 C18 |
| L3          | Porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod   | ChromCore Silica  |
| L7          | Octylsilane chemically bonded to totally or superficially porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod   | ChromCore 120 C8<br>ChromCore AQ C8<br>ChromCore 300 C8   |
| L8          | An essentially monomolecular layer of aminopropylsilane chemically bonded to totally porous silica gel support, 1.5 to 10 µm in diameter, or a monolithic silica rod  | ChromCore NH <sub>2</sub>   |
| L9          | Irregular or spherical, totally porous silica gel having a chemically bonded, strongly acidic cation-exchange coating, 3 to 10 µm in diameter   | ChromCore SCX<br>ChromCore 300 SCX  |
| L10         | Nitrile groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod   | ChromCore CN  |
| L11         | Phenyl groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod  | ChromCore Phenyl<br>ChromCore Phenyl-Hexyl<br>ChromCore Phenyl-Ether<br>ChromCore Biphenyl                                |
| L14         | Silica gel having a chemically bonded strongly basic quaternary ammonium anion-exchange coating, 5 to 10 µm in diameter   | ChromCore SAX   |
| L17         | Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the hydrogen form, 6 to 12 µm in diameter  | ChromCore Sugar-10H   |
| L19         | Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the calcium form, 5 – 15 µm in diameter  | ChromCore Sugar-10Ca  |
| L20         | Dihydroxypropane groups chemically bonded to porous silica or hybrid particles, 1.5 to 10 µm in diameter, or a monolithic silica rod  | ChromCore HILIC-Diol<br>BioCore SEC-120<br>BioCore SEC-150<br>BioCore SEC-300<br>BioCore SEC-500                          |
| L26         | Butyl silane chemically bonded to totally porous or superficially porous silica particles, 1.5 to 10 µm in diameter   | ChromCore C4  |
| L40         | Cellulose tris-3,5-dimethylphenylcarbamate coated porous silica particles, 3 µm to 20 µm in diameter  | UniChiral CND   |
| L43         | Pentafluorophenyl groups chemically bonded to silica particles by a propyl spacer, 1.5 to 10 µm in diameter   | ChromCore PFP   |
| L51         | Amylose tris-3,5-dimethylphenylcarbamate-coated, porous, spherical, silica particles, 3 to 10 µm in diameter  | UniChiral CMD   |
| L58         | Strong cation-exchange resin consisting of sulfonated cross-linked styrene-divinylbenzene copolymer in the sodium form, about 6 to 30 µm diameter   | ChromCore Sugar-10Na  |
| L60         | Spherical, porous silica gel, 10 µm or less in diameter, the surface of which has been covalently modified with alkyl amide groups and endcapped  | ChromCore Polar C18   |
| L62         | C30 silane bonded phase on a fully porous spherical silica, 3 to 15 µm in diameter  | ChromCore C30   |
| L68         | Spherical, porous silica, 10 µm or less in diameter, the surface of which has been covalently modified with alkyl amide groups and not endcapped  | ChromCore HILIC-Amide<br>BioCore Glycan   |
| L78         | A silane ligand that consists of both reversed-phase (an alkyl chain longer than C8) and anion-exchange (primary, secondary, tertiary, or quaternary amino groups) functional groups chemically bonded to porous or non-porous silica or ceramic micro-particles, 1.0 to 50 µm in diameter, or a monolithic rod | ChromCore SAA   |
| L80         | Cellulose tris(4-methylbenzoate)-coated, porous, spherical, silica particles, 5 - 20 µm in diameter   | UniChiral CNJ   |
| L90         | Amylose tris-[(S)-alpha-methylbenzylcarbamate] coated on porous, spherical silica particles, 3 to 10 µm in diameter   | UniChiral CMS   |
| L118        | Aqueous polymerized C18 groups on silica particles, 1.2 to 5 µm in diameter   | ChromCore PAH   |



# Bio-Separation Columns

BioCore™ HPLC Columns



|                           |    |
|---------------------------|----|
| BioCore SEC Columns       | 11 |
| BioCore WCX Columns       | 19 |
| BioCore SCX Columns       | 22 |
| BioCore SAX Columns       | 24 |
| BioCore HIC Columns       | 26 |
| BioCore RP Columns        | 28 |
| BioCore Glycan Columns    | 30 |
| BioCore Protein A Columns | 31 |

NANOCHROM

## BioCore™ HPLC Columns

BioCore HPLC columns are based on the most advanced column technology and designed for characterization of proteins by liquid chromatography, including fast titer analysis of monoclonal antibodies (mAb) and Fc fusion proteins, monomer and dimers of mAbs, charged variant and oxidation variant analysis, antibody drug conjugate analysis, intact mAb and mAb fragments analysis, peptide mapping and glycan analysis.

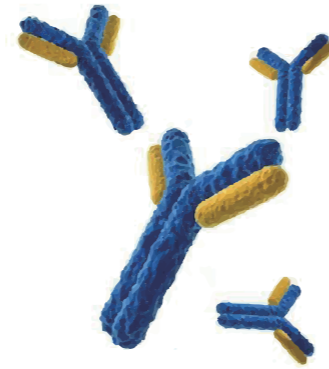


### Product Portfolio

|                    | SEC  | IEC   | HIC                         |
|--------------------|--|---|-----------------------------|
| <b>Product</b>     | <p>BioCore SEC-120<br/>BioCore SEC-150<br/>BioCore SEC-300<br/>BioCore SEC-500</p> | <p>BioCore WCX<br/>BioCore SCX<br/>BioCore SAX</p>                  | <p>BioCore HIC</p>          |
| <b>Application</b> | small-molecule drugs, peptides, proteins, oligos, glycans, etc.                    | charged variants in mAbs, bi-specific antibodies, ADCs and proteins | mAbs and ADCs               |
|                    | RPC  | HILIC   | Affinity                    |
| <b>Product</b>     | <p>BioCore RP</p>  | <p>BioCore Glycan</p>   | <p>BioCore Protein A</p>    |
| <b>Application</b> | intact proteins and protein fragments  | N-glycans of proteins   | mAbs and Fc fusion proteins |

## BioCore™ SEC Columns

BioCore SEC is a family of high performance, size exclusion chromatography columns designed for separating a broad range of biomolecules based on size. This column technology involves the creation of a neutral hydrophilic layer on the surface of specially designed, high-strength, monodispersed silica particles, combined with well-established column packing processes. BioCore SEC columns are suited for separating peptides, oligonucleotides, monoclonal antibodies, and related aggregates and fragments, thus have a broad application range in pharmaceutical, biopharmaceutical and academia research.



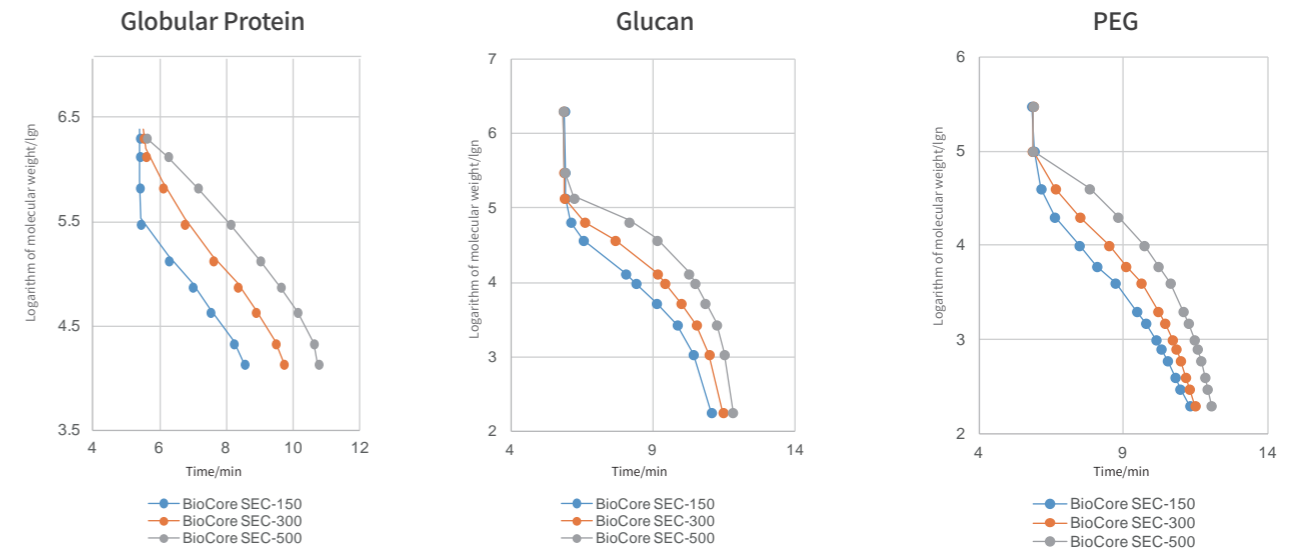
### Main Features

- High column efficiency and high resolution
- Minimal undesired interactions between the stationary phase and analytes, resulting in good peak shape and recovery
- High mechanical strength for longer column lifetime
- Broad application range, including small-molecule drugs, peptides, proteins, oligos, glycans, etc.

### Specifications

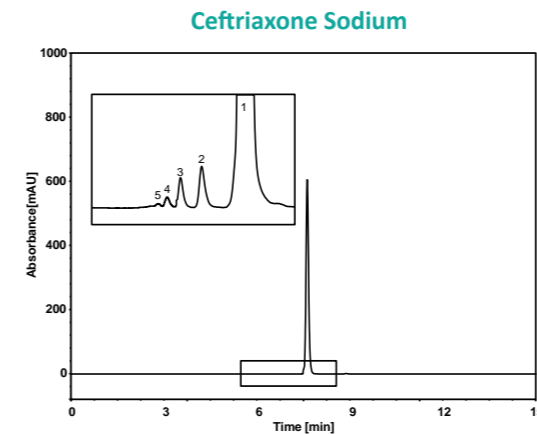
| Product Name                         | SEC-120  | SEC-150  | SEC-300             | SEC-500  |
|--------------------------------------|--|--|---------------------|--|
| Functional Group                     | Diol   |  |                     |  |
| Substrate                            | Monodispersed, high pore volume, porous silica particles |  |                     |  |
| Particle Size                        | 3 & 5 μm   |  |                     |  |
| Pore Size                            | 120 Å  | 150 Å  | 300 Å               | 500 Å  |
| Pressure Limit                       | >1500 psi for 5 μm, >2500 psi for 3 μm                   |  |                     |  |
| Temperature Limit                    | 40 °C  |  |                     |  |
| pH Range                             | 2-8  |  |                     |  |
| Calibration Curve (PEG)              | 300-10,000   | 500-15,000   | 1,000-50,000        | 5,000-200,000  |
| Calibration Curve (Glucan)           | NA   | 1,000-30,000   | 2,000-100,000       | 20,000-500,000   |
| Calibration Curve (globular protein) | NA   | 5,000-150,000  | 10,000-750,000      | 20,000-1,500,000   |
| Application                          | Small-molecule drugs, peptides, glycans, small oligos    | Small-molecule drugs, peptides, glycans, small oligos and small proteins | mAbs and aggregates | mAbs and high order aggregates, large proteins and large DNA/RNA |

### Calibration Curve

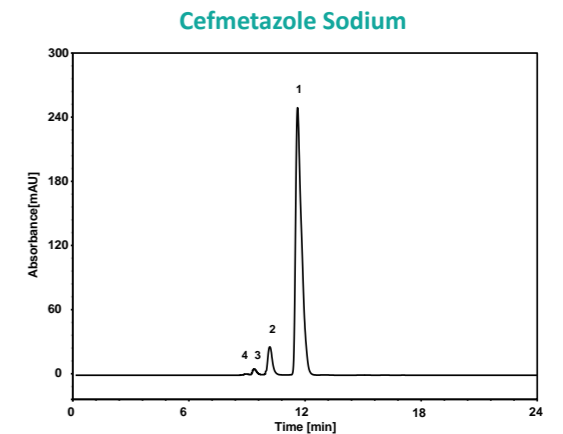
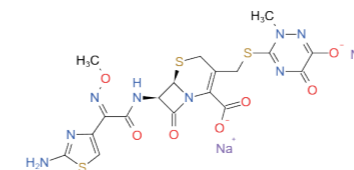


### Applications

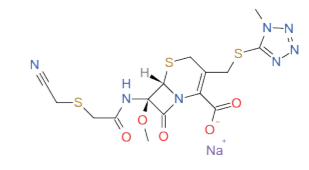
#### >> BioCore SEC-120



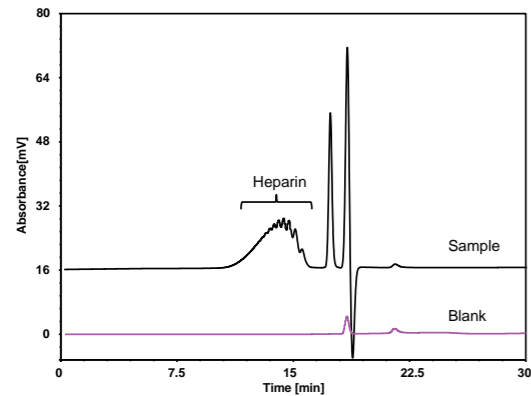
Column: BioCore SEC-120, 5 μm  
 Dimension: 7.8×300 mm  
 Mobile Phase: 5mM phosphate buffer, pH7.0  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 2 μL  
 Detection: UV 231 nm  
 Peaks: 1. Ceftriaxone  
 2-5. Polymers of Ceftriaxone



Column: BioCore SEC-120, 5 μm  
 Dimension: 7.8×300 mm  
 Mobile Phase: 90/10 v/v 5 mM phosphate buffer, pH7.0/MeCN  
 Flow Rate: 0.6 mL/min  
 Temperature: 25 °C  
 Injection: 10 μL  
 Detection: UV 254 nm  
 Peaks: 1. Cefmetazole  
 2-4. Impurities

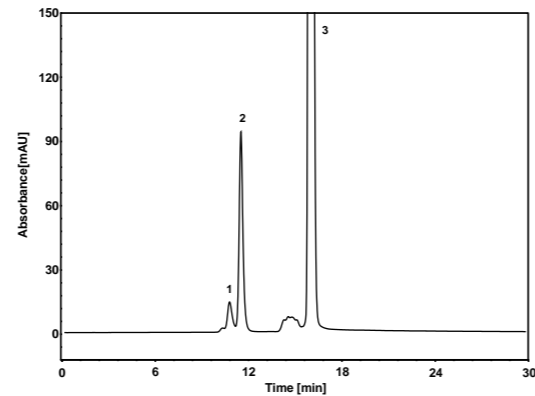


Low Molecular Heparin



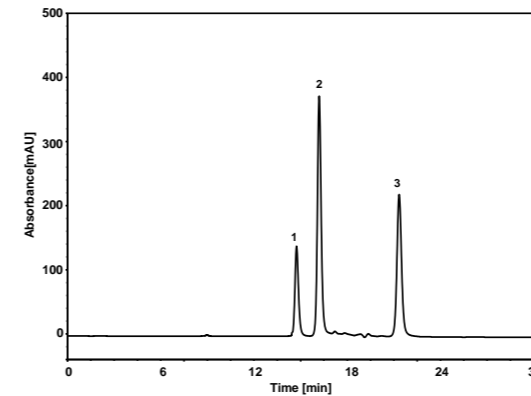
Column: BioCore SEC-120, 5 µm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 100 mM ammonium acetate solution  
 Flow Rate: 0.6 mL/min  
 Temperature: 35 °C  
 Injection: 20 µL  
 Detection: RID  
 Peaks: Heparin

Peptides



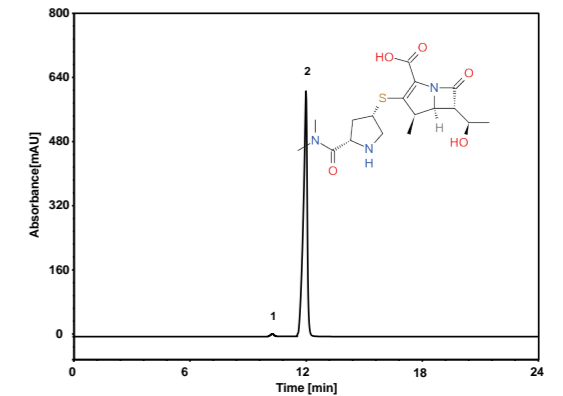
Column: BioCore SEC-120, 5 µm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 40/60 v/v MeCN/0.1% TFA in H<sub>2</sub>O  
 Flow Rate: 0.7 mL/min  
 Temperature: 30 °C  
 Injection: 20 µL  
 Detection: UV 276 nm  
 Peaks: 1. Polymer of peptide  
 2. Peptide  
 3. M-cresol

Peptides



Column: BioCore SEC-150, 5 µm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 90/10 v/v 300 mM NaCl in 50 mM phosphate buffer/MeCN  
 Flow Rate: 0.6 mL/min  
 Temperature: 25 °C  
 Injection: 10 µL  
 Detection: UV 215 nm  
 Peaks: 1. P-3000  
 2. P-2000  
 3. P-1000

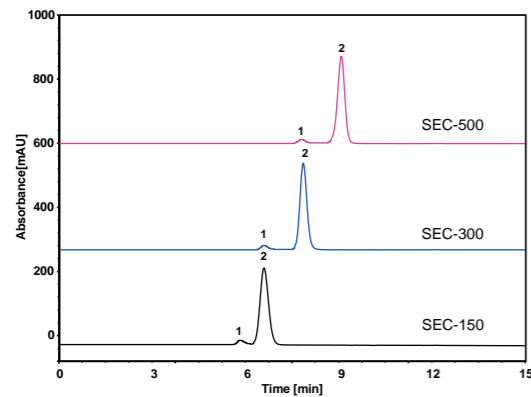
Meropenem



Column: BioCore SEC-150, 5 µm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 95/5 v/v 5 mM phosphate buffer, pH7.0/MeCN  
 Flow Rate: 0.6 mL/min  
 Temperature: 25 °C  
 Injection: 20 µL  
 Detection: UV 254 nm  
 Peaks: 1. Meropenem Aggregate  
 2. Meropenem

>> BioCore SEC-150

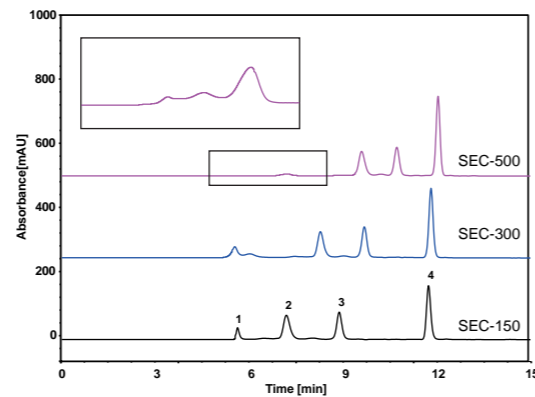
IgG1 and Aggregate



Columns: BioCore SEC-150, 5 µm  
 BioCore SEC-300, 5 µm  
 BioCore SEC-500, 5 µm  
 Dimension: 4.6 × 300 mm  
 Mobile Phase: 150 mM phosphate buffer, pH6.8  
 Flow Rate: 0.35 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: UV 280 nm  
 Sample: IgG1 (2.6 mg/mL in H<sub>2</sub>O)  
 Peaks: 1. IgG1 Aggregate  
 2. IgG1

| Column  | R.T. (IgG1) | Resolution | Peak Purity (IgG1) |
|---------|-------------|------------|--------------------|
| SEC-150 | 6.606       | 1.61       | 94.72 %            |
| SEC-300 | 7.864       | 3.03       | 95.14 %            |
| SEC-500 | 9.089       | 2.92       | 95.14 %            |

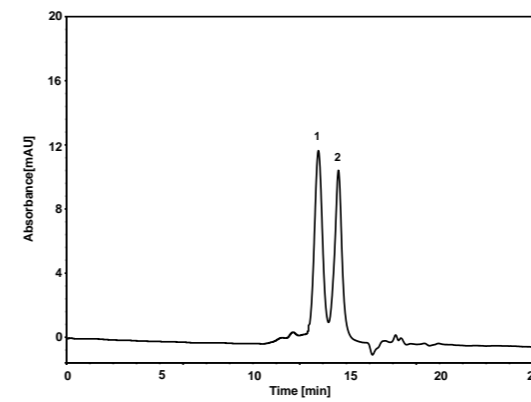
Proteins



Columns: BioCore SEC-150, 5 µm  
 BioCore SEC-300, 5 µm  
 BioCore SEC-500, 5 µm  
 Dimension: 4.6 × 300 mm  
 Mobile Phase: 150 mM phosphate buffer, pH6.8  
 Flow Rate: 0.35 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: UV 280 nm  
 Peaks: 1. Thyroglobulin - 669,000 Da (0.5 mg/mL)  
 2. Conalbumin - 75,000 Da (1 mg/mL)  
 3. Ribonuclease A - 13,700 Da (1 mg/mL)  
 4. Uracil - 112 Da (0.1 mg/mL)

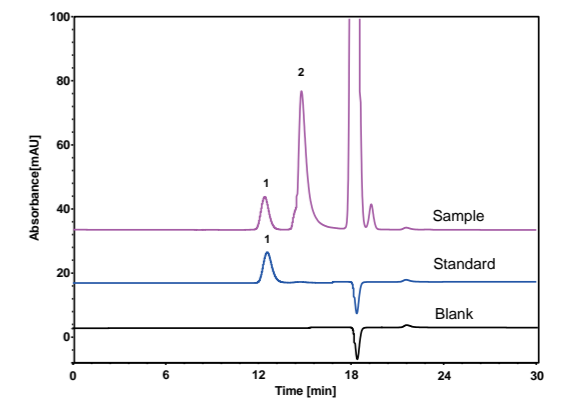
| Column  | R.T. (1) | R.T. (2) | R.T. (3) | R.T. (4) |
|---------|----------|----------|----------|----------|
| SEC-150 | 5.634    | 7.192    | 8.884    | 11.742   |
| SEC-300 | 5.547    | 8.281    | 9.689    | 11.822   |
| SEC-500 | 6.239    | 9.606    | 10.739   | 12.056   |

ScFv Monomer and Dimer



Column: BioCore SEC-150, 5 µm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 90/10 v/v 300 mM NaCl in 50 mM phosphate buffer/MeCN  
 Flow Rate: 0.6 mL/min  
 Temperature: 30 °C  
 Injection: 20 µL  
 Detection: UV 280 nm  
 Peaks: 1. ScFv Dimer  
 2. ScFv Monomer

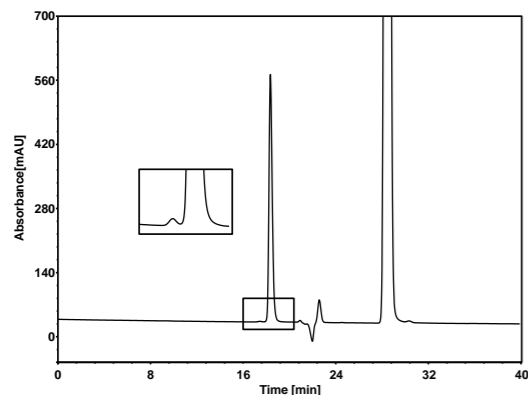
Poloxamer 188 (P188) in Protein Solution



Column: BioCore SEC-150, 5 µm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 10 mM ammonium acetate solution, pH5.2  
 Flow Rate: 0.6 mL/min  
 Temperature: 25 °C  
 Injection: 20 µL  
 Detection: RID  
 Peaks: 1. Poloxamer 188 (P188)  
 2. Protein



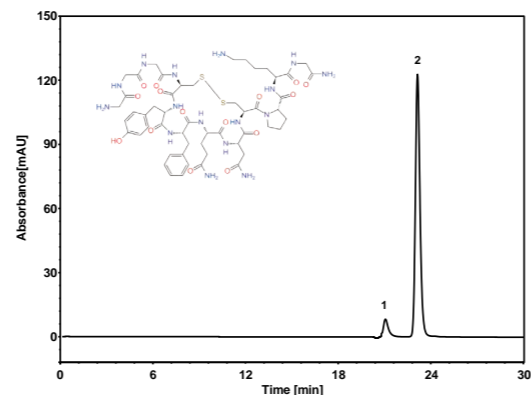
**Exenatide Injection**



Column: BioCore SEC-150, 5 µm  
 Dimension: 7.8×300 mm  
 Mobile Phase: 25/75/0.1 v/v/v MeCN/18.7 g/L Na<sub>2</sub>SO<sub>4</sub> in H<sub>2</sub>O/TFA  
 Flow Rate: 0.5 mL/min  
 Temperature: 30 °C  
 Injection: 20 µL  
 Detection: UV 214 nm  
 Sample: Exenatide Injection

| R.T. (min) | Peak Area | Peak Height | Theoretical Plate | Tailing Factor | Resolution |
|------------|-----------|-------------|-------------------|----------------|------------|
| 18.413     | 10949957  | 557185      | 20924             | 1.25           | 1.65       |

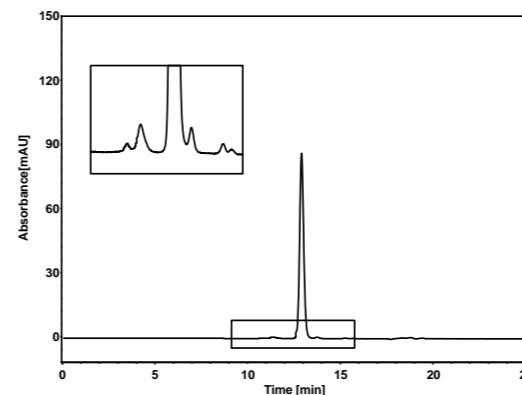
**Terlipressin**



Column: BioCore SEC-150, 5 µm  
 Dimension: 7.8×300 mm  
 Mobile Phase: 100 mM Na<sub>2</sub>SO<sub>4</sub> in 100 mM phosphate buffer  
 Flow Rate: 0.5 mL/min  
 Temperature: 30 °C  
 Injection: 10 µL  
 Detection: UV 274 nm  
 Peaks: 1. Impurity U  
 2. Terlipressin

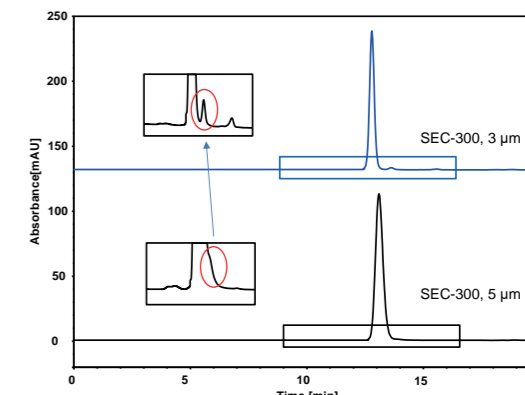
| R.T. (min) | Peak Area | Peak Height | Theoretical Plate | Tailing Factor | Resolution |
|------------|-----------|-------------|-------------------|----------------|------------|
| 23.080     | 2593525   | 126283      | 29589             | 1.19           | 3.63       |

**NIST RM8671**



Column: BioCore SEC-300, 3 µm  
 Dimension: 4.6×300 mm  
 Mobile Phase: 90/10 v/v 300 mM NaCl in 50 mM phosphate buffer, pH6.8/MeCN  
 Flow Rate: 0.21 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: UV 280 nm  
 Sample: NISTmAb (1.0 mg/mL)

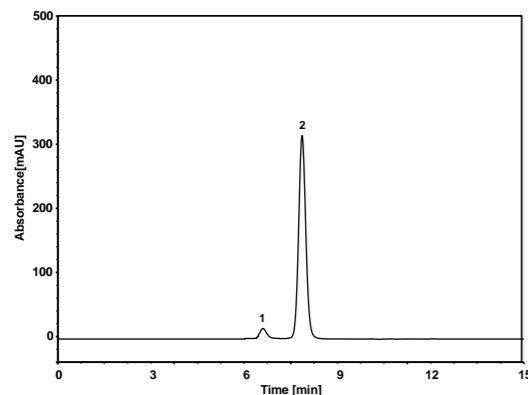
**Monoclonal Antibody**



Columns:  
 Blue: BioCore SEC-300, 3 µm  
 Black: BioCore SEC-300, 5 µm  
 Dimension: 4.6×300 mm  
 Mobile Phase: 300 mM NaCl in 50 mM phosphate buffer, pH6.8  
 Flow Rate: 0.21 mL/min  
 Temperature: 30 °C  
 Injection: 2 µL  
 Detection: UV 280 nm  
 Sample: mAb (10.3 mg/mL)

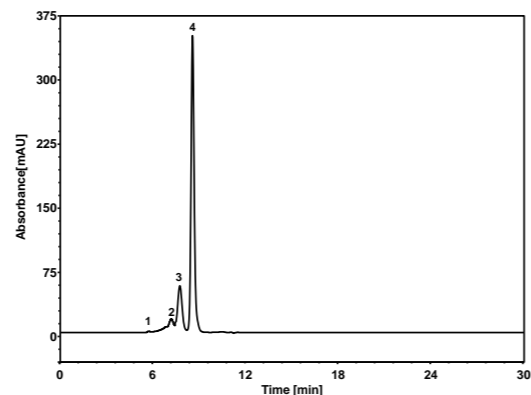
>> BioCore SEC-300

**IgG1 and Aggregate**



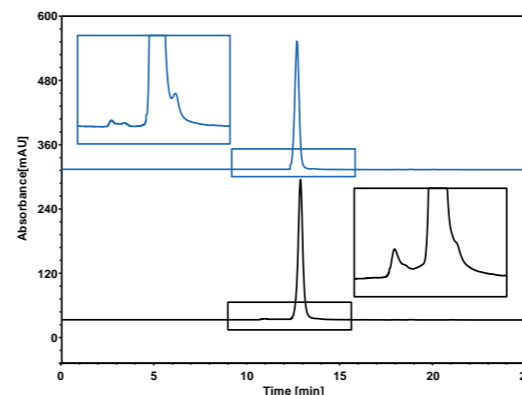
Column: BioCore SEC-300, 5 µm  
 Dimension: 4.6×300 mm  
 Mobile Phase: 150 mM phosphate buffer, pH6.8  
 Flow Rate: 0.35 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: UV 280 nm  
 Sample: IgG1 (2.6 mg/mL in H<sub>2</sub>O)  
 Peaks: 1. IgG1 Aggregate  
 2. IgG1

**Human Serum Albumin**



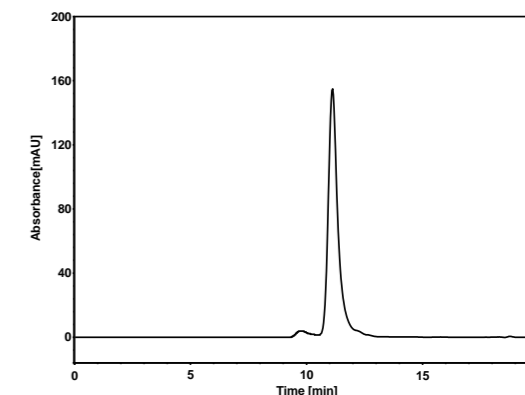
Column: BioCore SEC-300, 5 µm  
 Dimension: 7.8×300 mm  
 Mobile Phase: 100 mM phosphate buffer, pH7.0  
 Flow Rate: 0.7 mL/min  
 Temperature: 25 °C  
 Injection: 10 µL  
 Detection: UV 280 nm  
 Peaks: 1-3. Aggregates  
 4. Human Serum Albumin

**Antibody-Drug Conjugate (ADC)**



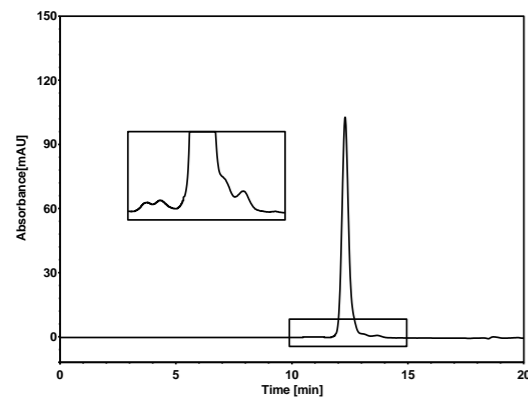
Column: BioCore SEC-300, 3 µm  
 Dimension: 4.6×300 mm  
 Mobile Phase:  
 Blue: 90/10 v/v 300 mM NaCl in 50 mM phosphate buffer, pH6.8/MeCN  
 Black: 300 mM NaCl in 50 mM phosphate buffer, pH6.8  
 Flow Rate: 0.21 mL/min  
 Temperature: 30 °C  
 Injection: 2 µL  
 Detection: UV 280 nm  
 Sample: ADC (10.0 mg/mL)

**Recombinant Protein**



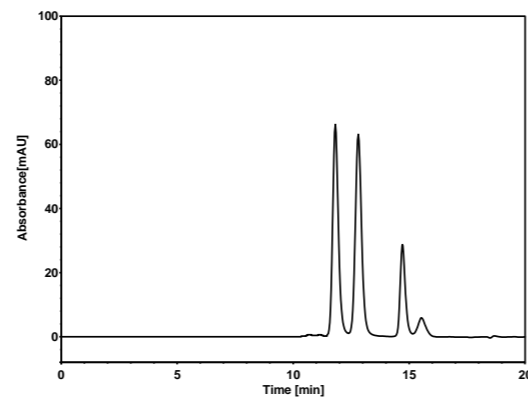
Column: BioCore SEC-300, 3 µm  
 Dimension: 4.6×300 mm  
 Mobile Phase: 90/10 v/v 300 mM NaCl in 50 mM phosphate buffer, pH6.8/MeCN  
 Flow Rate: 0.21 mL/min  
 Temperature: 30 °C  
 Injection: 2 µL  
 Detection: UV 280 nm  
 Sample: Recombinant Protein

**Bispecific Antibody**



Column: BioCore SEC-300, 3 μm  
 Dimension: 4.6 × 300 mm  
 Mobile Phase: 90/10 v/v 300 mM NaCl in 50 mM phosphate buffer, pH6.8/MeCN  
 Flow Rate: 0.21 mL/min  
 Temperature: 30 °C  
 Injection: 2 μL  
 Detection: UV 280 nm  
 Sample: Bispecific Antibody (4 mg/mL)

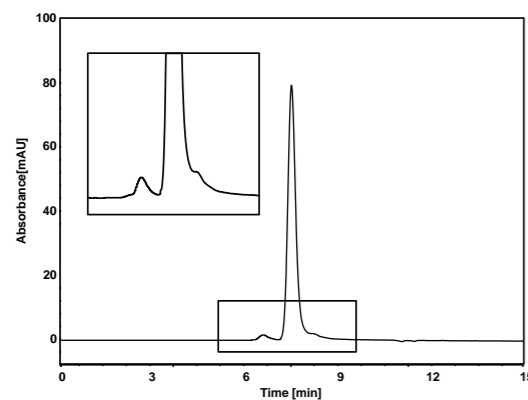
**Trispecific Antibody**



Column: BioCore SEC-300, 3 μm  
 Dimension: 4.6 × 300 mm  
 Mobile Phase: 90/10 v/v 300 mM NaCl in 50 mM phosphate buffer, pH6.8/MeCN  
 Flow Rate: 0.21 mL/min  
 Temperature: 30 °C  
 Injection: 2 μL  
 Detection: UV 280 nm  
 Sample: Trispecific Antibody (5 mg/mL)

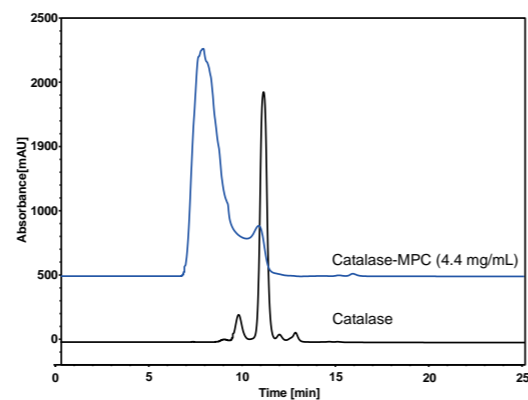
**>> BioCore SEC-500**

**Fusion Protein**



Column: BioCore SEC-500, 5 μm  
 Dimension: 4.6 × 300 mm  
 Mobile Phase: 150 mM phosphate buffer, pH6.8  
 Flow Rate: 0.35 mL/min  
 Temperature: 30 °C  
 Injection: 5 μL  
 Detection: UV 280 nm  
 Sample: Fusion Protein (1 mg/mL in H<sub>2</sub>O)

**Catalase and Catalase-MPC Nanocapsules**



Column: BioCore SEC-500, 5 μm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 150 mM phosphate buffer, pH7.4  
 Flow Rate: 0.8 mL/min  
 Temperature: 25 °C  
 Injection: 10 μL  
 Detection: UV 214 nm  
 Samples: Catalase (M.W. = 300KD)  
 Catalase-MPC (M.W. = 400-600KD)

**Ordering Information**

| Product Name    | Particle Size (μm) | Length (mm) | ID (mm)            |                    |
|-----------------|--------------------|-------------|--------------------|--------------------|
|                 |                    |             | 7.8                | 4.6                |
| BioCore SEC-120 | 5                  | 300         | B213-050012-07830S | B213-050012-04630S |
|                 |                    | 150         | B213-050012-07815S | B213-050012-04615S |
|                 |                    | 50          | /                  | B213-050012-04605S |
|                 | 3                  | 300         | B213-030012-07830S | B213-030012-04630S |
|                 |                    | 150         | B213-030012-07815S | B213-030012-04615S |
|                 |                    | 50          | /                  | B213-030012-04605S |
| BioCore SEC-150 | 5                  | 300         | B213-050015-07830S | B213-050015-04630S |
|                 |                    | 150         | B213-050015-07815S | B213-050015-04615S |
|                 |                    | 50          | /                  | B213-050015-04605S |
|                 | 3                  | 300         | B213-030015-07830S | B213-030015-04630S |
|                 |                    | 150         | B213-030015-07815S | B213-030015-04615S |
|                 |                    | 50          | /                  | B213-030015-04605S |
| BioCore SEC-300 | 5                  | 300         | B213-050030-07830S | B213-050030-04630S |
|                 |                    | 150         | B213-050030-07815S | B213-050030-04615S |
|                 |                    | 50          | /                  | B213-050030-04605S |
|                 | 3                  | 300         | B213-030030-07830S | B213-030030-04630S |
|                 |                    | 150         | B213-030030-07815S | B213-030030-04615S |
|                 |                    | 50          | /                  | B213-030030-04605S |
| BioCore SEC-500 | 5                  | 300         | B213-050050-07830S | B213-050050-04630S |
|                 |                    | 150         | B213-050050-07815S | B213-050050-04615S |
|                 |                    | 50          | /                  | B213-050050-04605S |
|                 | 3                  | 300         | B213-030050-07830S | B213-030050-04630S |
|                 |                    | 150         | B213-030050-07815S | B213-030050-04615S |
|                 |                    | 50          | /                  | B213-030050-04605S |

## BioCore™ WCX Columns

### Description

BioCore WCX is a family of high-performance, weak cation-exchange columns designed for separating charged variants in proteins, including monoclonal antibodies (mAbs) and related substances. Its column technology involves the creation of a hydrophilic carboxylic functional layer on the surface of monodispersed, nonporous, spherical PS/DVB particles, combined with a well-established column packing process.

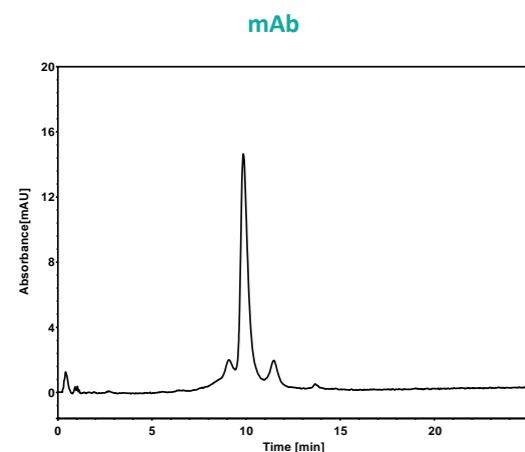
### Main Features

- Optimal selectivity for separating antibody charged variants
- Good peak shape and low carryover
- High column efficiency and mechanical strength
- Excellent tolerance to acids, bases and organic solvents
- Good column-to-column consistency

### Specifications

| Product Name      | BioCore WCX                               |
|-------------------|---|
| Functional Group  | Carboxylic Acid                           |
| Substrate         | Monodispersed, spherical PS/DVB particles |
| Particle Size     | 5 & 10 μm                                 |
| Pore Size         | Nonporous                                 |
| Pressure Limit    | 4500 psi for 10 μm, 5000 psi for 5 μm     |
| Temperature Limit | 60 °C                                     |
| pH Range          | 2-12                                      |

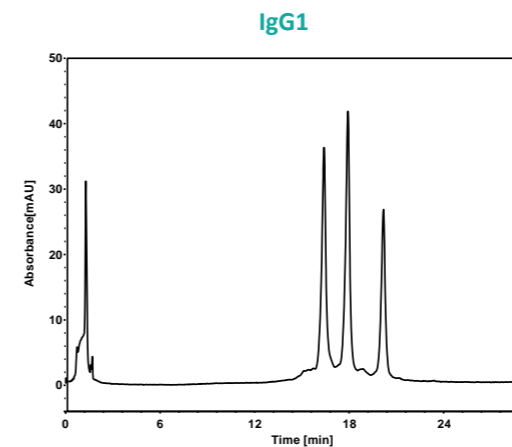
### Applications



Column: BioCore WCX, 10 μm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) 20 mM ACES, pH7.0  
 B) 300 mM NaCl in 20 mM ACES  
 Gradient:

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 80 | 20  |
| 0      | 80 | 20  |
| 5      | 80 | 20  |
| 25     | 60 | 40  |
| 25.1   | 0  | 100 |
| 30     | 0  | 100 |

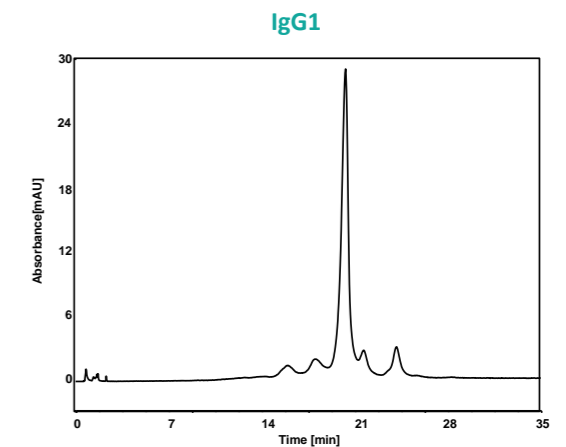
Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 2 μL  
 Detection: UV 280 nm  
 Sample: mAb (5.0 mg/mL in mobile phase A)



Column: BioCore WCX, 10 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: A) 20 mM MES, pH6.1  
 B) 200 mM NaCl in 20 mM MES, pH6.1  
 Gradient:

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 83 | 17  |
| 0      | 83 | 17  |
| 5      | 83 | 17  |
| 30     | 50 | 50  |
| 30.1   | 0  | 100 |
| 35     | 0  | 100 |

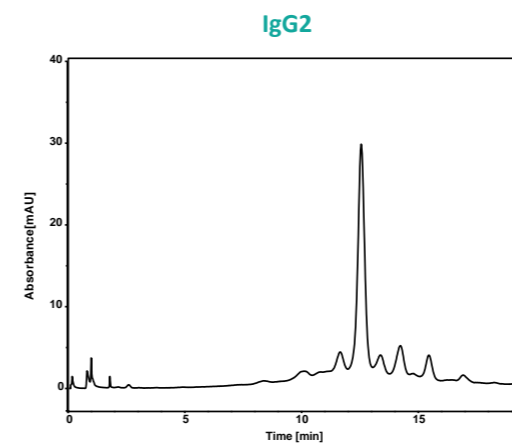
Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 20 μL  
 Detection: UV 280 nm  
 Sample: IgG1 (~2 mg/mL in H<sub>2</sub>O)



Column: BioCore WCX, 10 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: A) 20 mM MES, pH6.5  
 B) 150 mM NaCl in 20 mM MES, pH6.5  
 Gradient:

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 95 | 5   |
| 0      | 95 | 5   |
| 0.1    | 95 | 5   |
| 40     | 80 | 20  |
| 40.1   | 0  | 100 |
| 43     | 0  | 100 |

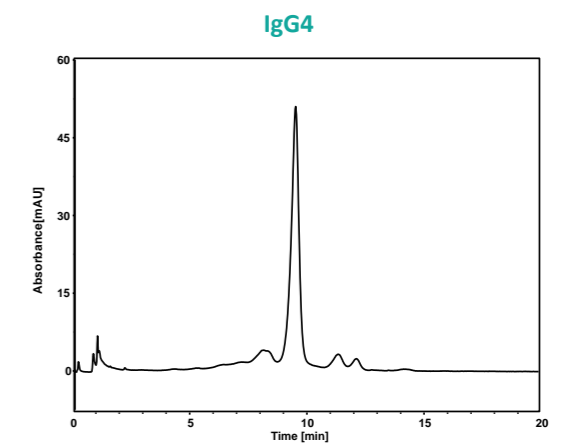
Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 280 nm  
 Sample: IgG1 (~2.5 mg/mL in mobile phase A)



Column: BioCore WCX, 10 μm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) 20 mM phosphate buffer, pH7.0  
 B) 300 mM NaCl in 20 mM phosphate buffer, pH7.0  
 Gradient:

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 95 | 5   |
| 0      | 95 | 5   |
| 0.1    | 95 | 5   |
| 20     | 80 | 20  |
| 20.1   | 0  | 100 |
| 23     | 0  | 100 |

Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 25 μL  
 Detection: UV 280 nm  
 Sample: IgG2 (1 mg/mL in H<sub>2</sub>O)

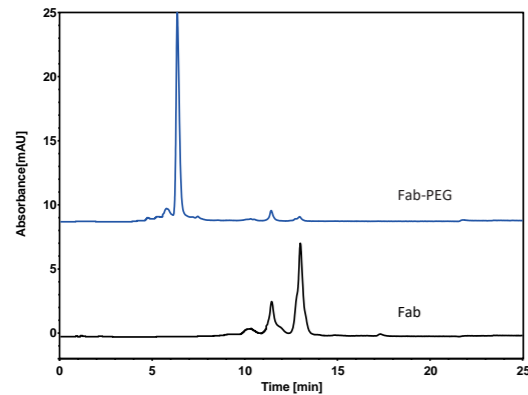


Column: BioCore WCX, 10 μm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) 20 mM phosphate buffer, pH6.5  
 B) 300 mM NaCl in 20 mM phosphate buffer, pH6.5  
 Gradient:

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 95 | 5   |
| 0      | 95 | 5   |
| 0.1    | 95 | 5   |
| 20     | 80 | 20  |
| 20.1   | 0  | 100 |
| 23     | 0  | 100 |

Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 25 μL  
 Detection: UV 280 nm  
 Sample: IgG4 (1.0 mg/mL in H<sub>2</sub>O)

Fab and Fab-PEG

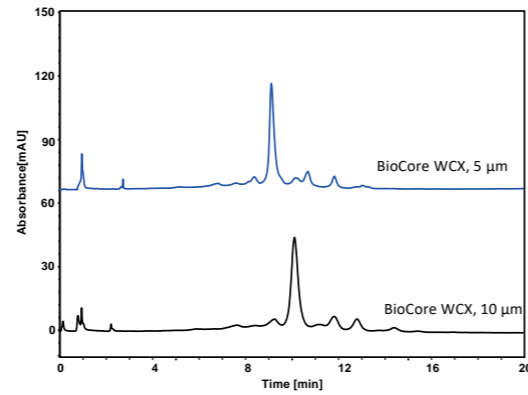


Column: BioCore WCX, 10  $\mu$ m  
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: A) 20 mM MES, pH5.5  
 B) 300 mM NaCl in 20 mM MES, pH5.5  
 Gradient: 

| t(min) | %A  | %B  |
|--------|-----|-----|
| -10    | 100 | 0   |
| 0      | 100 | 0   |
| 20     | 60  | 40  |
| 20.1   | 0   | 100 |
| 25     | 0   | 100 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 30  $^{\circ}$ C  
 Injection: 2  $\mu$ L  
 Detection: UV 280 nm  
 Sample: Fab-PEG (3 mg/mL in 50mM sodium acetate solution)  
 Fab (5 mg/mL in 50mM phosphate buffer)

IgG2 Charge Variants

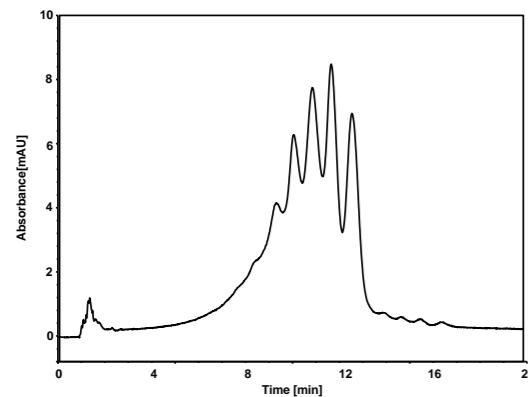


Columns: BioCore WCX, 5  $\mu$ m  
 BioCore WCX, 10  $\mu$ m  
 Bule: BioCore WCX, 5  $\mu$ m  
 Black: BioCore WCX, 10  $\mu$ m  
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: A) 20 mM phosphate buffer, pH6.5  
 B) 300 mM NaCl in 20 mM phosphate buffer, pH6.5  
 Gradient: 

| t (min) | %A | %B  |
|---------|----|-----|
| -15     | 85 | 15  |
| 0       | 85 | 15  |
| 0.1     | 85 | 15  |
| 20      | 70 | 30  |
| 20.1    | 0  | 100 |
| 23      | 0  | 100 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 30  $^{\circ}$ C  
 Injection: 25  $\mu$ L  
 Detection: UV 280 nm  
 Sample: IgG2 (~1 mg/mL in mobile phase A)

Bispecific Antibody



Column: BioCore WCX, 5  $\mu$ m  
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: A) 20 mM phosphate buffer, pH6.5  
 B) 300 mM NaCl in 20 mM phosphate buffer, pH6.5  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 90 | 10  |
| 0      | 90 | 10  |
| 0.1    | 90 | 10  |
| 20     | 75 | 25  |
| 20.1   | 0  | 100 |
| 23     | 0  | 100 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 30  $^{\circ}$ C  
 Injection: 5  $\mu$ L  
 Detection: UV 280 nm  
 Sample: Bispecific Antibody (~5.0 mg/mL in mobile phase A)

Ordering Information

| Product Name | Particle Size ( $\mu$ m) | Length (mm) | ID (mm)            |
|--------------|--------------------------|-------------|--------------------|
|              |                          |             | 4.6                |
| BioCore WCX  | 10                       | 250         | B311-100000-04625P |
|              |                          | 150         | B311-100000-04615P |
|              |                          | 100         | B311-100000-04610P |
|              | 5                        | 250         | B311-050000-04625P |
|              |                          | 150         | B311-050000-04615P |
|              |                          | 100         | B311-050000-04610P |
|              |                          | 50          | B311-050000-04605P |

BioCore™ SCX Columns

BioCore SCX is a family of high-performance, strong cation-exchange columns designed for separating charged variants in proteins, including monoclonal antibodies (mAbs) and related biomolecules. Its column technology involves the creation of a hydrophilic sulfonic functional layer on the surface of monodispersed, nonporous, spherical PS/DVB particles, combined with a well-established column packing process.

Main Features

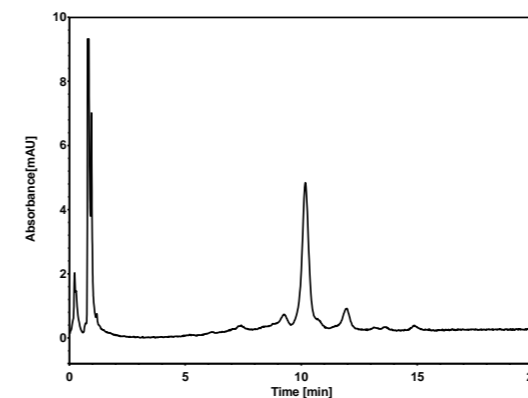
- Optimal selectivity for separating antibody charged variants
- Good peak shape and low carryover
- High column efficiency and mechanical strength
- Excellent tolerance to acids, bases and organic solvents
- Good column-to-column consistency

Specifications

| Product Name      | BioCore SCX                                     |
|-------------------|---|
| Functional Group  | Sulfonic Acid                                   |
| Substrate         | Monodispersed, spherical PS/DVB particles       |
| Particle Size     | 5 & 10 $\mu$ m                                  |
| Pore Size         | Nonporous                                       |
| Pressure Limit    | 4500 psi for 10 $\mu$ m, 5000 psi for 5 $\mu$ m |
| Temperature Limit | 60 $^{\circ}$ C                                 |
| pH Range          | 2-12  |

Applications

IgG2

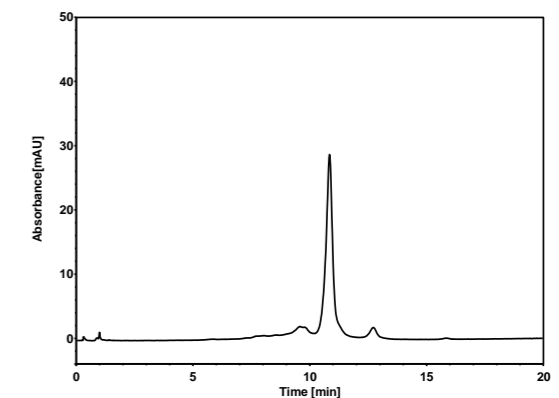


Column: BioCore SCX, 10  $\mu$ m  
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: A) 20 mM MES, pH6.5  
 B) 300mM NaCl in 20 mM MES, pH6.5  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 82 | 18  |
| 0      | 82 | 18  |
| 20     | 70 | 30  |
| 20.1   | 0  | 100 |
| 23     | 0  | 100 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 30  $^{\circ}$ C  
 Injection: 10  $\mu$ L  
 Detection: UV 280 nm  
 Sample: IgG2 (1 mg/mL in H<sub>2</sub>O)

IgG4

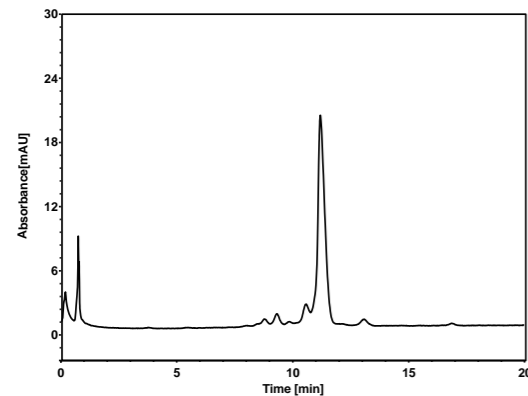


Column: BioCore SCX, 10  $\mu$ m  
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: A) 20 mM MES, pH6.5  
 B) 300mM NaCl in 20 mM MES, pH6.5  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 93 | 7   |
| 0      | 93 | 7   |
| 20     | 79 | 21  |
| 20.1   | 0  | 100 |
| 23     | 0  | 100 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 30  $^{\circ}$ C  
 Injection: 10  $\mu$ L  
 Detection: UV 280 nm  
 Sample: IgG4 (1 mg/mL in H<sub>2</sub>O)

Fusion Protein

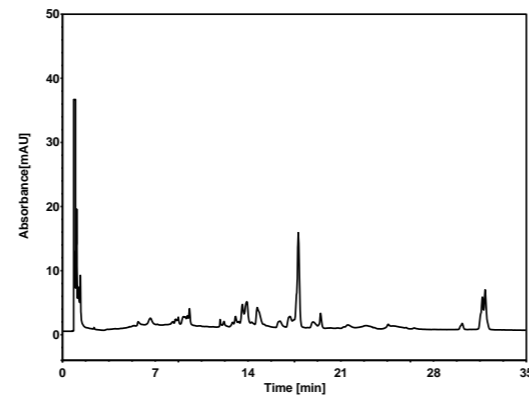


Column: BioCore SCX, 10 μm  
 Dimension: 4.6×150 mm  
 Mobile Phase: A) 20 mM MES, pH6.0  
 B) 300mM NaCl in 20 mM MES, pH6.0  
 Gradient:  

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 72 | 28  |
| 0      | 72 | 28  |
| 25     | 45 | 55  |
| 25.1   | 0  | 100 |
| 28     | 0  | 100 |

 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 280 nm  
 Sample: Fusion Protein (2.5 mg/mL in mobile phase A)

Snake Venom

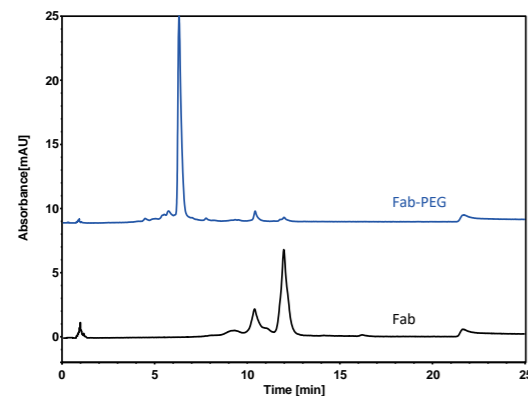


Column: BioCore SCX, 5 μm  
 Dimension: 4.6×150 mm  
 Mobile Phase: A) 20 mM Tris-HCl, pH6.0  
 B) 300 mM NaCl in 20 mM Tris-HCl, pH6.0  
 Gradient:  

| t(min) | %A  | %B  |
|--------|-----|-----|
| -15    | 100 | 0   |
| 0      | 100 | 0   |
| 30     | 0   | 100 |
| 35     | 0   | 100 |

 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 280 nm  
 Sample: Snake Venom (5 mg/mL in mobile phase A)

Fab and Fab-PEG



Column: BioCore SCX, 10 μm  
 Dimension: 4.6×150 mm  
 Mobile Phase: A) 20 mM MES, pH5.5  
 B) 300mM NaCl in 20 mM MES, pH5.5  
 Gradient:  

| t(min) | %A  | %B  |
|--------|-----|-----|
| -10    | 100 | 0   |
| 0      | 100 | 0   |
| 20     | 60  | 40  |
| 20.1   | 0   | 100 |
| 25     | 0   | 100 |

 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 2 μL  
 Detection: UV 280 nm  
 Sample: Fab-PEG (3 mg/mL in 50mM sodium acetate solution)  
 Fab (5 mg/mL in 50mM phosphate buffer)

Ordering Information

| Product Name | Particle Size (μm) | Length (mm) | ID (mm)            |
|--------------|--------------------|-------------|--------------------|
|              |                    |             | 4.6                |
| BioCore SCX  | 10                 | 250         | B411-100000-04625P |
|              |                    | 150         | B411-100000-04615P |
|              |                    | 100         | B411-100000-04610P |
|              |                    | 50          | B411-100000-04605P |
|              | 5                  | 250         | B411-050000-04625P |
|              |                    | 150         | B411-050000-04615P |
|              |                    | 100         | B411-050000-04610P |
|              |                    | 50          | B411-050000-04605P |

BioCore™ SAX Columns

Description

BioCore SAX is a family of high-performance, strong anion-exchange columns designed for separating charged variants in proteins with an isoelectric point below 10. Its column technology involves the creation of a hydrophilic quaternary amino functional layer on the surface of monodispersed, nonporous, spherical PS/DVB particles, combined with a well-established column packing process.

Main Features

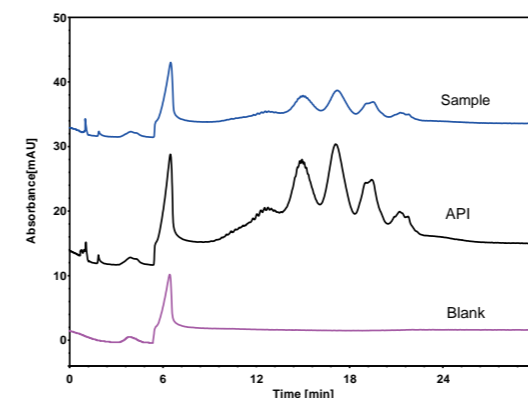
- Optimal selectivity for separating negatively charged variants in proteins
- Good peak shape and low carryover
- High column efficiency and mechanical strength
- Excellent tolerance to acids, bases and organic solvents
- Good column-to-column consistency

Specifications

| Product Name      | BioCore SAX                               |
|-------------------|---|
| Functional Group  | Quaternary Ammonium                       |
| Substrate         | Monodispersed, spherical PS/DVB particles |
| Particle Size     | 5 & 10 μm                                 |
| Pore Size         | Nonporous                                 |
| Pressure Limit    | 4500 psi for 10 μm, 5000 psi for 5 μm     |
| Temperature Limit | 60 °C                                     |
| pH Range          | 2-12                                      |

Applications

Glycoprotein

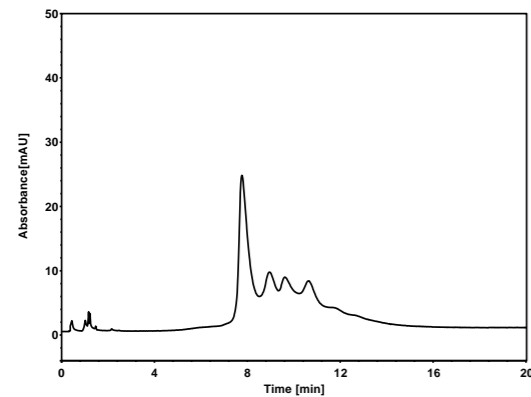


Column: BioCore SAX, 10 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: A) 20 mM phosphate buffer, pH3.0  
 B) 300 mM NaCl in 20 mM phosphate buffer, pH3.0  
 Gradient:  

| t(min) | %A  | %B  |
|--------|-----|-----|
| -15    | 100 | 0   |
| 0      | 100 | 0   |
| 20     | 0   | 100 |
| 23     | 0   | 100 |

 Flow Rate: 1.0 mL/min  
 Injection: 5 μL  
 Temperature: 30 °C  
 Detection: UV 280 nm  
 Sample: API (40 mg/mL in mobile phase A)  
 Injection sample (10 mg/mL)

Recombinant Fusion Protein

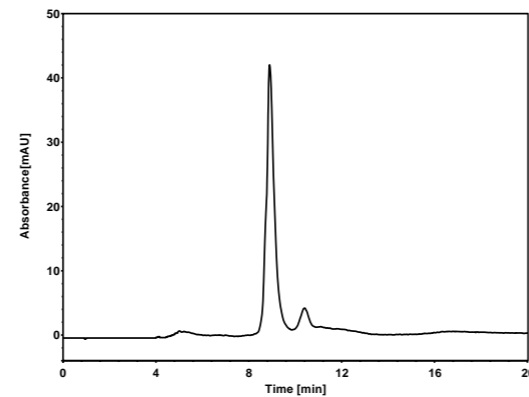


Column: BioCore SAX, 10 µm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) 20 mM MES, pH6.5  
 B) 300 mM NaCl in 20 mM MES, pH6.5  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| -15    | 70 | 30  |
| 0      | 70 | 30  |
| 20     | 40 | 60  |
| 20.1   | 0  | 100 |
| 23     | 0  | 100 |

  
 Flow Rate: 0.8 mL/min  
 Injection: 10 µL  
 Temperature: 20 °C  
 Detection: UV 280 nm  
 Sample: Recombinant Fusion Protein (1 mg/mL in H<sub>2</sub>O)

BSA

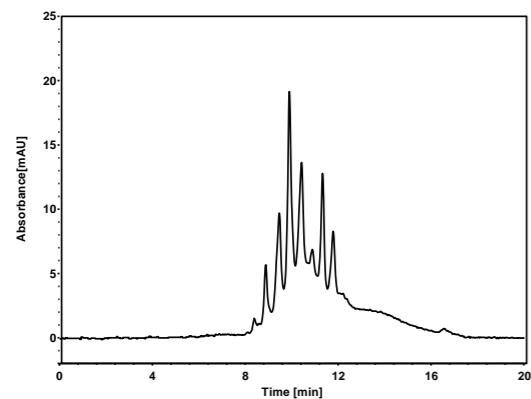


Column: BioCore SAX, 10 µm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) 20 mM Tris, pH8.5  
 B) 500 mM NaCl in 20 mM Tris, pH8.5  
 Gradient: 

| t(min) | %A  | %B  |
|--------|-----|-----|
| -15    | 100 | 0   |
| 0      | 100 | 0   |
| 15     | 0   | 100 |
| 15.1   | 0   | 100 |
| 20     | 0   | 100 |

  
 Flow Rate: 1.0 mL/min  
 Injection: 10 µL  
 Temperature: 30 °C  
 Detection: UV 280 nm  
 Sample: BSA (5 mg/mL in H<sub>2</sub>O)

Ovalbumin



Column: BioCore SAX, 10 µm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) 20 mM Tris, pH8.5  
 B) 500 mM NaCl in 20 mM Tris, pH8.5  
 Gradient: 

| t(min) | %A  | %B  |
|--------|-----|-----|
| -15    | 100 | 0   |
| 0      | 100 | 0   |
| 15     | 50  | 50  |
| 15.1   | 0   | 100 |
| 20     | 0   | 100 |

  
 Flow Rate: 1.0 mL/min  
 Injection: 10 µL  
 Temperature: 30 °C  
 Detection: UV 280 nm  
 Sample: Ovalbumin (5 mg/mL in H<sub>2</sub>O)

Ordering Information

| Product Name | Particle Size (µm) | Length (mm) | ID (mm)            |
|--------------|--------------------|-------------|--------------------|
|              |                    |             | 4.6                |
| BioCore SAX  | 10                 | 250         | B611-100000-04625P |
|              |                    | 150         | B611-100000-04615P |
|              |                    | 100         | B611-100000-04610P |
|              |                    | 50          | B611-100000-04605P |
|              | 5                  | 250         | B611-050000-04625P |
|              |                    | 150         | B611-050000-04615P |
|              |                    | 100         | B611-050000-04610P |
|              |                    | 50          | B611-050000-04605P |

BioCore™ HIC-Butyl Columns

Hydrophobic Interaction Chromatography (HIC) is suitable for proteins analysis based on the difference in hydrophobicity of the large molecules. In HIC, under high salt concentration, the proteins bind to the solid phase and selectively elute out from the column with decreasing salt concentration. And the elution time of proteins increase as the hydrophobicity increases.

Description

BioCore HIC-Butyl is a family of high-performance, hydrophobic interaction chromatography columns that separate monoclonal antibodies (mAbs) and Antibody-Drug Conjugates (ADCs) based on their differences in surface hydrophobicity. This column technology involves the creation of a hydrophilic layer decorated with selective hydrophobic functionality, on the surface of monodispersed, wide-pore, spherical, silica particles, combined with well-established column packing processes.

Main Features

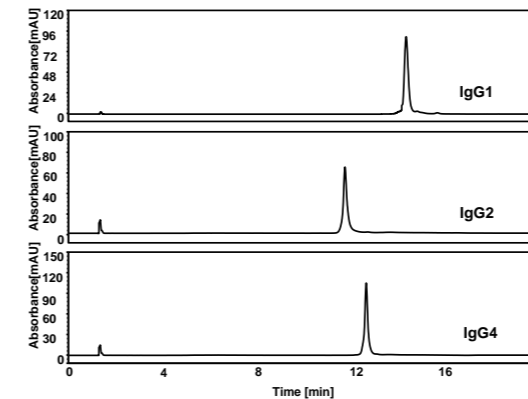
- Optimal selectivity for the DAR analysis in ADCs
- Minimal undesired interactions for low carryover
- High column efficiency
- Excellent mechanical strength for column robustness
- Good column-to-column consistency

Specifications

| Product Name      | BioCore HIC-Butyl                         |
|-------------------|---|
| Functional Group  | Butyl                                     |
| Substrate         | Monodispersed, spherical silica particles |
| Particle Size     | 5 µm                                      |
| Pore Size         | 1000 Å                                    |
| Pressure Limit    | 6000 psi                                  |
| Temperature Limit | 60 °C                                     |
| pH Range          | 2-8                                       |

Applications

IgG1, IgG2 and IgG4

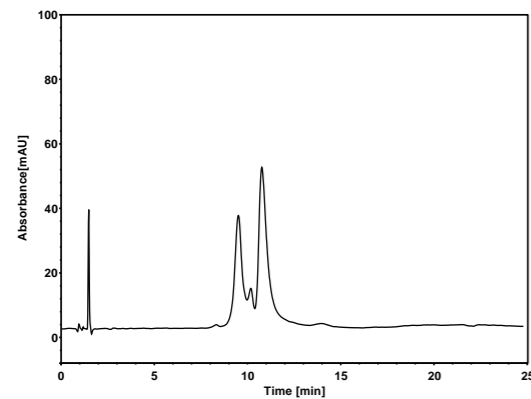


Column: BioCore HIC-Butyl, 5 µm  
 Dimension: 4.6 × 100 mm  
 Mobile Phase: A) 2.0 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> in 100 mM phosphate buffer, pH7.0  
 B) 100 mM phosphate buffer, pH7.0  
 Gradient: 

| t(min) | %A  | %B  |
|--------|-----|-----|
| -10    | 100 | 0   |
| 0      | 100 | 0   |
| 1      | 100 | 0   |
| 15     | 0   | 100 |
| 20     | 0   | 100 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 µL  
 Detection: UV 280 nm  
 Sample: IgG1, IgG2 and IgG4 (~1 mg/mL each in mobile phase A)

**Bispecific Antibody**

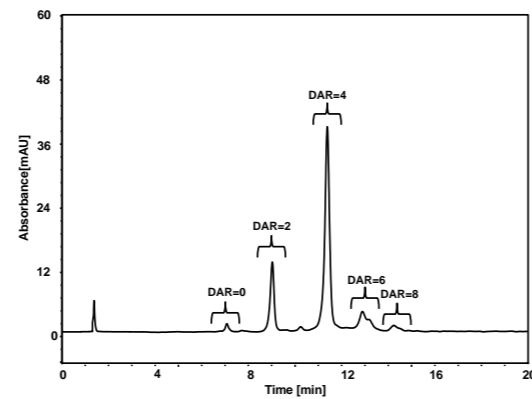


Column: BioCore HIC-Butyl, 5 μm  
 Dimension: 4.6 × 100 mm  
 Mobile Phase: A) 2.0 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> in 100 mM phosphate buffer, pH7.0  
 B) 100 mM phosphate buffer, pH7.0  
 Gradient: C) Isopropanol

| t (min) | %A | %B | %C |
|---------|----|----|----|
| 0       | 60 | 40 | 0  |
| 20      | 0  | 80 | 20 |
| 25      | 0  | 80 | 20 |

Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 214 nm  
 Sample: Bispecific Antibody

**Cysteine Conjugated ADC**



Column: BioCore HIC-Butyl, 5 μm  
 Dimension: 4.6 × 100 mm  
 Mobile Phase: A) 2.0 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> in 100 mM phosphate buffer, pH7.0  
 B) 100 mM phosphate buffer, pH7.0  
 Gradient: C) Isopropanol

| t (min) | %A | %B | %C |
|---------|----|----|----|
| -10     | 75 | 25 | 0  |
| 0       | 75 | 25 | 0  |
| 1       | 75 | 25 | 0  |
| 15      | 0  | 75 | 25 |
| 20      | 0  | 75 | 25 |

Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 280 nm  
 Sample: Cysteine conjugated ADC (~1 mg/mL in mobile phase A)

**Ordering Information**

| Product Name      | Particle Size (μm) | Length (mm) | ID (mm)            |
|-------------------|--------------------|-------------|--------------------|
|                   |                    |             | 4.6                |
| BioCore HIC-Butyl | 5                  | 250         | B713-050100-04625S |
|                   |                    | 100         | B713-050100-04610S |
|                   |                    | 50          | B713-050100-04605S |

**BioCore™ RP-Butyl Columns**

BioCore RP-Butyl is a family of high-performance, reversed-phase columns that separate intact proteins and protein fragments, including monoclonal antibodies (mAbs) and related substances. This column technology involves attaching butyl functionality onto the surface of monodispersed, nonporous, spherical, PS/DVB particles, combined with well-established column packing processes.

**Main Features**

- High column efficiency and low carryover
- Good MS compatibility
- Excellent mechanical strength
- Good column-to-column consistency

**Specifications**

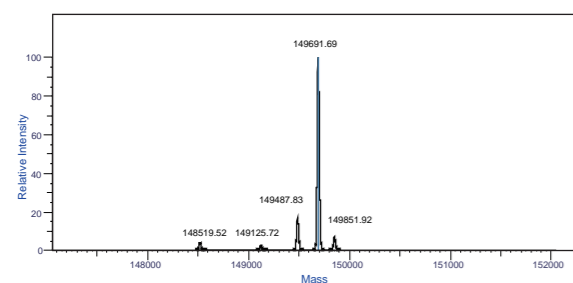
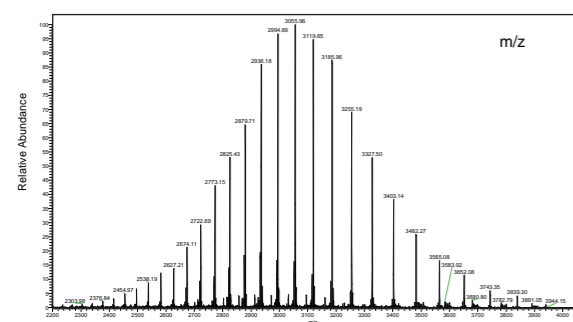
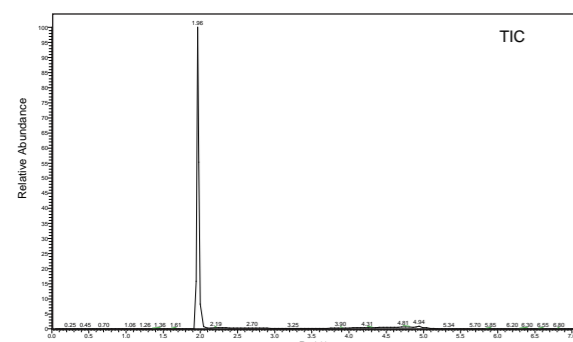
| Product Name      | BioCore RP-Butyl                          |
|-------------------|---|
| Functional Group  | Butyl                                     |
| Substrate         | Monodispersed, spherical PS/DVB particles |
| Particle Size     | 5 μm                                      |
| Pore Size         | Nonporous                                 |
| Pressure Limit    | 4500 psi                                  |
| Temperature Limit | 100 °C                                    |
| pH Range          | 2-12                                      |

**Ordering Information**

| Product Name     | Particle Size (μm) | Length (mm) | ID (mm)            | ID (mm)            | ID (mm)            |
|------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                  |                    |             | 4.6                | 3.0                | 2.1                |
| BioCore RP-Butyl | 5                  | 150         | B821-050000-04615S | B821-050000-03015S | B821-050000-02115S |
|                  |                    | 100         | B821-050000-04610S | B821-050000-03010S | B821-050000-02110S |
|                  |                    | 50          | B821-050000-04605S | B821-050000-03005S | B821-050000-02105S |

### Applications

#### Monoclonal Antibody

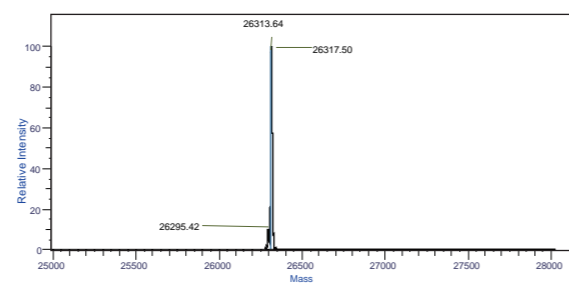
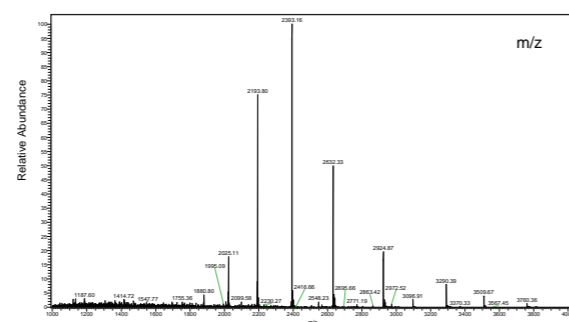
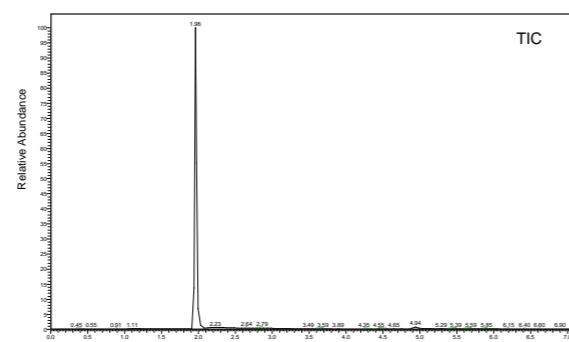


Column: BioCore RP-Butyl, 5 µm  
 Dimension: 3.0 × 50 mm  
 Mobile Phase: A) 0.1% formic acid in H<sub>2</sub>O  
 B) 0.1% formic acid in MeCN  
 Gradient:
 

| t(min) | %A | %B |
|--------|----|----|
| 0      | 95 | 5  |
| 1      | 95 | 5  |
| 1.1    | 95 | 5  |
| 1.2    | 5  | 95 |
| 4      | 5  | 95 |
| 4.1    | 95 | 5  |
| 7      | 95 | 5  |

 Flow Rate: 0.6 mL/min  
 Temperature: 60 °C  
 Injection: ~1 µg  
 Detection: QE  
 Sample: Monoclonal Antibody

#### Recombinant Protein



Column: BioCore RP-Butyl, 5 µm  
 Dimension: 3.0 × 50 mm  
 Mobile Phase: A) 0.1% formic acid in H<sub>2</sub>O  
 B) 0.1% formic acid in MeCN  
 Gradient:
 

| t(min) | %A | %B |
|--------|----|----|
| 0      | 95 | 5  |
| 1      | 95 | 5  |
| 1.1    | 95 | 5  |
| 1.2    | 5  | 95 |
| 4      | 5  | 95 |
| 4.1    | 95 | 5  |
| 7      | 95 | 5  |

 Flow Rate: 0.6 mL/min  
 Temperature: 60 °C  
 Injection: ~1 µg  
 Detection: QE  
 Sample: Recombinant Protein

### BioCore™ Glycan Columns

BioCore Glycan is a family of high-performance HILIC columns designed for profiling N-glycans present in proteins and related substances. This column technology involves the creation of a proprietary hydrophilic layer on the surface of monodispersed, spherical, porous silica particles, combined with well-established column packing processes.

#### Main Features

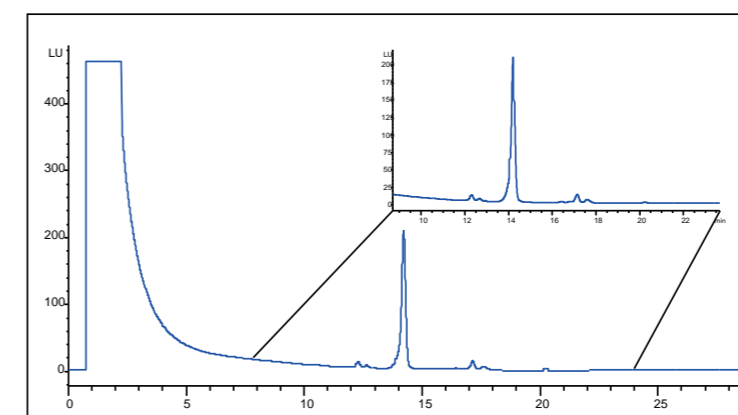
- Desired selectivity for separating fluorescently labeled N-glycans in proteins
- High column efficiency and stability
- MS compatibility
- Good column-to-column consistency

#### Specifications

| Product Name      | BioCore Glycan                            |
|-------------------|---|
| Functional Group  | Amide                                     |
| Substrate         | Monodispersed, spherical silica particles |
| Particle Size     | 3 µm                                      |
| Pore Size         | 180 Å                                     |
| Pressure Limit    | 6000 psi                                  |
| Temperature Limit | 80 °C                                     |
| pH Range          | 2-9                                       |

### Applications

#### N-Glycans of Avastin



Column: BioCore Glycan, 3 µm  
 Dimension: 3.0 × 100 mm  
 Mobile Phase: A) 50 mM ammonium acetate solution, pH4.4  
 B) MeCN  
 Gradient:
 

| t(min) | %A | %B |
|--------|----|----|
| 0      | 25 | 75 |
| 2      | 25 | 75 |
| 37     | 46 | 54 |
| 37.1   | 25 | 75 |
| 40     | 25 | 75 |

 Flow Rate: 0.4 mL/min  
 Temperature: 65 °C  
 Injection: 30 µL  
 Detection: Ex/Em= 250 nm/428 nm  
 Sample: 2-AB labelled N-Glycans

#### Ordering Information

| Product Name   | Particle Size (µm) | Length (mm) | ID (mm)            |                    |                    |
|----------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                |                    |             | 4.6                | 3.0                | 2.1                |
| BioCore Glycan | 3                  | 150         | B913-030018-04615S | B913-030018-03015S | B913-030018-02115S |
|                |                    | 100         | B913-030018-04610S | B913-030018-03010S | B913-030018-02110S |
|                |                    | 50          | B913-030018-04605S | B913-030018-03005S | B913-030018-02105S |



### BioCore™ Protein A Columns

BioCore Protein A is a family of high-performance-affinity chromatography columns, designed for fast titer analysis of monoclonal antibodies (mAb) and Fc fusion proteins. BioCore Protein A is based on monodispersed, wide-pore, spherical PS/DVB particles, on which alkaline-resistant recombinant protein A ligands are bonded, combined with well-established column packing processes.

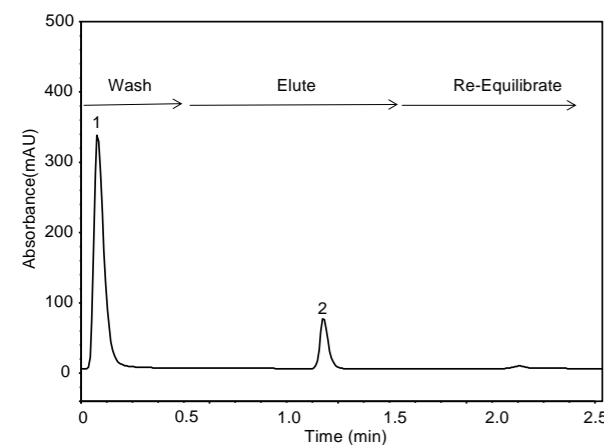
#### Main Features

- High specificity for efficient capture of a broad selection of antibodies and antibody fragments
- High dynamic binding capacity for a wide linear range
- High mechanical strength for faster analysis and better column lifetime
- Low ligand leakage for higher purity and better column lifetime

#### Specifications

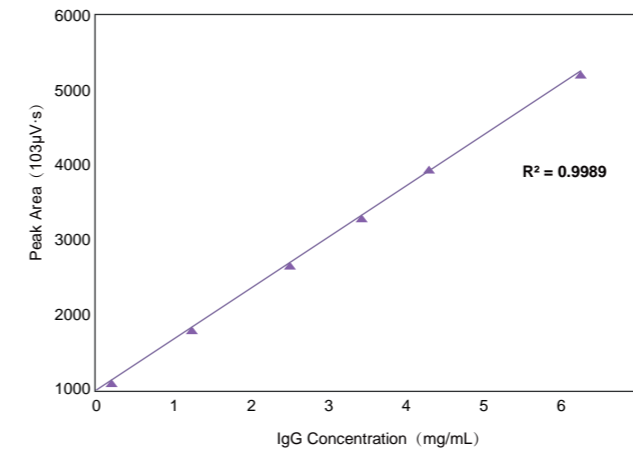
| Product Name             | BioCore Protein A                                 |
|--------------------------|---|
| Functional Group         | pH stable rProtein A                              |
| Substrate                | Monodispersed, porous, spherical PS/DVB particles |
| Particle Size            | 15 μm   |
| Pore Size                | 1000 Å  |
| Pressure Limit           | 1450 psi  |
| Temperature Limit        | 2-40 °C   |
| pH Range                 | 2-12  |
| Dynamic Binding Capacity | ≥20 mg/mL (IgG)                                   |
| Linear Range (≥0.99)     | 0-200 μg (2.1X30 mm)                              |
| Storage                  | 20% Ethanol (2-8 °C)                              |

#### Titer Analysis in HCC



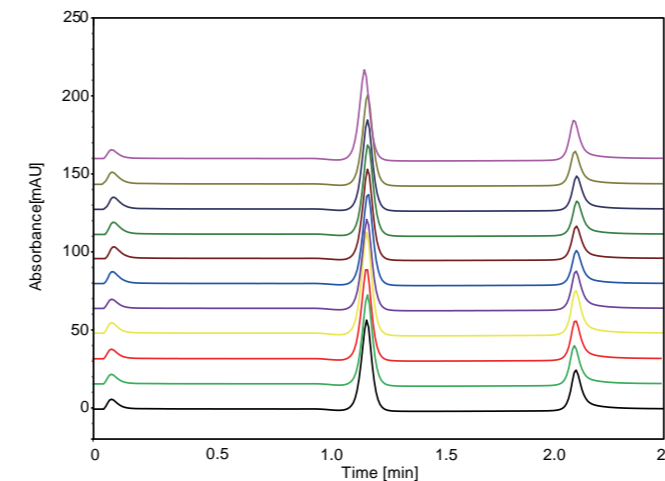
Column: BioCore Protein A, 15 μm  
 Dimension: 2.1x30 mm  
 Mobile Phase: A) 150 mM NaCl in 50 mM phosphate buffer, pH7.0  
 B) 150 mM NaCl in 50 mM phosphate buffer, pH2.5  
 Gradient: t(min) %A %B  
 0 100 0  
 0.5 100 0  
 0.51 0 100  
 1.5 0 100  
 1.51 100 0  
 2.5 100 0  
 Flow Rate: 2.0 mL/min  
 Temperature: 30 °C  
 Injection: 20 μL  
 Detection: UV 280 nm  
 Sample: Cell culture solution (IgG ~ 2.4 mg/mL)

#### Calibration Curve



Column: BioCore Protein A, 15 μm  
 Dimension: 2.1x30 mm  
 Mobile Phase: A) 150 mM NaCl in 50 mM phosphate buffer, pH 7.0  
 B) 150 mM NaCl in 50 mM phosphate buffer, pH 2.5  
 Gradient: t (min) %A %B  
 0 100 0  
 0.5 100 0  
 0.51 0 100  
 1.5 0 100  
 1.51 100 0  
 2.5 100 0  
 Flow Rate: 2.0 mL/min  
 Temperature: 30 °C  
 Injection: 20 μL  
 Detection: UV 280 nm  
 Sample: IgG (0-6.25 mg/mL in H<sub>2</sub>O)

#### Ruggedness



Column: BioCore Protein A, 15 μm  
 Dimension: 2.1x30 mm  
 Mobile Phase: A) 150 mM NaCl in 50 mM phosphate buffer, pH 7.0  
 B) 150 mM NaCl in 50 mM phosphate buffer, pH 2.5  
 Gradient: t(min) %A %B  
 0 100 0  
 0.5 100 0  
 0.51 0 100  
 1.5 0 100  
 1.51 100 0  
 2.5 100 0  
 Flow Rate: 2.0 mL/min  
 Temperature: 30 °C  
 Injection: 20 μL  
 Detection: UV 280 nm  
 Sample: IgG (1.0 mg/mL in H<sub>2</sub>O)

#### Ordering Information

| Product Name      | Particle Size (μm) | Length (mm) | ID (mm)            |                    |
|-------------------|--------------------|-------------|--------------------|--------------------|
|                   |                    |             | 4.6                | 2.1                |
| BioCore Protein A | 15                 | 100         | B111-150100-04610S | B111-150100-02110S |
|                   |                    | 50          | B111-150100-04605S | B111-150100-02105S |
|                   |                    | 30          | B111-150100-04603S | B111-150100-02103S |

# LC Columns

HPLC · UHPLC



|   |    |
|---|----|
| ChromCore Reversed-Phase LC Columns       | 35 |
| ChromCore 300 Å Reversed-Phase LC Columns | 70 |
| ChromCore Normal Phase/HILIC LC Columns   | 73 |
| ChromCore Ion Exchange LC Columns         | 85 |
| ChromCore Application-Specific Columns    | 89 |
| ChromCore Sugar Columns                   | 91 |
| ChromCore UHPLC Columns                   | 93 |
| NanoChrom Ghost-Remover Columns           | 99 |

NANOCHROM

## ChromCore™ LC Columns

ChromCore columns, consisting of reversed-phase (RP), normal phase (NP)/hydrophilic interaction (HILIC), ion exchange (IEX) and application-specific columns, are designed for a broad range of applications in pharmaceutical, chemical, environmental, food & beverage, research, etc.

The high performance of ChromCore columns is the result of innovative particle technology, advanced column chemistry and well-developed manufacturing processes. ChromCore separation media are based on monodispersed particles with precisely controlled particle size and pore structure, as well as high mechanical strength, providing high efficiency and consistency. Advanced column chemistry results in excellent chromatography properties with desired selectivity, making ChromCore columns suited for a broad application range. ChromCore columns are produced using well-developed manufacturing processes under strict quality control, ensuring high quality and reproducibility.



## ChromCore LC Columns Specifications

| Product Name    | Particle Size (µm) | Pore Size (Å) | SSA (m <sup>2</sup> /g) | Carbon Load (%) | pH     | USP Listing |
|-----------------|--------------------|---------------|-------------------------|-----------------|--------|-------------|
| 120 C18         | 1.8, 3, 5          | 120           | 300                     | 17              | 2-10   | L1          |
| AQ C18          | 1.8, 3, 5          | 180           | 200                     | 13              | 2-10   | L1          |
| AR C18          | 3, 5               | 120           | 300                     | 12              | 1-8    | L1          |
| BR C18          | 3, 5               | 180           | 150                     | 12              | 1.5-11 | L1          |
| 120 C18-T       | 3, 5               | 120           | 300                     | 18              | 1.5-10 | L1          |
| Polar C18       | 3, 5               | 120           | 300                     | 18              | 2-10   | L60         |
| 120 C8          | 1.8, 3, 5          | 120           | 300                     | 10              | 2-10   | L7          |
| AQ C8           | 1.8, 3, 5          | 180           | 200                     | 7               | 2-10   | L7          |
| C30             | 3, 5               | 180           | 200                     | 11              | 2-10   | L62         |
| 300 C18         | 3, 5               | 300           | 100                     | 9               | 2-10   | L1          |
| 300 C8          | 3, 5               | 300           | 100                     | 4.5             | 2-10   | L7          |
| 300 C4-T        | 3, 5               | 300           | 100                     | 3               | 2-9    | L26         |
| Phenyl          | 3, 5               | 120           | 300                     | 12              | 2-8    | L11         |
| PFP             | 3, 5               | 120           | 300                     | 10              | 2-8    | L43         |
| Biphenyl        | 3, 5               | 120           | 300                     | 12              | 2-9    | L11         |
| Phenyl-Hexyl    | 3, 5               | 120           | 300                     | 14              | 2-9    | L11         |
| Phenyl-Ether    | 5                  | 120           | 300                     | 12              | 2-9    | L11         |
| Silica          | 3, 5               | 120           | 300                     | 0               | 3-7    | L3          |
| NH2             | 3, 5               | 120           | 300                     | 4               | 2-8    | L8          |
| CN              | 3, 5               | 120           | 300                     | 6               | 2-8    | L10         |
| HILIC-Diol      | 3, 5               | 120           | 300                     | 10              | 2-8    | L20         |
| HILIC-Amide     | 3, 5               | 120           | 300                     | 7               | 2-8    | L68         |
| HILIC-Imidazole | 3, 5               | 120           | 300                     | 5               | 2-8    | /           |
| SCX             | 3, 5               | 120           | 300                     | 3               | 2-8    | L9          |
| 300 SCX         | 3, 5               | 300           | 100                     | 3               | 2-8    | L9          |
| SAX             | 3, 5               | 120           | 300                     | 4               | 2-8    | L14         |

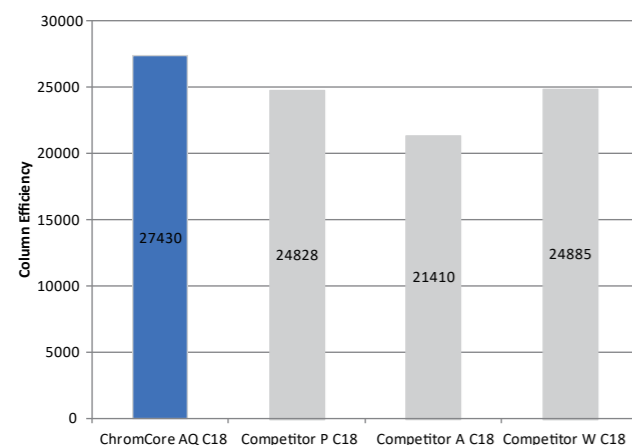
## ChromCore™ Reversed-Phase LC Columns

ChromCore Reversed-Phase LC columns are based on novel monodispersed particle technology that delivers excellent mechanical strength and high column efficiency. Combined with advanced column chemistry which results in desired selectivity, high resolution and good column-to-column consistency, ChromCore columns are suited for a broad range of applications, including pharmaceutical, food and beverage, clinical mass spectrometry, chemical, environmental, consumer products, and more.

### Main Features

- Advanced monodispersed particle technology for high column efficiency and mechanical strength
- Versatile column chemistries for a broad range of selectivity
- Excellent chromatographic peak shape for acidic, basic and neutral analytes
- Low column bleed for MS compatibility
- Good column-to-column consistency

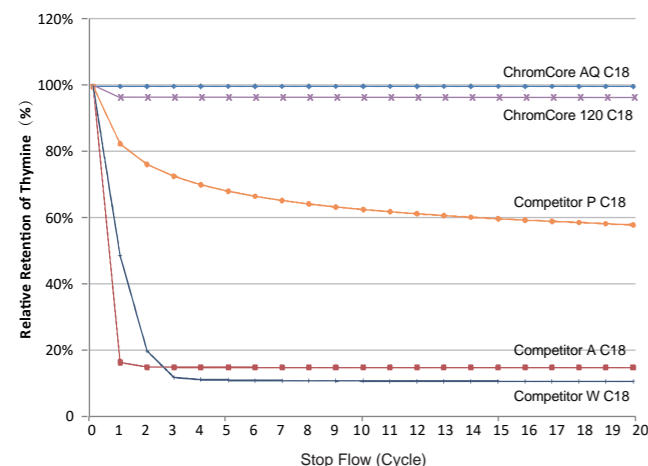
### Column Efficiency



Column: ChromCore AQ C18, 5 µm  
 Dimension: 4.6x250 mm  
 Mobile Phase: 60/40 v/v MeCN/D.I. H<sub>2</sub>O  
 Flow Rate: 1 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: UV 254 nm  
 Analyte: Naphthalene

The combination of advanced monodispersed particle technology and innovative chemistry leads to higher column efficiency compared to competing products in the market.

### Aqueous Compatibility



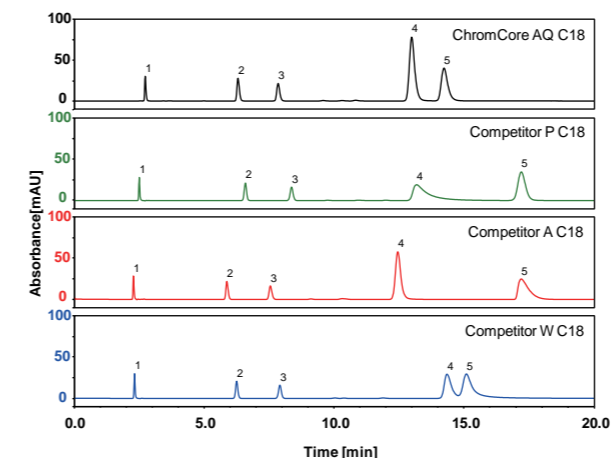
Testing Condition  
 Column: C18, 5 µm  
 Dimension: 4.6x150 mm  
 Mobile Phase: 10mM ammonium acetate buffer, pH5.2  
 Flow Rate: 1 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: UV 254 nm  
 Analyte: 1. Cytosine  
 2. Uracil  
 3. Thymine

Protocol:  
 1. Equilibrate column with the mobile phase for 20 min before testing for 10 min  
 2. Stop flow for 10 min  
 3. Repeat "1" and "2" for 10 cycles

The unique column chemistry ensures excellent compatibility with highly aqueous mobile phase.

### Peak Shape

The advanced bonding technology greatly minimizes silanol activity, improving peak shape for basic compounds (e.g., amitriptyline).

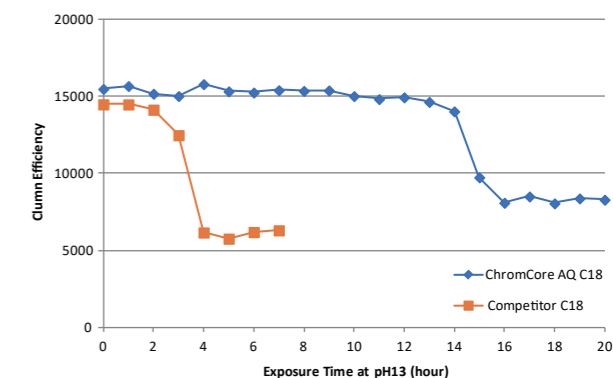


Column: ChromCore AQ C18, 5 µm  
 Dimension: 4.6x250 mm  
 Mobile Phase: 80/20 v/v MeOH/20 mM phosphate buffer, pH7.0  
 Flow Rate: 1 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: UV 254 nm  
 Peaks: 1. Uracil  
 2. Toluene  
 3. Ethylbenzene  
 4. Quinizarin  
 5. Amitriptyline

| Column           | Amitriptyline Asymmetry (normalized) | Quinizarin Asymmetry (normalized) |
|------------------|--------------------------------------|-----------------------------------|
| ChromCore AQ C18 | 1.13                                 | 1.07                              |
| Competitor P C18 | 1.11                                 | 3.25                              |
| Competitor A C18 | 2.06                                 | 1.09                              |
| Competitor W C18 | 1.75                                 | 1.25                              |

### pH Stability

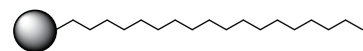
Compared with a brand name C18 column based on conventional silica particles, ChromCore AQ C18 demonstrates significantly enhanced chemical stability in alkaline conditions as the result of its high pH resistance nature of base particle and the protection of densely bonded surface.



Column: ChromCore AQ C18, 5 µm  
 Dimension: 4.6x150 mm  
 Mobile Phase: 10/90 v/v MeCN/10 mM ammonium acetate solution, pH5.2  
 Flow Rate: 1 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: UV 225 nm  
 Analyte: Acetanilide (0.1 mg/mL)

Stress Condition:  
 Mobile Phase: 100 mM NaOH  
 Flow Rate: 1 mL/min  
 Temperature: 30 °C

## ChromCore™ 120 C18 Columns



ChromCore 120 C18 columns are based on high surface coverage C18 modified silica particles with exhaustive end-capping for minimal undesired silanol activity. They are most commonly used to separate analytes with low to high hydrophobicity.

### Main Features

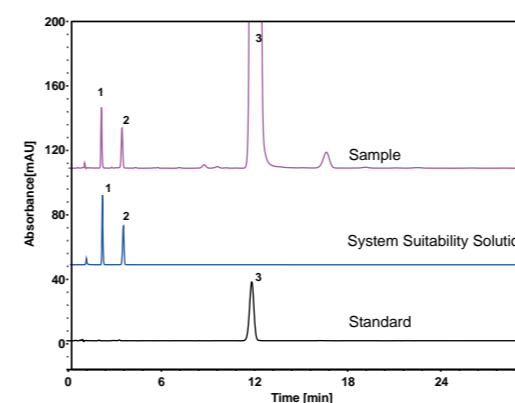
- Advanced monodispersed particle technology for high efficiency and mechanical strength
- Excellent chromatographic peak shape for acidic, basic and neutral analytes
- Low column bleed for good MS compatibility
- Good aqueous compatibility
- Good column-to-column consistency

### Specifications

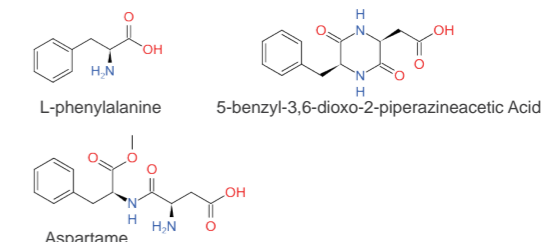
| Product Name          | ChromCore 120 C18   |
|-----------------------|---|
| Functional Group      | Octadecyl   |
| Substrate             | Monodispersed, porous, spherical silica particles   |
| Particle Size         | 1.8, 3 & 5 $\mu\text{m}$  |
| Pore Size             | 120 $\text{\AA}$  |
| Surface Area          | 300 $\text{m}^2/\text{g}$   |
| Carbon Load           | 17%   |
| End-capped            | Yes   |
| Pressure Limit        | 5000 psi for 5 $\mu\text{m}$<br>6000 psi for 3 $\mu\text{m}$<br>12000 psi for 1.8 $\mu\text{m}$ |
| Temperature Limit     | 60 $^{\circ}\text{C}$   |
| pH Range              | 2-10  |
| Aqueous Compatibility | 95% aqueous   |

### Applications

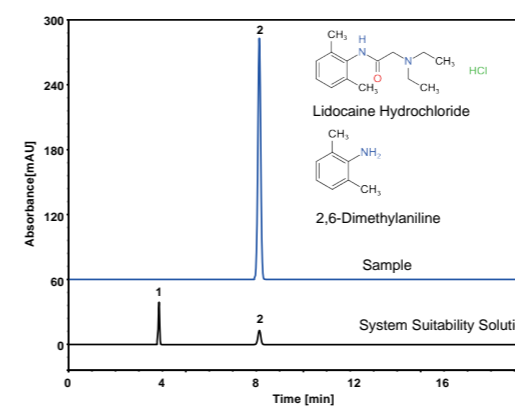
#### Aspartame



Column: ChromCore 120 C18, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: 18/82 v/v MeOH/50 mM potassium dihydrogen phosphate in  $\text{H}_2\text{O}$  pH4.3 adjusted by phosphoric acid  
 Flow Rate: 2.0 mL/min  
 Temperature: 40  $^{\circ}\text{C}$   
 Injection: 20  $\mu\text{L}$   
 Detection: UV 210 nm  
 Sample: Aspartame  
 Peaks:  
 1. L-phenylalanine  
 2. 5-benzyl-3,6-dioxo-2-piperazineacetic Acid  
 3. Aspartame



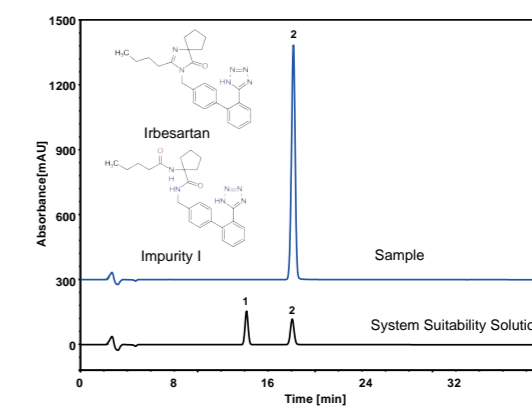
#### Lidocaine Hydrochloride



Column: ChromCore 120 C18, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: 50/50 v/v MeCN/17.6 mM phosphate buffer, pH8.0  
 Flow Rate: 1.0 mL/min  
 Temperature: 25  $^{\circ}\text{C}$   
 Injection: 20  $\mu\text{L}$   
 Detection: UV 230 nm  
 Peaks:  
 1. Impurity I (2,6-Dimethylaniline)  
 2. Lidocaine

|                     | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|---------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| 2,6-Dimethylaniline | 4.697      | 10777                   | 1.13                 | /                | /                     |
| Lidocaine           | 7.950      | 12141                   | 1.10                 | 13.54            | 605.2                 |

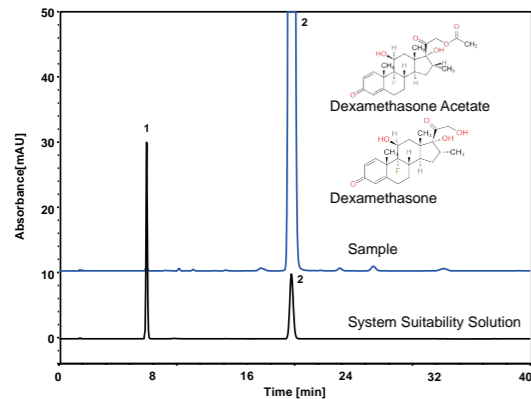
#### Irbesartan



Column: ChromCore 120 C18, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 38/62 v/v MeCN/10 mM phosphoric acid solution, pH3.2 adjusted by triethylamine  
 Flow Rate: 1.0 mL/min  
 Temperature: 25  $^{\circ}\text{C}$   
 Injection: 10  $\mu\text{L}$   
 Detection: UV 220 nm  
 Peaks:  
 1. Impurity I  
 2. Irbesartan

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 14.133     | 13244                   | 1.02                 | /                | /                     |
| Irbesartan | 18.033     | 15549                   | 1.02                 | 7.29             | 12.1                  |

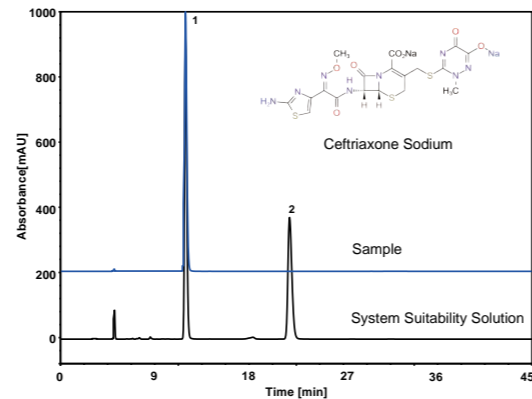
**Dexamethasone Acetate**



Column: ChromCore 120 C18, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 40/60 v/v MeCN/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20 µL  
 Detection: UV 240 nm  
 Peaks: 1. Dexamethasone  
 2. Dexamethasone Acetate

|                       | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|-----------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Dexamethasone         | 7.410      | 18684                   | 1.11                 | /                | /                     |
| Dexamethasone Acetate | 19.713     | 20579                   | 1.06                 | 32.10            | 56.1                  |

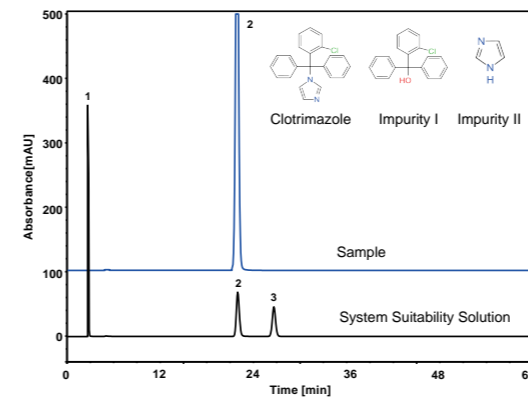
**Ceftriaxone Sodium**



Column: ChromCore 120 C18, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 27/73 v/v MeCN/20 mM octylamine solution, pH6.5  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20 µL  
 Detection: UV 254 nm  
 Peaks: 1. Ceftriaxone  
 2. Trans-isomer of Ceftriaxone

|                             | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|-----------------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Ceftriaxone                 | 11.890     | 14638                   | 1.31                 | /                | 39.1                  |
| Trans-isomer of Ceftriaxone | 21.843     | 15723                   | 1.30                 | 18.26            | /                     |

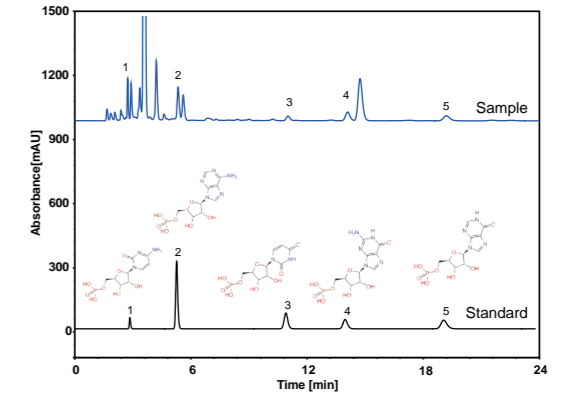
**Clotrimazole**



Column: ChromCore 120 C18, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 70/30 v/v MeOH/50 mM potassium phosphate buffer, pH5.7-5.8  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20 µL  
 System Suitability Solution: 10 µL  
 Sample: 20 µL  
 Detection: UV 215 nm  
 Peaks: 1. Impurity II  
 2. Clotrimazole  
 3. Impurity I

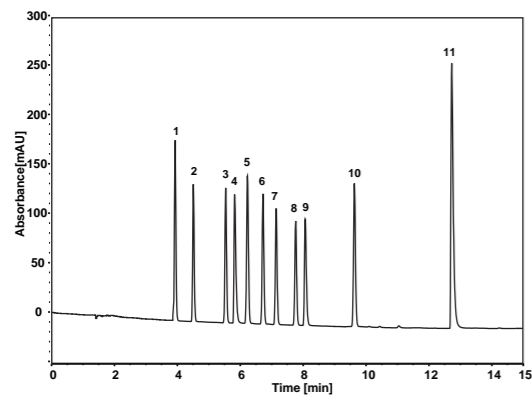
|              | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|--------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity II  | 2.713      | 15129                   | 1.38                 | /                | /                     |
| Clotrimazole | 21.947     | 15007                   | 1.12                 | 47.75            | 53.6                  |
| Impurity I   | 26.603     | 17909                   | 1.05                 | 6.16             | /                     |

**Five Nucleotides in Dairy Products**

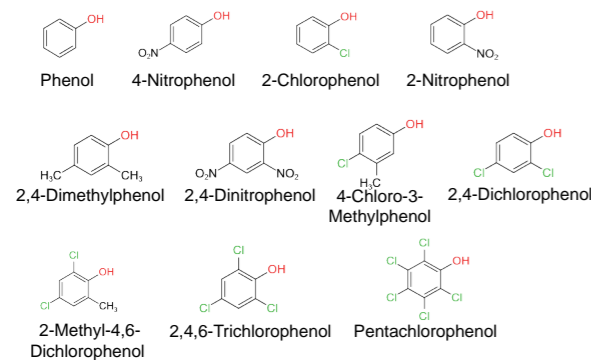


Column: ChromCore 120 C18, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 96/4 v/v 1.4 mM tetrabutyl ammonium hydrogen sulfate in 10 mM potassium phosphate buffer, pH2.5/MeOH  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 10 µL  
 Detection: UV 254 nm  
 Peaks: 1. CMP  
 2. AMP  
 3. UMP  
 4. GMP  
 5. IMP

**Phenolic Compounds (U.S. EPA 604)**



Column: ChromCore 120 C18, 3 µm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) MeCN  
 B) 0.1% phosphoric acid in H<sub>2</sub>O  
 Gradient: t(min) %A %B  
 -5 30 70  
 0 30 70  
 15 90 10  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 5 µL  
 Detection: UV 214 nm  
 Peaks: 1. Phenol  
 2. 4-Nitrophenol  
 3. 2-Chlorophenol  
 4. 2-Nitrophenol  
 5. 2,4-Dimethylphenol  
 6. 2,4-Dinitrophenol  
 7. 4-Chloro-3-Methylphenol  
 8. 2,4-Dichlorophenol  
 9. 2-Methyl-4,6-Dichlorophenol  
 10. 2,4,6-Trichlorophenol  
 11. Pentachlorophenol

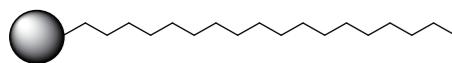


**Ordering Information**

| Product Name      | Particle Size (µm) | Length (mm) | ID (mm)            |                    |                    |                    |
|-------------------|--------------------|-------------|--------------------|--------------------|--------------------|--------------------|
|                   |                    |             | 4.6                | 3.0                | 2.1                |                    |
| ChromCore 120 C18 | 5                  | 250         | A001-050012-04625S | A001-050012-03025S | A001-050012-02125S |                    |
|                   |                    | 150         | A001-050012-04615S | A001-050012-03015S | A001-050012-02115S |                    |
|                   |                    | 100         | A001-050012-04610S | A001-050012-03010S | A001-050012-02110S |                    |
|                   |                    | 50          | A001-050012-04605S | A001-050012-03005S | A001-050012-02105S |                    |
|                   |                    | 3           | 150                | A001-030012-04615S | A001-030012-03015S | A001-030012-02115S |
|                   |                    |             | 100                | A001-030012-04610S | A001-030012-03010S | A001-030012-02110S |
|                   | 50                 |             | A001-030012-04605S | A001-030012-03005S | A001-030012-02105S |                    |
|                   | 1.8                | 30          | A001-030012-04603S | A001-030012-03003S | A001-030012-02103S |                    |
|                   |                    | 150         | /                  | A001-018012-03015S | A001-018012-02115S |                    |
|                   |                    | 100         | /                  | A001-018012-03010S | A001-018012-02110S |                    |
|                   |                    | 50          | /                  | A001-018012-03005S | A001-018012-02105S |                    |
|                   |                    | 30          | /                  | A001-018012-03003S | A001-018012-02103S |                    |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ AQ C18 Columns



ChromCore AQ C18 columns are based on proprietary C18 modified silica particles for excellent aqueous compatibility. They are the column of choice for applications requiring highly aqueous mobile phase and/or C18 selectivity.

### Main Features

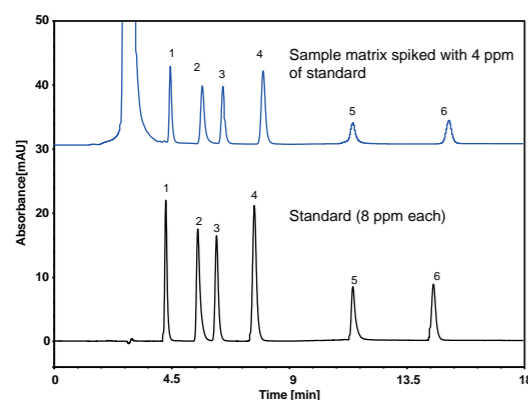
- C18 selectivity with 100% aqueous compatibility
- Excellent chromatographic peak shape for acidic, basic and neutral analytes
- Low column bleed, fully compatible with MS applications
- Good column-to-column consistency

### Specifications

| Product Name          | ChromCore AQ C18   |
|-----------------------|--|
| Functional Group      | Octadecyl  |
| Substrate             | Monodispersed, porous, spherical silica particles              |
| Particle Size         | 1.8, 3 & 5 μm  |
| Pore Size             | 180 Å  |
| Surface Area          | 200 m <sup>2</sup> /g  |
| Carbon Load           | 13%  |
| End-capped            | Yes  |
| Pressure Limit        | 5000 psi for 5 μm<br>6000 psi for 3 μm<br>12000 psi for 1.8 μm |
| Temperature Limit     | 60 °C  |
| pH Range              | 2-10   |
| Aqueous Compatibility | 100% aqueous   |

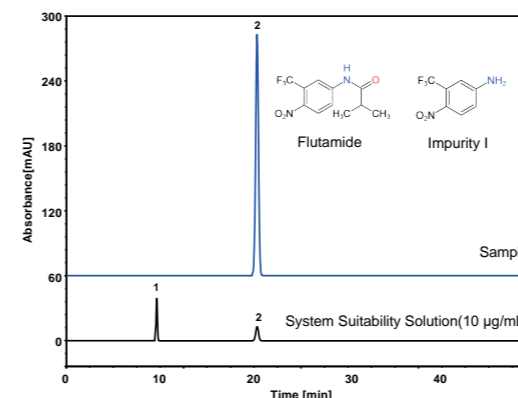
### Applications

#### Sildenafil in Urine



Column: ChromCore AQ C18, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: A) H<sub>2</sub>O  
 B) MeOH  
 Gradient: t(min) %A %B  
 -10 28 72  
 0 28 72  
 5.7 28 72  
 8.0 20 80  
 15.0 20 80  
 20.0 28 72  
 Flow Rate: 1.0 mL/min  
 Temperature: Room Temperature  
 Injection: 5 μL  
 Detection: UV 290 nm  
 Peaks: 1. Amino Tadalafil  
 2. N-Desmethyl Sildenafil  
 3. Sildenafil Citrate  
 4. Homo Sildenafil  
 5. Desmethyl Thioxidofen  
 6. Thiohomosildenafil

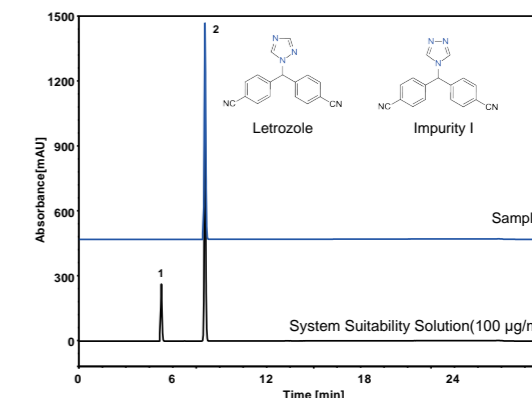
#### Flutamide



Column: ChromCore AQ C18, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 55/45 v/v H<sub>2</sub>O/MeCN  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20 μL  
 Detection: UV 240 nm  
 Peaks: 1. Impurity I  
 2. Flutamide

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 9.560      | 22823                   | 0.95                 | /                | /                     |
| Flutamide  | 20.264     | 20248                   | 0.96                 | 26.02            | 13.3                  |

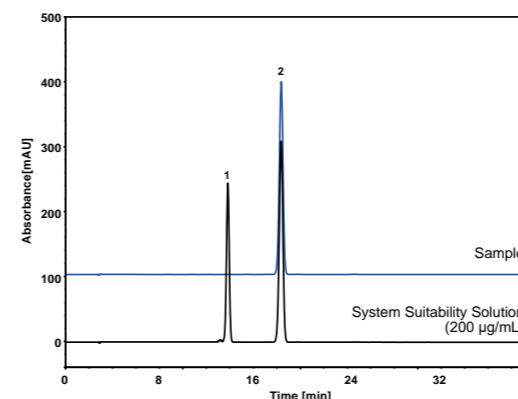
#### Letrozole



Column: ChromCore AQ C18, 5 μm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) H<sub>2</sub>O  
 B) MeCN  
 Gradient: t(min) %A %B  
 0 70 30  
 25 30 70  
 25.1 70 30  
 30 70 30  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20 μL  
 Detection: UV 230 nm  
 Peaks: 1. Impurity I  
 2. Letrozole

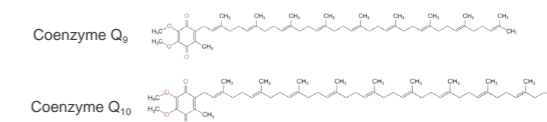
|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 5.240      | 22079                   | 1.10                 | /                | /                     |
| Letrozole  | 8.030      | 36020                   | 1.06                 | 17.98            | 15.8                  |

#### Coenzyme Q<sub>9</sub> and Coenzyme Q<sub>10</sub>

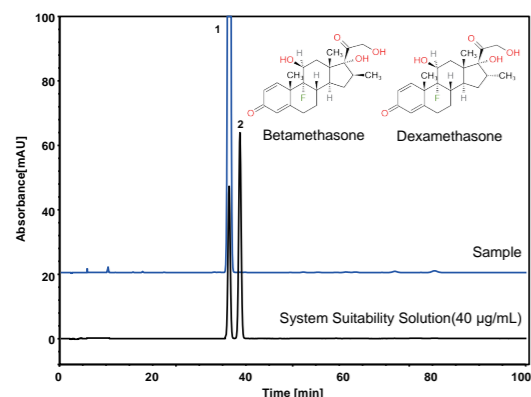


Column: ChromCore AQ C18, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 50/50 v/v MeOH/EtOH  
 Flow Rate: 1.0 mL/min  
 Temperature: 35 °C  
 Injection: 20 μL  
 Detection: UV 275 nm  
 Peaks: 1. Coenzyme Q<sub>9</sub>  
 2. Coenzyme Q<sub>10</sub>

|                          | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|--------------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Coenzyme Q <sub>9</sub>  | 13.803     | 15833                   | 0.98                 | /                | /                     |
| Coenzyme Q <sub>10</sub> | 18.350     | 15823                   | 0.96                 | 8.89             | 12.6                  |



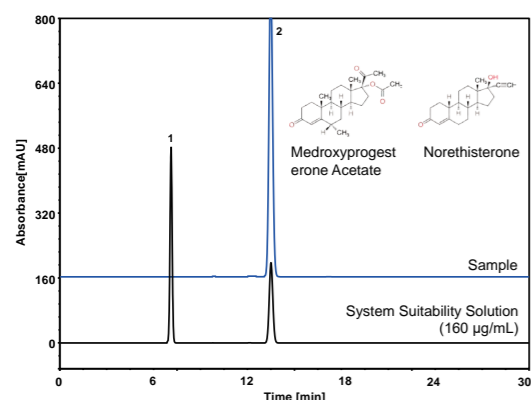
### Betamethasone



Column: ChromCore AQ C18, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 25/75 v/v MeCN/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20 µL  
 Detection: UV 240 nm  
 Peaks: 1. Betamethasone  
 2. Dexamethasone

|               | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|---------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Betamethasone | 36.157     | 24315                   | 1.01                 | /                | 18.3                  |
| Dexamethasone | 38.470     | 24275                   | 1.01                 | 2.42             | /                     |

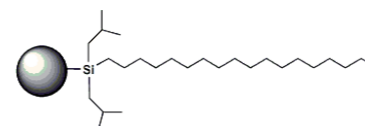
### Medroxyprogesterone Acetate



Column: ChromCore AQ C18, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 70/30 v/v MeOH/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 10 µL  
 Detection: UV 254 nm  
 Peaks: 1. Norethisterone  
 2. Medroxyprogesterone Acetate

|                             | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|-----------------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Norethisterone              | 7.093      | 12521                   | 1.01                 | /                | /                     |
| Medroxyprogesterone Acetate | 13.487     | 15389                   | 1.04                 | 18.57            | 31.5                  |

### ChromCore™ AR C18 Columns



ChromCore AR C18 columns are based on bonding a unique sterically protected C18 silane to the surface of high-purity, monodispersed, porous silica particles, designed for applications that require extreme acidic conditions, highly aqueous mobile phases, and/or selectivity complimentary to ChromCore C18 columns.

#### Main Features

- High tolerance under acidic conditions
- Enhanced retention for highly polar compounds
- 100% aqueous compatibility
- Good column-to-column consistency

#### Specifications

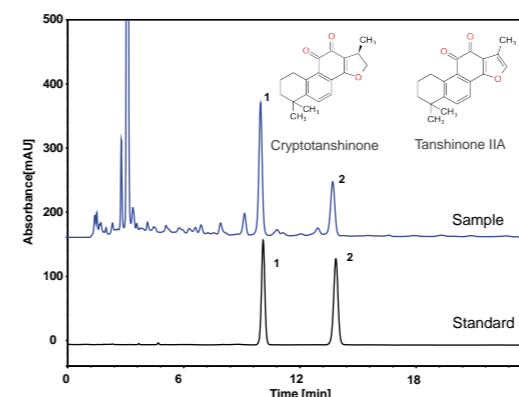
| Product Name          | ChromCore AR C18                                  |
|-----------------------|---|
| Functional Group      | Sterically protected octadecyl                    |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 µm  |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 12%   |
| End-capped            | No  |
| Pressure Limit        | 5000 psi for 5 µm<br>6000 psi for 3 µm            |
| Temperature Limit     | 60 °C   |
| pH Range              | 1-8   |
| Aqueous Compatibility | 100% aqueous                                      |

#### Ordering Information

| Product Name     | Particle Size (µm) | Length (mm) | ID (mm)            |                    |                    |
|------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                  |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore AQ C18 | 5                  | 250         | A201-050012-04625S | A201-050012-03025S | A201-050012-02125S |
|                  |                    | 150         | A201-050012-04615S | A201-050012-03015S | A201-050012-02115S |
|                  |                    | 100         | A201-050012-04610S | A201-050012-03010S | A201-050012-02110S |
|                  |                    | 50          | A201-050012-04605S | A201-050012-03005S | A201-050012-02105S |
|                  | 3                  | 150         | A201-030012-04615S | A201-030012-03015S | A201-030012-02115S |
|                  |                    | 100         | A201-030012-04610S | A201-030012-03010S | A201-030012-02110S |
|                  |                    | 50          | A201-030012-04605S | A201-030012-03005S | A201-030012-02105S |
|                  |                    | 30          | A201-030012-04603S | A201-030012-03003S | A201-030012-02103S |
|                  | 1.8                | 150         | /                  | A201-018012-03015S | A201-018012-02115S |
|                  |                    | 100         | /                  | A201-018012-03010S | A201-018012-02110S |
|                  |                    | 50          | /                  | A201-018012-03005S | A201-018012-02105S |
|                  |                    | 30          | /                  | A201-018012-03003S | A201-018012-02103S |

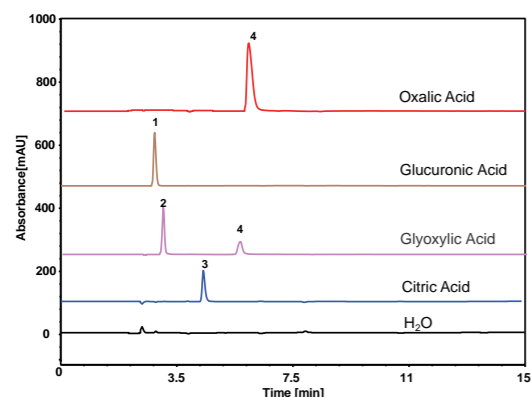
#### Applications

##### Clozapine Gel

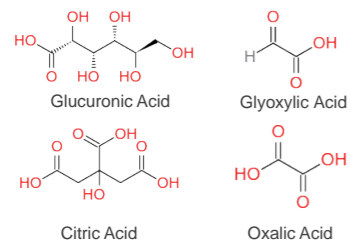


Column: ChromCore AR C18, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 75/25 v/v MeOH/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 10 µL  
 Detection: UV 254 nm  
 Peaks: 1. Cryptotanshinone  
 2. Tanshinone IIA

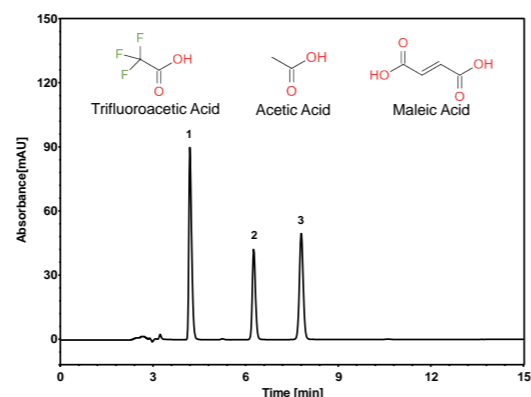
Four Organic Acids



Column: ChromCore AR C18, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 5/95 v/v MeCN/0.1% tetrabutylammonium hydrogen sulfate in 50 mM NaH<sub>2</sub>PO<sub>4</sub>, pH2.0  
 Flow Rate: 1.0 mL/min  
 Temperature: 35 °C  
 Injection: 10  $\mu$ L  
 Detection: UV 210 nm  
 Peaks: 1. Glucuronic Acid  
 2. Glyoxylic Acid  
 3. Citric Acid  
 4. Oxalic Acid



Three Organic Acids



Column: ChromCore AR C18, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 55 mM phosphate buffer, pH2.5  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 10  $\mu$ L  
 Detection: UV 200 nm  
 Peaks: 1. Trifluoroacetic Acid (1 mg/mL)  
 2. Acetic Acid (1 mg/mL)  
 3. Maleic Acid (0.008 mg/mL)

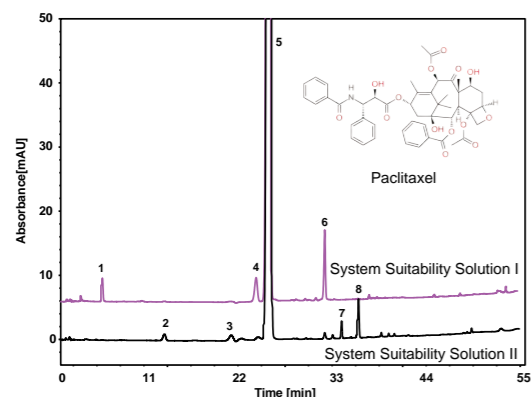
| Component            | R.T. (min) | Theoretical Plates | Tailing Factor | Resolution |
|----------------------|------------|--------------------|----------------|------------|
| Trifluoroacetic Acid | 4.189      | 9337               | 1.44           | /          |
| Acetic Acid          | 6.255      | 17757              | 1.15           | 11.4       |
| Maleic Acid          | 7.792      | 18978              | 1.06           | 7.3        |

Ordering Information

| Product Name     | Particle Size ( $\mu$ m) | Length (mm) | ID (mm)            |                    |                    |
|------------------|--------------------------|-------------|--------------------|--------------------|--------------------|
|                  |                          |             | 4.6                | 3.0                | 2.1                |
| ChromCore AR C18 | 5                        | 250         | A401-050012-04625S | A401-050012-03025S | A401-050012-02125S |
|                  |                          | 150         | A401-050012-04615S | A401-050012-03015S | A401-050012-02115S |
|                  |                          | 100         | A401-050012-04610S | A401-050012-03010S | A401-050012-02110S |
|                  |                          | 50          | A401-050012-04605S | A401-050012-03005S | A401-050012-02105S |
|                  |                          | 150         | A401-030012-04615S | A401-030012-03015S | A401-030012-02115S |
|                  | 3                        | 100         | A401-030012-04610S | A401-030012-03010S | A401-030012-02110S |
|                  |                          | 50          | A401-030012-04605S | A401-030012-03005S | A401-030012-02105S |
|                  |                          | 30          | A401-030012-04603S | A401-030012-03003S | A401-030012-02103S |

For more information, please visit <http://www.nanochrom.com>

Paclitaxel (EP)



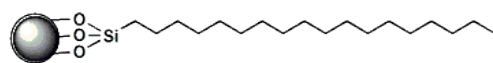
Column: ChromCore AR C18, 3  $\mu$ m  
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: A) MeCN  
 B) 2/3 v/v MeCN/H<sub>2</sub>O  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| 0      | 0  | 100 |
| 20     | 0  | 100 |
| 60     | 90 | 10  |
| 62     | 0  | 100 |
| 70     | 0  | 100 |

  
 Flow Rate: 1.2 mL/min  
 Temperature: 35 °C  
 Injection: 15  $\mu$ L  
 Detection: UV 227 nm  
 Peaks: 1. Impurity N  
 2. Impurity G  
 3. Impurity A  
 4. Impurity H  
 5. Paclitaxel  
 6. Impurity E  
 7. Impurity I  
 8. Impurity L



## ChromCore™ BR C18 Columns



ChromCore BR C18 columns are based on bonding C18 functionality to the surface of superficially organic-inorganic hybrid modified silica particles, designed for applications that require pH extremes, especially alkaline conditions, highly aqueous mobile phases, or selectivity complimentary to ChromCore AQ C18 columns.

### Main Features

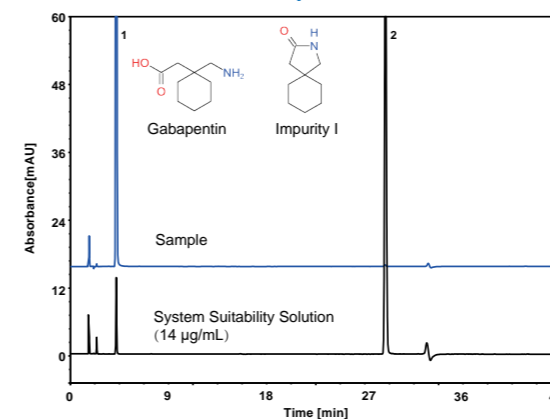
- Enhanced chemical stability under alkaline conditions
- Good peak shape for both acidic and basic compounds
- Improved shape selectivity for structural related compounds
- Low column bleed, compatible with MS applications

### Specifications

| Product Name          | ChromCore BR C18  |
|-----------------------|---|
| Functional Group      | Octadecyl   |
| Substrate             | Superficially organic-inorganic hybrid, monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 $\mu\text{m}$   |
| Pore Size             | 180 $\text{\AA}$  |
| Surface Area          | 150 $\text{m}^2/\text{g}$   |
| Carbon Load           | 12%   |
| End-capped            | Yes   |
| Pressure Limit        | 5000 psi for 5 $\mu\text{m}$<br>6000 psi for 3 $\mu\text{m}$                              |
| Temperature Limit     | 60 $^{\circ}\text{C}$   |
| pH Range              | 1.5-11.0  |
| Aqueous Compatibility | 95% aqueous   |

## Applications

### Gabapentin

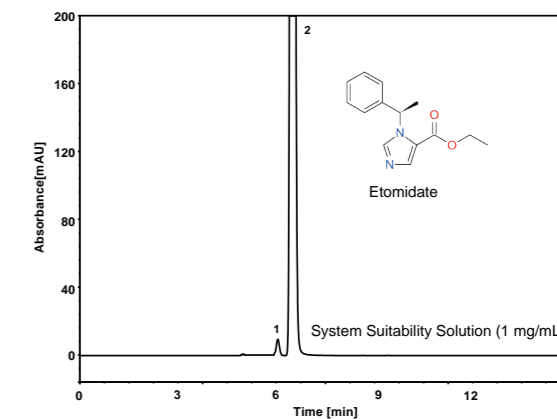


Column: ChromCore BR C18, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: A) 6/94 v/v MeCN/ 9.4 mM phosphate buffer, pH6.9 adjusted by 5 mol/L KOH solution  
 B) 30/70 v/v MeCN/ 9.4 mM phosphate buffer, pH6.9 adjusted by 5 mol/L KOH solution  
 Gradient:
 

| t(min) | %A  | %B  |
|--------|-----|-----|
| 0      | 100 | 0   |
| 7      | 100 | 0   |
| 45     | 0   | 100 |

 Flow Rate: 1.5 mL/min  
 Temperature: 40  $^{\circ}\text{C}$   
 Injection: 20  $\mu\text{L}$   
 Detection: UV 210 nm  
 Peaks: 1. Gabapentin  
 2. Impurity I

### Etomidate



Column: ChromCore BR C18, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 60/40 v/v MeOH/0.062% ammonium acetate solution  
 Flow Rate: 1.0 mL/min  
 Temperature: 50  $^{\circ}\text{C}$   
 Injection: 5  $\mu\text{L}$   
 Detection: UV 240 nm  
 Peaks: 1. Impurity I  
 2. Etomidate

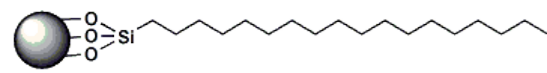
|           | R.T.<br>(min) | Theoretical Plates<br>(USP) | Tailing Factor<br>(USP) | Resolution<br>(USP) |
|-----------|---------------|-----------------------------|-------------------------|---------------------|
| Etomidate | 6.500         | 18810                       | 1.14                    | 2.41                |

## Ordering Information

| Product Name     | Particle Size<br>( $\mu\text{m}$ ) | Length<br>(mm) | ID (mm)            |                    |                    |
|------------------|------------------------------------|----------------|--------------------|--------------------|--------------------|
|                  |                                    |                | 4.6                | 3.0                | 2.1                |
| ChromCore BR C18 | 5                                  | 250            | A301-050012-04625S | A301-050012-03025S | A301-050012-02125S |
|                  |                                    | 150            | A301-050012-04615S | A301-050012-03015S | A301-050012-02115S |
|                  |                                    | 100            | A301-050012-04610S | A301-050012-03010S | A301-050012-02110S |
|                  | 3                                  | 50             | A301-050012-04605S | A301-050012-03005S | A301-050012-02105S |
|                  |                                    | 150            | A301-030012-04615S | A301-030012-03015S | A301-030012-02115S |
|                  |                                    | 100            | A301-030012-04610S | A301-030012-03010S | A301-030012-02110S |
|                  |                                    | 50             | A301-030012-04605S | A301-030012-03005S | A301-030012-02105S |
|                  |                                    | 30             | A301-030012-04603S | A301-030012-03003S | A301-030012-02103S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ 120 C18-T Columns



ChromCore 120 C18-T columns are based on bonding C18 functionality to the surface of high-purity, monodispersed, porous silica particles through three siloxane linkages, designed for applications that require extended pH range or high shape selectivity.

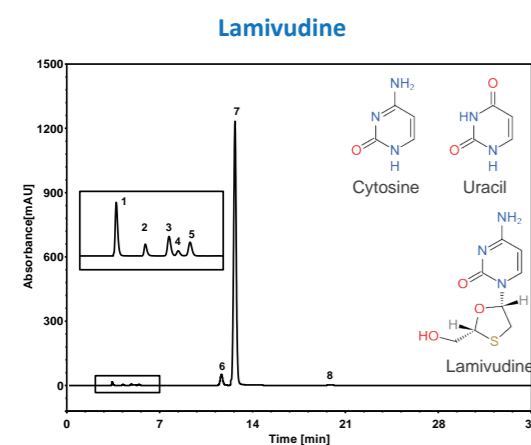
## Main Features

- Enhanced hydrolytic stability for longer column life
- Good peak shape for both acidic and basic compounds
- Improved shape selectivity for structural related compounds
- Low column bleed, compatible with MS applications

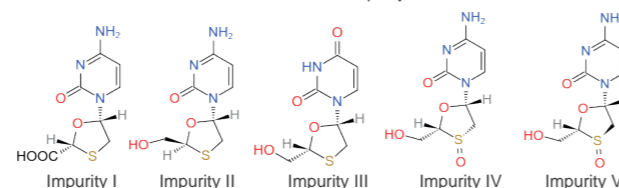
## Specifications

| Product Name          | ChromCore 120 C18-T  |
|-----------------------|--|
| Functional Group      | Octadecyl  |
| Substrate             | Monodispersed, porous, spherical silica particles            |
| Particle Size         | 3 & 5 $\mu\text{m}$  |
| Pore Size             | 120 $\text{\AA}$   |
| Surface Area          | 300 $\text{m}^2/\text{g}$                                    |
| Carbon Load           | 18%  |
| End-capped            | Yes  |
| Pressure Limit        | 5000 psi for 5 $\mu\text{m}$<br>6000 psi for 3 $\mu\text{m}$ |
| Temperature Limit     | 60 $^{\circ}\text{C}$  |
| pH Range              | 1.5-10.0   |
| Aqueous Compatibility | 95% aqueous  |

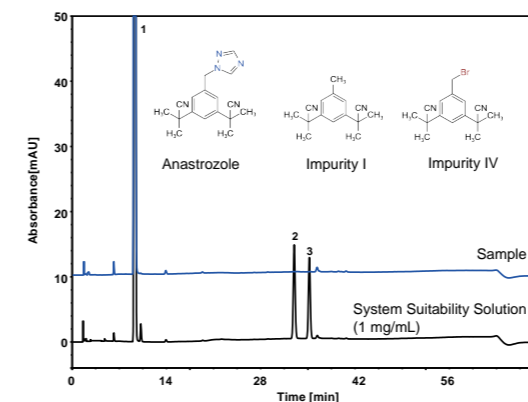
## Applications



Columns: ChromCore 120 C18-T, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 5/95 v/v MeOH/25 mM ammonium acetate solution, pH3.8  
 Flow Rate: 1.0 mL/min  
 Temperature: 35  $^{\circ}\text{C}$   
 Injection: 10  $\mu\text{L}$   
 Detection: UV 277 nm  
 Sample: System Suitability Solution  
 Peaks: 1. Cytosine 2. Uracil 3. Impurity I  
 4. Impurity IV 5. Impurity V 6. Impurity II  
 7. Lamivudine 8. Impurity III

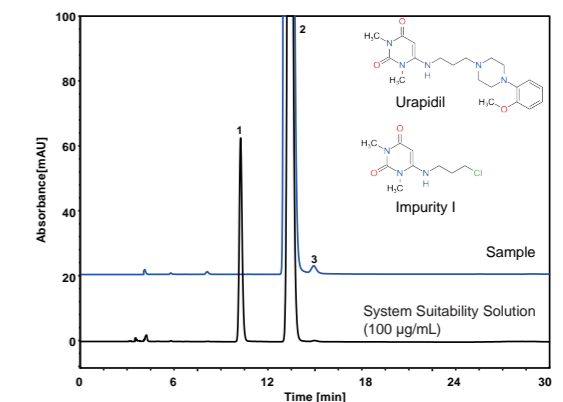


## Anastrozole



Column: ChromCore 120 C18-T, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: A) 40/60 v/v MeCN/H<sub>2</sub>O  
 B) 60/40 v/v MeCN/H<sub>2</sub>O  
 Gradient: t(min) %A %B  
 0 100 0  
 10 100 0  
 55 0 100  
 60 0 100  
 61 100 0  
 70 100 0  
 Flow Rate: 1.0 mL/min  
 Temperature: 35  $^{\circ}\text{C}$   
 Injection: 10  $\mu\text{L}$   
 Detection: UV 215 nm  
 Peaks: 1. Anastrozole  
 2. Impurity I  
 3. Impurity IV

## Urapidil



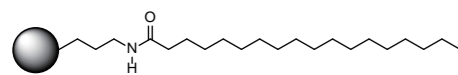
Column: ChromCore 120 C18-T, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 30/70 v/v MeOH/100 mM sodium acetate solution  
 Flow Rate: 1.0 mL/min  
 Temperature: 25  $^{\circ}\text{C}$   
 Injection: 20  $\mu\text{L}$   
 Detection: UV 268 nm  
 Peaks: 1. Impurity I  
 2. Urapidil  
 3. Impurity II

## Ordering Information

| Product Name        | Particle Size ( $\mu\text{m}$ ) | Length (mm) | ID (mm)            |                    |                    |
|---------------------|---------------------------------|-------------|--------------------|--------------------|--------------------|
|                     |                                 |             | 4.6                | 3.0                | 2.1                |
| ChromCore 120 C18-T | 5                               | 250         | A501-050012-04625S | A501-050012-03025S | A501-050012-02125S |
|                     |                                 | 150         | A501-050012-04615S | A501-050012-03015S | A501-050012-02115S |
|                     |                                 | 100         | A501-050012-04610S | A501-050012-03010S | A501-050012-02110S |
|                     | 3                               | 50          | A501-050012-04605S | A501-050012-03005S | A501-050012-02105S |
|                     |                                 | 150         | A501-030012-04615S | A501-030012-03015S | A501-030012-02115S |
|                     |                                 | 100         | A501-030012-04610S | A501-030012-03010S | A501-030012-02110S |
|                     |                                 | 50          | A501-030012-04605S | A501-030012-03005S | A501-030012-02105S |
|                     |                                 | 30          | A501-030012-04603S | A501-030012-03003S | A501-030012-02103S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ Polar C18 Columns



ChromCore Polar C18 columns are based on amide-embedded C18 modified monodispersed, porous silica particles with exhaustive end-capping, designed for applications that require highly aqueous mobile phase and/or selectivity different from typical C18.

### Main Features

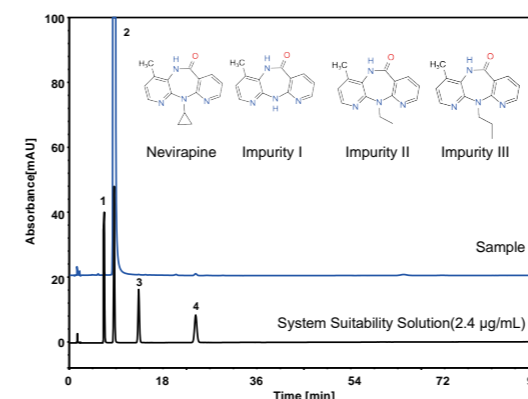
- Selectivity complimentary to general C18
- Enhanced retention for polar compounds especially containing hydrogen bond donor
- 100% aqueous compatibility
- Low column bleed, compatible with MS applications

### Specifications

| Product Name          | ChromCore Polar C18  |
|-----------------------|--|
| Functional Group      | Amide-embedded octadecyl                                     |
| Substrate             | Monodispersed, porous, spherical silica particles            |
| Particle Size         | 3 & 5 $\mu\text{m}$  |
| Pore Size             | 120 $\text{\AA}$   |
| Surface Area          | 300 $\text{m}^2/\text{g}$                                    |
| Carbon Load           | 18%  |
| End-capped            | Yes  |
| Pressure Limit        | 5000 psi for 5 $\mu\text{m}$<br>6000 psi for 3 $\mu\text{m}$ |
| Temperature Limit     | 60 $^{\circ}\text{C}$  |
| pH Range              | 2-10   |
| Aqueous Compatibility | 100% aqueous   |

## Applications

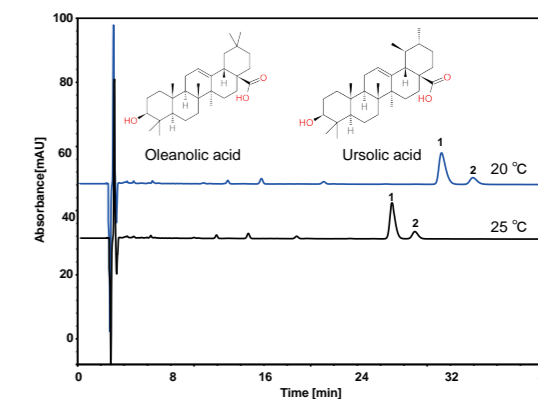
### Nevirapine



Column: ChromCore Polar C18, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  150 mm  
 Mobile Phase: 20/80 v/v MeCN/25 mM phosphate buffer, pH5.0  
 Flow Rate: 1.0 mL/min  
 Temperature: 25  $^{\circ}\text{C}$   
 Injection: System Suitability Solution: 25  $\mu\text{L}$   
 sample: 50  $\mu\text{L}$   
 Detection: UV 220 nm  
 Peaks: 1. Impurity I  
 2. Nevirapine  
 3. Impurity II  
 4. Impurity III

|              | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|--------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I   | 6.640      | 11345                   | 1.07                 | /                | /                     |
| Nevirapine   | 8.540      | 10542                   | 1.08                 | 6.53             | 143.4                 |
| Impurity II  | 13.260     | 12123                   | 1.05                 | 11.59            | /                     |
| Impurity III | 24.197     | 13057                   | 1.04                 | 16.46            | /                     |

### Loquat Leaf



Column: ChromCore Polar C18, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 67/12/21 v/v/v MeCN/MeOH/0.5% ammonium acetate solution  
 Flow Rate: 1.0 mL/min  
 Temperature: 20  $^{\circ}\text{C}$  / 25  $^{\circ}\text{C}$   
 Injection: 10  $\mu\text{L}$   
 Detection: UV 210 nm  
 Peaks: 1. Oleanolic acid  
 2. Ursolic acid

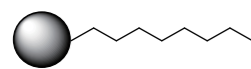
| Temperature           | Resolution |
|-----------------------|------------|
| 20 $^{\circ}\text{C}$ | 2.42       |
| 25 $^{\circ}\text{C}$ | 2.16       |

## Ordering Information

| Product Name        | Particle Size ( $\mu\text{m}$ ) | Length (mm) | ID (mm)            |                    |                    |
|---------------------|---------------------------------|-------------|--------------------|--------------------|--------------------|
|                     |                                 |             | 4.6                | 3.0                | 2.1                |
| ChromCore Polar C18 | 5                               | 250         | A060-050012-04625S | A060-050012-03025S | A060-050012-02125S |
|                     |                                 | 150         | A060-050012-04615S | A060-050012-03015S | A060-050012-02115S |
|                     |                                 | 100         | A060-050012-04610S | A060-050012-03010S | A060-050012-02110S |
|                     | 3                               | 50          | A060-050012-04605S | A060-050012-03005S | A060-050012-02105S |
|                     |                                 | 150         | A060-030012-04615S | A060-030012-03015S | A060-030012-02115S |
|                     |                                 | 100         | A060-030012-04610S | A060-030012-03010S | A060-030012-02110S |
|                     |                                 | 50          | A060-030012-04605S | A060-030012-03005S | A060-030012-02105S |
|                     |                                 | 30          | A060-030012-04603S | A060-030012-03003S | A060-030012-02103S |

For more information, please visit <http://www.nanochrom.com>

### ChromCore™ 120 C8 Columns



ChromCore 120 C8 columns are based on high surface coverage C8 modified silica particles with exhaustive end-capping to minimize undesired silanol activity. They are designed for separating analytes with intermediate to high hydrophobicity.

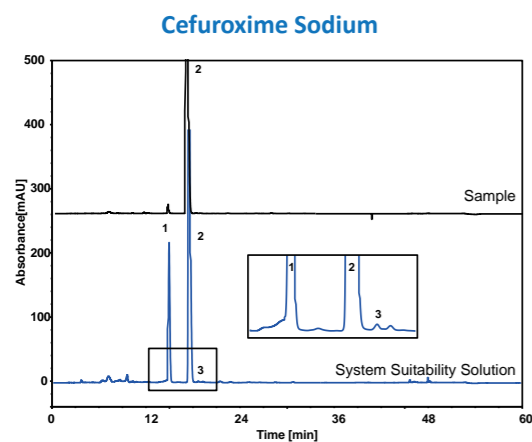
#### Main Features

- Well suited for intermediate to high hydrophobic compounds analysis
- Excellent chromatographic peak shape for acidic, basic and neutral analytes
- Good aqueous compatibility
- Good column-to-column consistency

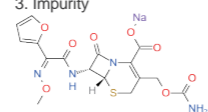
#### Specifications

| Product Name          | ChromCore 120 C8   |
|-----------------------|--|
| Functional Group      | Octyl  |
| Substrate             | Monodispersed, porous, spherical silica particles              |
| Particle Size         | 1.8, 3 & 5 µm  |
| Pore Size             | 120 Å  |
| Surface Area          | 300 m <sup>2</sup> /g  |
| Carbon Load           | 10%  |
| End-capped            | Yes  |
| Pressure Limit        | 5000 psi for 5 µm<br>6000 psi for 3 µm<br>12000 psi for 1.8 µm |
| Temperature Limit     | 60 °C  |
| pH Range              | 2-10   |
| Aqueous Compatibility | 95% aqueous  |

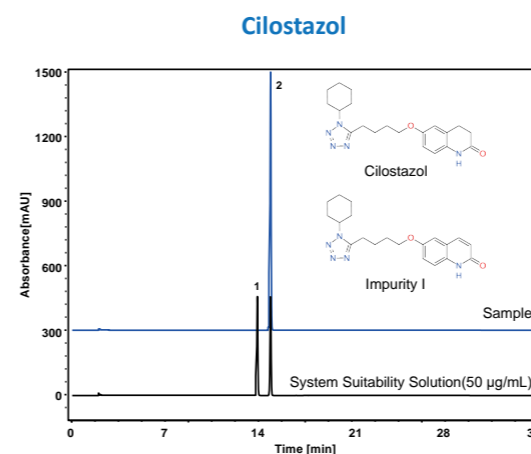
#### Applications



Column: ChromCore 120 C8, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: A) MeCN  
 B) 104.2 mM sodium acetate solution, pH3.4  
 Gradient: t(min) %A %B  
 0 5 95  
 40 20 80  
 50 40 60  
 51 5 95  
 60 5 95  
 Flow Rate: 1.5 mL/min  
 Temperature: 30 °C  
 Injection: 20 µL  
 Detection: UV 273 nm  
 Peaks: 1. Descarbamoyl Cefuroxime  
 2. Cefuroxime  
 3. Impurity

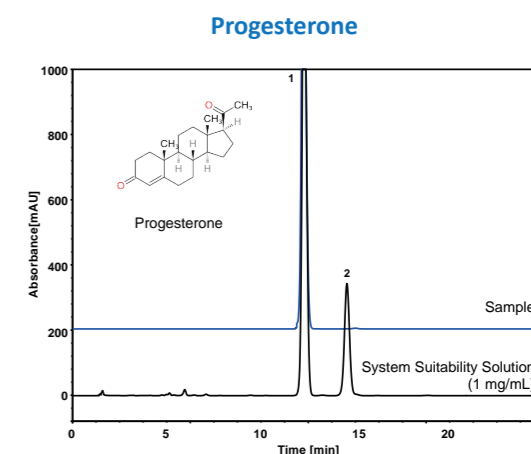


Cefuroxime Sodium



Column: ChromCore 120 C8, 5 µm  
 Dimension: 4.6×150 mm  
 Mobile Phase: A) H<sub>2</sub>O  
 B) MeCN  
 Gradient: t(min) %A %B  
 0 80 20  
 6.5 70 30  
 17 40 60  
 27 40 60  
 28 80 20  
 35 80 20  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 20 µL  
 Detection: UV 254 nm  
 Peaks: 1. Impurity I  
 2. Cilostazol

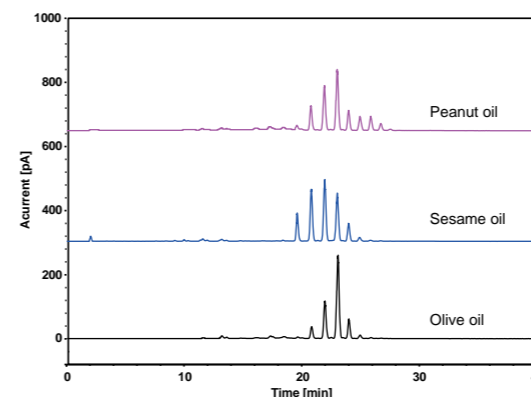
|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 13.900     | 167936                  | 0.97                 | /                | /                     |
| Cilostazol | 14.897     | 169986                  | 0.90                 | 7.11             | 49.3                  |



Column: ChromCore 120 C8, 5 µm  
 Dimension: 4.6×150 mm  
 Mobile Phase: 25/35/40 v/v/v MeOH/MeCN/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 10 µL  
 Detection: UV 241 nm  
 Peaks: 1. Progesterone  
 2. Degradation Product

|                     | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise |
|---------------------|------------|-------------------------|----------------------|------------------|-----------------|
| Progesterone        | 12.273     | 13691                   | 1.10                 | /                | 103.4           |
| Degradation Product | 14.547     | 13853                   | 1.02                 | 4.97             | /               |

#### Cooking Oil



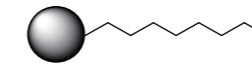
Column: ChromCore 120 C8, 5 µm  
 Dimension: 4.6×150 mm  
 Mobile Phase: A) MeCN  
 B) Isopropanol  
 C) 100 mM ammonium acetate solution, pH5.0  
 Gradient: t(min) %A %B %C  
 -10 90 5 5  
 0 90 5 5  
 30 0 95 5  
 40 0 95 5  
 Flow Rate: 1.0 mL/min  
 Injection: 5 µL  
 Temperature: 30 °C  
 Detection: CAD  
 Sample: Cooking Oil (5 mg/mL dissolved in isopropanol)

## Ordering Information

| Product Name     | Particle Size (µm) | Length (mm) | ID (mm)            |                    |                    |
|------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                  |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore 120 C8 | 5                  | 250         | A007-050012-04625S | A007-050012-03025S | A007-050012-02125S |
|                  |                    | 150         | A007-050012-04615S | A007-050012-03015S | A007-050012-02115S |
|                  |                    | 100         | A007-050012-04610S | A007-050012-03010S | A007-050012-02110S |
|                  |                    | 50          | A007-050012-04605S | A007-050012-03005S | A007-050012-02105S |
|                  | 3                  | 150         | A007-030012-04615S | A007-030012-03015S | A007-030012-02115S |
|                  |                    | 100         | A007-030012-04610S | A007-030012-03010S | A007-030012-02110S |
|                  |                    | 50          | A007-030012-04605S | A007-030012-03005S | A007-030012-02105S |
|                  |                    | 30          | A007-030012-04603S | A007-030012-03003S | A007-030012-02103S |
|                  | 1.8                | 150         | /                  | A007-018012-03015S | A007-018012-02115S |
|                  |                    | 100         | /                  | A007-018012-03010S | A007-018012-02110S |
|                  |                    | 50          | /                  | A007-018012-03005S | A007-018012-02105S |
|                  |                    | 30          | /                  | A007-018012-03003S | A007-018012-02103S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ AQ C8 Columns



ChromCore AQ C8 columns are based on high surface coverage C8 modified silica particles with exhaustive end-capping to minimize undesired silanol activity. They are designed for separating analytes with intermediate to high hydrophobicity in highly aqueous mobile phase.

## Main Features

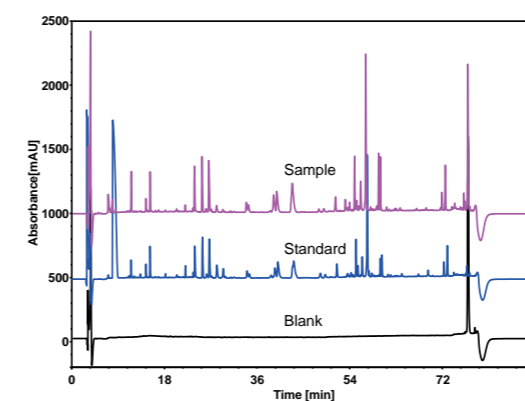
- C8 selectivity with 100% aqueous compatibility
- Well suited for intermediate to high hydrophobic compounds analysis
- Excellent chromatographic peak shape for acidic, basic and neutral analytes
- Low column bleed, fully compatible with MS applications
- Good column-to-column consistency

## Specifications

| Product Name          | ChromCore AQ C8  |
|-----------------------|--|
| Functional Group      | Octyl  |
| Substrate             | Monodispersed, porous, spherical silica particles              |
| Particle Size         | 1.8, 3 & 5 µm  |
| Pore Size             | 180 Å  |
| Surface Area          | 200 m <sup>2</sup> /g  |
| Carbon Load           | 7%   |
| End-capped            | Yes  |
| Pressure Limit        | 5000 psi for 5 µm<br>6000 psi for 3 µm<br>12000 psi for 1.8 µm |
| Temperature Limit     | 60 °C  |
| pH Range              | 2-10   |
| Aqueous Compatibility | 100% aqueous   |

## Applications

## Peptide Mapping of rhGH



Column: ChromCore AQ C8, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: A) 0.1% TFA in H<sub>2</sub>O  
 B) 0.1% TFA in 90% MeCN/H<sub>2</sub>O  
 Gradient:

| t(min) | %A  | %B |
|--------|-----|----|
| 0      | 100 | 0  |
| 20     | 80  | 20 |
| 45     | 75  | 25 |
| 70     | 50  | 50 |
| 75     | 20  | 80 |

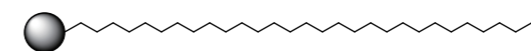
Flow Rate: 1.0 mL/min  
 Temperature: 35 °C  
 Injection: 100 µL  
 Detection: UV 214 nm  
 Sample: Enzymatic hydrolysates of rhGH by trypsin

## Ordering Information

| Product Name    | Particle Size (μm) | Length (mm) | ID (mm)            |                    |                    |
|-----------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                 |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore AQ C8 | 5                  | 250         | A207-050018-04625S | A207-050018-03025S | A207-050018-02125S |
|                 |                    | 150         | A207-050018-04615S | A207-050018-03015S | A207-050018-02115S |
|                 |                    | 100         | A207-050018-04610S | A207-050018-03010S | A207-050018-02110S |
|                 |                    | 50          | A207-050018-04605S | A207-050018-03005S | A207-050018-02105S |
|                 | 3                  | 150         | A207-030018-04615S | A207-030018-03015S | A207-030018-02115S |
|                 |                    | 100         | A207-030018-04610S | A207-030018-03010S | A207-030018-02110S |
|                 |                    | 50          | A207-030018-04605S | A207-030018-03005S | A207-030018-02105S |
|                 |                    | 30          | A207-030018-04603S | A207-030018-03003S | A207-030018-02103S |
|                 | 1.8                | 150         | /                  | A207-018018-03015S | A207-018018-02115S |
|                 |                    | 100         | /                  | A207-018018-03010S | A207-018018-02110S |
|                 |                    | 50          | /                  | A207-018018-03005S | A207-018018-02105S |
|                 |                    | 30          | /                  | A207-018018-03003S | A207-018018-02103S |

For more information, please visit <http://www.nanochrom.com>.

## ChromCore™ C30 Columns



ChromCore C30 columns are based on C30 modified silica particles with exhaustive end-capping, designed for separating structurally related compounds with large molecular size.

## Main Features

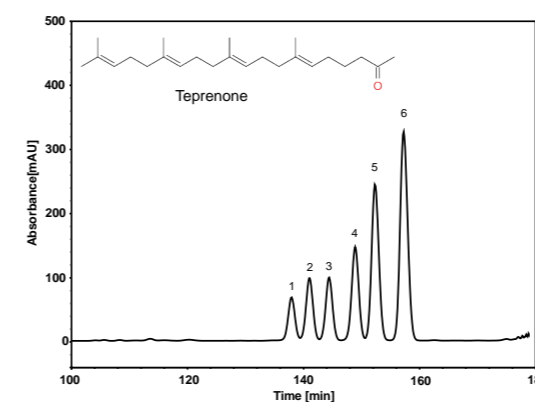
- Good selectivity for highly hydrophobic, long-chain and structurally related compounds
- Enhanced shape selectivity for geometric and positional isomers
- Compatible with both highly aqueous and highly organic solvent conditions
- Good column-to-column consistency

## Specifications

| Product Name          | ChromCore C30                                     |
|-----------------------|---|
| Functional Group      | Triacetyldimethyl                                 |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 μm  |
| Pore Size             | 180 Å   |
| Surface Area          | 200 m <sup>2</sup> /g                             |
| Carbon Load           | 11%   |
| End-capped            | Yes   |
| Pressure Limit        | 5000 psi for 5 μm<br>6000 psi for 3 μm            |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-10  |
| Aqueous Compatibility | 100% aqueous                                      |

## Applications

## Teprenone and Isomer

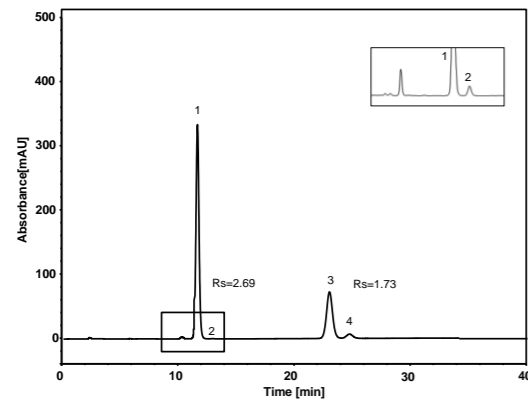


Column: ChromCore C30, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: A) H<sub>2</sub>O  
 B) MeCN  
 Gradient:
 

| t(min) | %A | %B |
|--------|----|----|
| 0      | 40 | 60 |
| 20     | 40 | 60 |
| 170    | 25 | 75 |
| 180    | 10 | 90 |
| 190    | 10 | 90 |

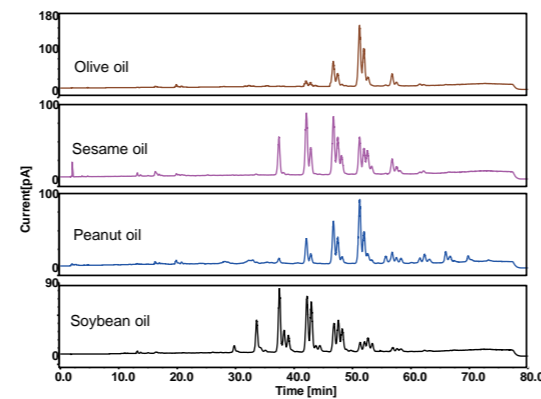
 Flow Rate: 1.0 mL/min  
 Temperature: 20 °C  
 Injection: 5 μL  
 Detection: UV 205 nm  
 Peaks: 1-4. Teprenone isomer  
 5-6. Teprenone

Isomers of Vitamin K1 and K2



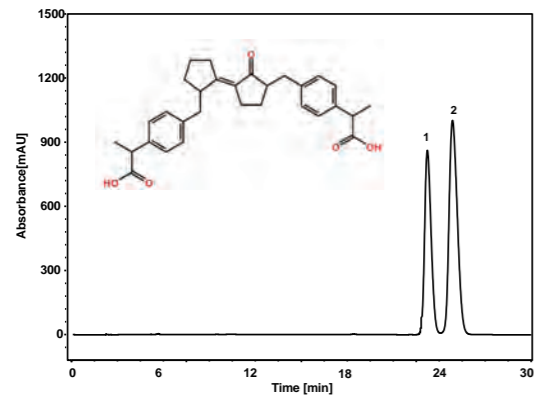
Column: ChromCore C30, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 95/5 v/v MeOH/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 20 °C  
 Injection: 5 µL  
 Detection: UV 254 nm  
 Sample: Vitamin K1 & K2 in MeCN  
 Peaks: 1. Vitamin K2  
 2. Isomer of Vitamin K2  
 3. Vitamin K1  
 4. Isomer of Vitamin K1

Lipids



Column: ChromCore C30, 5 µm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) MeCN  
 B) 100 mM ammonium acetate solution, pH5.0  
 C) IPA  
 Gradient: t(min) %A %B %C  
 -10 85 5 10  
 0 85 5 10  
 10 65 5 30  
 60 20 5 75  
 70 5 5 90  
 80 5 5 90  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 5 µL  
 Detection: CAD  
 Sample: Cooking oils (5 mg/mL)

Cis-trans Isomers

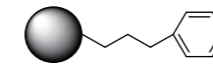


Column: ChromCore C30, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 50/50 v/v MeCN/0.1% phosphoric acid in H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 10 µL  
 Detection: UV 254 nm  
 Peaks: 1-2. Cis-trans Isomers

Ordering Information

| Product Name  | Particle Size (µm) | Length (mm) | ID (mm)            |                    |                    |
|---------------|--------------------|-------------|--------------------|--------------------|--------------------|
|               |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore C30 | 5                  | 250         | A062-050018-04625S | A062-050018-03025S | A062-050018-02125S |
|               |                    | 150         | A062-050018-04615S | A062-050018-03015S | A062-050018-02115S |
|               |                    | 100         | A062-050018-04610S | A062-050018-03010S | A062-050018-02110S |
|               |                    | 50          | A062-050018-04605S | A062-050018-03005S | A062-050018-02105S |
|               |                    | 30          | A062-050018-04603S | A062-050018-03003S | A062-050018-02103S |
|               | 3                  | 150         | A062-030018-04615S | A062-030018-03015S | A062-030018-02115S |
|               |                    | 100         | A062-030018-04610S | A062-030018-03010S | A062-030018-02110S |
|               |                    | 50          | A062-030018-04605S | A062-030018-03005S | A062-030018-02105S |
|               |                    | 30          | A062-030018-04603S | A062-030018-03003S | A062-030018-02103S |

ChromCore™ Phenyl Columns



ChromCore Phenyl columns are based on high surface coverage propylbenzene modified silica particles with exhaustive end-capping. They are designed for a broad range of applications that require selectivity towards aromatic analytes, such as isomers of aromatic and heterocyclic pharmaceuticals and catechins.

Main Features

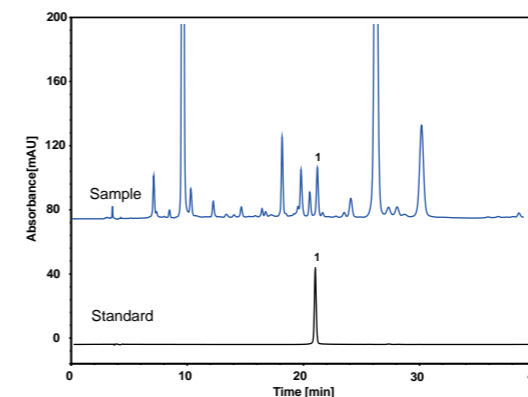
- Suitable selectivity for aromatic and heterocyclic compounds based on hydrophobic and π-π interactions
- Selectivity complementary to C18
- Low column bleed, compatible with MS applications
- Good column-to-column consistency

Specifications

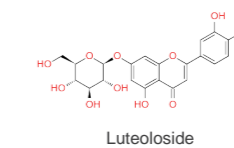
| Product Name          | ChromCore Phenyl                                  |
|-----------------------|---|
| Functional Group      | Propylphenyl                                      |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 µm  |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 12%   |
| End-capped            | Yes   |
| Pressure Limit        | 5000 psi for 5 µm<br>6000 psi for 3 µm            |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-8   |
| Aqueous Compatibility | 95% aqueous                                       |

Applications

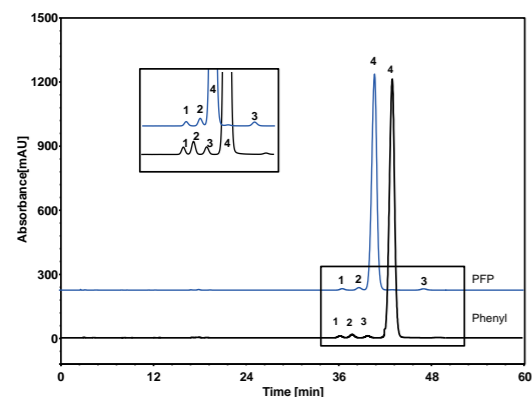
Honeysuckle



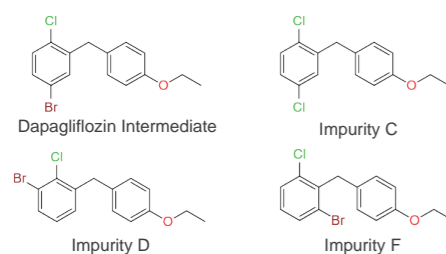
Column: ChromCore Phenyl, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: A) 0.5% acetic acid in H<sub>2</sub>O  
 B) MeCN  
 Gradient: t(min) %A %B  
 0 90 10  
 15 80 20  
 30 80 20  
 40 70 30  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 10 µL  
 Detection: UV 350 nm  
 Peak: 1. Luteoloside



## Dapagliflozin Intermediate



Columns: ChromCore Phenyl, 5  $\mu$ m  
ChromCore PFP, 5  $\mu$ m  
Dimension: 4.6  $\times$  250 mm  
Mobile Phase: 75/25 v/v MeOH/H<sub>2</sub>O  
Flow Rate: 1.0 mL/min  
Temperature: 25 °C  
Injection: 10  $\mu$ L  
Detection: UV 226 nm  
Peaks: 1. Impurity F (0.1 mg/mL)  
2. Impurity C (0.1 mg/mL)  
3. Impurity D (0.1 mg/mL)  
4. Dapagliflozin Intermediate (1 mg/mL)

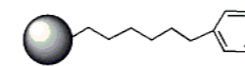


## Ordering Information

| Product Name     | Particle Size ( $\mu$ m) | Length (mm) | ID (mm)            |                    |                    |
|------------------|--------------------------|-------------|--------------------|--------------------|--------------------|
|                  |                          |             | 4.6                | 3.0                | 2.1                |
| ChromCore Phenyl | 5                        | 250         | A011-050012-04625S | A011-050012-03025S | A011-050012-02125S |
|                  |                          | 150         | A011-050012-04615S | A011-050012-03015S | A011-050012-02115S |
|                  |                          | 100         | A011-050012-04610S | A011-050012-03010S | A011-050012-02110S |
|                  |                          | 50          | A011-050012-04605S | A011-050012-03005S | A011-050012-02105S |
|                  | 3                        | 150         | A011-030012-04615S | A011-030012-03015S | A011-030012-02115S |
|                  |                          | 100         | A011-030012-04610S | A011-030012-03010S | A011-030012-02110S |
|                  |                          | 50          | A011-030012-04605S | A011-030012-03005S | A011-030012-02105S |
|                  |                          | 30          | A011-030012-04603S | A011-030012-03003S | A011-030012-02103S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ Phenyl-Hexyl Columns



ChromCore Phenyl-Hexyl columns are based on high surface coverage hexylbenzene modified silica particles with exhaustive end-capping. They are designed for a broad range of applications that require selectivity towards aromatic analytes, such as isomers of aromatic and heterocyclic pharmaceuticals and catechins.

## Main Features

- Suitable selectivity for aromatic and heterocyclic compounds based on hydrophobic and  $\pi$ - $\pi$  interactions
- Enhanced hydrophobic retention compared to ChromCore Phenyl
- Low column bleed, compatible with MS applications
- Good column-to-column consistency

## Specifications

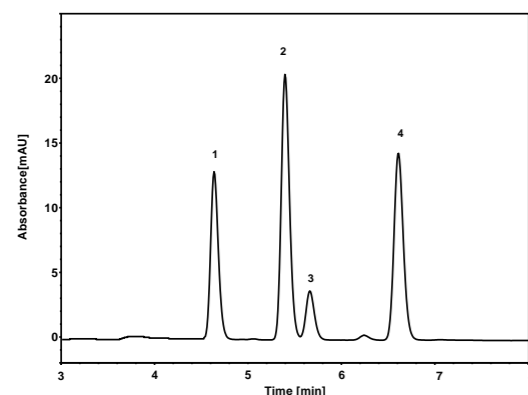
| Product Name          | ChromCore Phenyl-Hexyl                            |
|-----------------------|---|
| Functional Group      | Phenyl-hexyl                                      |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 $\mu$ m                                     |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 14%   |
| End-capped            | Yes   |
| Pressure Limit        | 5000 psi for 5 $\mu$ m<br>6000 psi for 3 $\mu$ m  |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-9   |
| Aqueous Compatibility | 95% aqueous                                       |

The selectivity of phenyl-hexyl is complementary to both C18 and polar C18 phases because of its unique aromaticity which can provide unique solute interaction with the aromatic ring and its delocalized electrons. Sometimes, the phenyl-hexyl phase may show good shape selectivity, which arises from solute multipoint interaction with the planar ring system. For solutes with aromatic electron-withdrawing groups or with a delocalized heterocyclic ring system such as the benzodiazepine compounds, we can see more retention and selectivity.

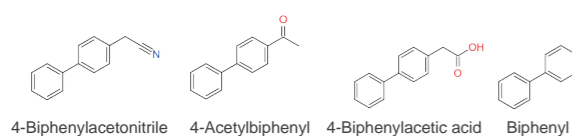


## Applications

## 4-Biphenylacetic acid



Column: ChromCore Phenyl-Hexyl, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 68/15/17 v/v/v MeOH/MeCN/0.1% acetic acid in H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20  $\mu$ L  
 Detection: UV 251 nm  
 Sample: Mixed standards (0.6  $\mu$ g/mL)  
 Peaks:  
 1. 4-Biphenylacetonitrile  
 2. 4-Acetylbiphenyl  
 3. 4-Biphenylacetic acid  
 4. Biphenyl

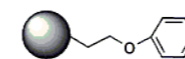


## Ordering Information

| Product Name           | Particle Size ( $\mu$ m) | Length (mm) | ID (mm)            |                    |                    |
|------------------------|--------------------------|-------------|--------------------|--------------------|--------------------|
|                        |                          |             | 4.6                | 3.0                | 2.1                |
| ChromCore Phenyl-Hexyl | 5                        | 250         | A311-050012-04625S | A311-050012-03025S | A311-050012-02125S |
|                        |                          | 150         | A311-050012-04615S | A311-050012-03015S | A311-050012-02115S |
|                        |                          | 100         | A311-050012-04610S | A311-050012-03010S | A311-050012-02110S |
|                        |                          | 50          | A311-050012-04605S | A311-050012-03005S | A311-050012-02105S |
|                        | 3                        | 150         | A311-030012-04615S | A311-030012-03015S | A311-030012-02115S |
|                        |                          | 100         | A311-030012-04610S | A311-030012-03010S | A311-030012-02110S |
|                        |                          | 50          | A311-030012-04605S | A311-030012-03005S | A311-030012-02105S |
|                        |                          | 30          | A311-030012-04603S | A311-030012-03003S | A311-030012-02103S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ Phenyl-Ether Columns



ChromCore Phenyl-Ether columns are based on high surface coverage ethoxybenzene modified silica particles with exhaustive end-capping. They are designed for a broad range of applications that require selectivity towards aromatic analytes, such as isomers of aromatic and heterocyclic pharmaceuticals and catechins.

## Main Features

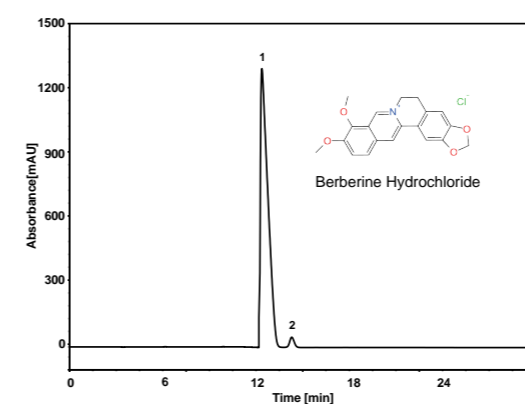
- Suitable selectivity for aromatic and heterocyclic compounds based on hydrophobic and  $\pi$ - $\pi$  interactions
- Selectivity complementary to ChromCore Phenyl
- Low column bleed, compatible with MS applications
- Good column-to-column consistency

## Specifications

| Product Name          | ChromCore Phenyl-Ether                            |
|-----------------------|---|
| Functional Group      | Ethoxyphenyl                                      |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 5 $\mu$ m   |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 12%   |
| End-capped            | Yes   |
| Pressure Limit        | 5000 psi for 5 $\mu$ m                            |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-9   |
| Aqueous Compatibility | 95% aqueous                                       |

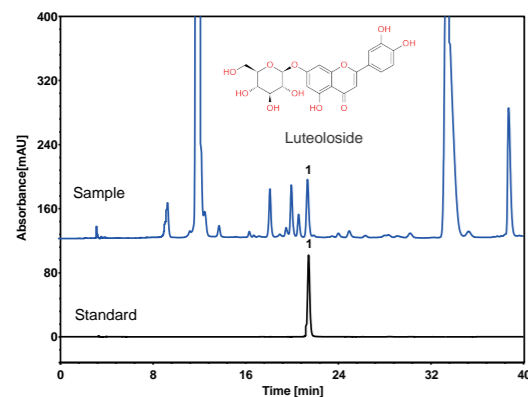
## Applications

## Berberine Hydrochloride



Column: ChromCore Phenyl-Ether, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 25/75 v/v MeCN/10 mM ammonium phosphate buffer, pH2.8  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10  $\mu$ L  
 Detection: UV 228 nm  
 Peaks:  
 1. Berberine  
 2. Isomer of berberine

## Honeysuckle



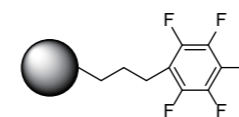
Column: ChromCore Phenyl-Ether, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: A) 0.5% acetic acid in H<sub>2</sub>O  
 B) MeCN  
 Gradient: t(min) %A %B  
 0 90 10  
 15 80 20  
 30 80 20  
 40 70 30  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 10  $\mu$ L  
 Detection: UV 350 nm  
 Peak: 1. Luteoloside

## Ordering Information

| Product Name           | Particle Size ( $\mu$ m) | Length (mm) | ID (mm)            |                    |                    |
|------------------------|--------------------------|-------------|--------------------|--------------------|--------------------|
|                        |                          |             | 4.6                | 3.0                | 2.1                |
| ChromCore Phenyl-Ether | 5                        | 250         | A411-050012-04625S | A411-050012-03025S | A411-050012-02125S |
|                        |                          | 150         | A411-050012-04615S | A411-050012-03015S | A411-050012-02115S |
|                        |                          | 100         | A411-050012-04610S | A411-050012-03010S | A411-050012-02110S |
|                        |                          | 50          | A411-050012-04605S | A411-050012-03005S | A411-050012-02105S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ PFP Columns



ChromCore PFP columns are based on pentafluorobenzene (PFP) modified silica particles with exhaustive end-capping. They are designed for a broad range of applications that require selectivity different from ChromCore Phenyl for aromatic analytes, such as halogenated aromatic compounds and Vitamin E isomers.

## Main Features

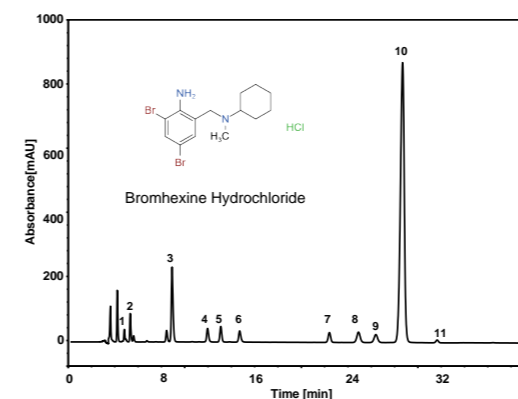
- Suitable selectivity for aromatic and heterocyclic compounds based on hydrophobic and  $\pi$ - $\pi$  interactions
- Selectivity complementary to ChromCore Phenyl
- Low column bleed, compatible with MS applications
- Good column-to-column consistency

## Specifications

| Product Name          | ChromCore PFP                                     |
|-----------------------|---|
| Functional Group      | Pentafluorophenyl                                 |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 $\mu$ m                                     |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 10%   |
| End-capped            | Yes   |
| Pressure Limit        | 5000 psi for 5 $\mu$ m<br>6000 psi for 3 $\mu$ m  |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-8   |
| Aqueous Compatibility | 95% aqueous                                       |

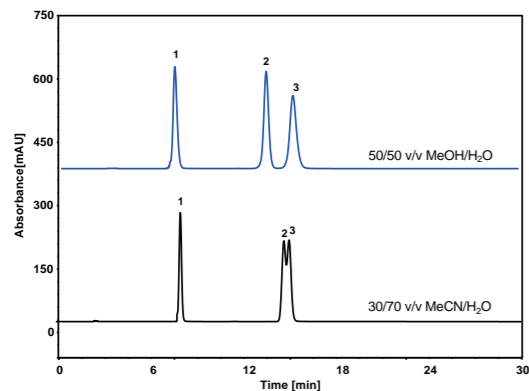
## Applications

## Bromhexine Hydrochloride



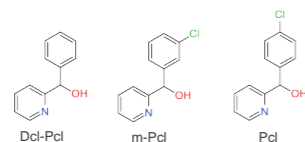
Column: ChromCore PFP, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: A) MeCN  
 B) 0.5% acetic acid in H<sub>2</sub>O, pH5.0 adjusted by triethylamine  
 Gradient: t(min) %A %B  
 0 35 65  
 5 35 65  
 35 55 45  
 40 55 45  
 40.1 35 65  
 50 35 65  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 10  $\mu$ L  
 Detection: UV 248 nm  
 Peaks: 1-9. Impurities  
 10. Bromhexine  
 11. Impurity

Pharmaceutical Intermediate-PCL

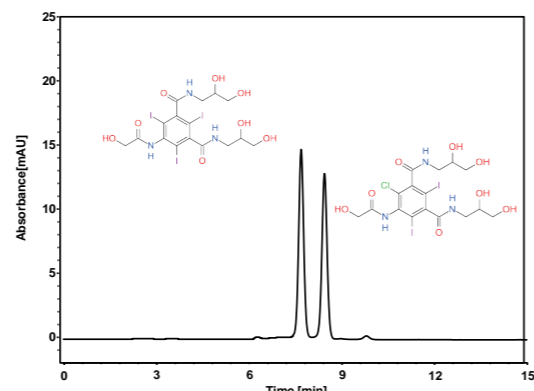


Column: ChromCore PFP, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 50/50 v/v MeOH/H<sub>2</sub>O  
 Blue: 50/50 v/v MeOH/H<sub>2</sub>O  
 Black: 30/70 v/v MeCN/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 35 °C  
 Injection: 10 µL  
 Detection: UV 220 nm  
 Peaks:

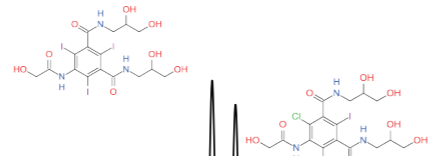
1. Dcl-Pcl
2. m-Pcl
3. Pcl



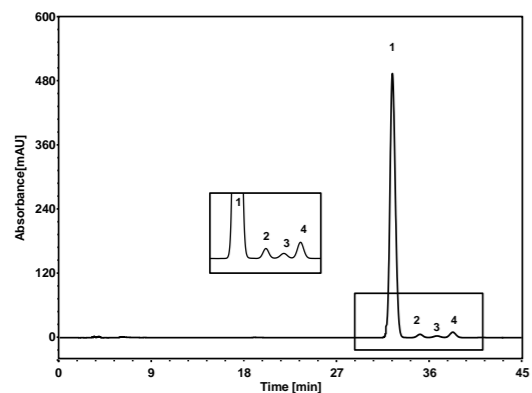
Ioversols



Column: ChromCore PFP, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 3/97 v/v MeOH/0.05% phosphoric acid in H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 10 µL  
 Detection: UV 240 nm  
 Sample: Mixture of Iodofluorohydrins

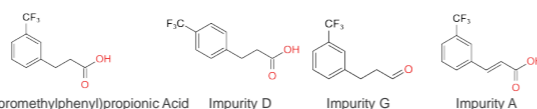


3-(3-Trifluoromethylphenyl)propionic Acid



Column: ChromCore PFP, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 50/50 v/v MeOH/0.1% phosphoric acid in H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 10 µL  
 Detection: UV 210 nm  
 Peaks:

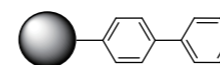
1. 3-(3-Trifluoromethylphenyl)propionic Acid
2. Impurity D
3. Impurity G
4. Impurity A



Ordering Information

| Product Name  | Particle Size (µm) | Length (mm) | ID (mm)            |                    |                    |                    |
|---------------|--------------------|-------------|--------------------|--------------------|--------------------|--------------------|
|               |                    |             | 4.6                | 3.0                | 2.1                |                    |
| ChromCore PFP | 5                  | 250         | A043-050012-04625S | A043-050012-03025S | A043-050012-02125S |                    |
|               |                    | 150         | A043-050012-04615S | A043-050012-03015S | A043-050012-02115S |                    |
|               |                    | 100         | A043-050012-04610S | A043-050012-03010S | A043-050012-02110S |                    |
|               |                    | 50          | A043-050012-04605S | A043-050012-03005S | A043-050012-02105S |                    |
|               |                    | 3           | 150                | A043-030012-04615S | A043-030012-03015S | A043-030012-02115S |
|               |                    |             | 100                | A043-030012-04610S | A043-030012-03010S | A043-030012-02110S |
|               | 50                 |             | A043-030012-04605S | A043-030012-03005S | A043-030012-02105S |                    |
|               | 30                 |             | A043-030012-04603S | A043-030012-03003S | A043-030012-02103S |                    |

ChromCore™ Biphenyl Columns



ChromCore Biphenyl columns are based on high surface coverage biphenyl modified silica particles with exhaustive end-capping. They are designed for applications that require different selectivity towards aromatic analytes compared to ChromCore Phenyl or ChromCore PFP columns.

Main Features

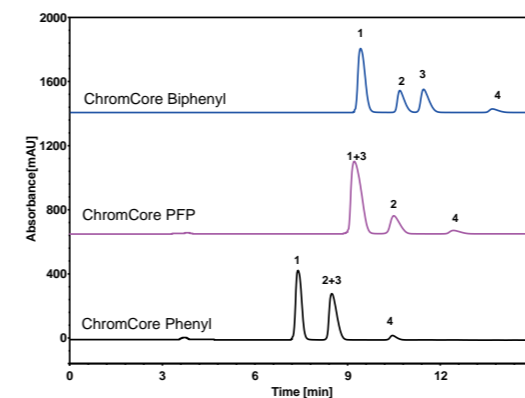
- Unique selectivity for aromatic and heterocyclic compounds based on hydrophobic and π-π interactions
- Selectivity complementary to other aromatic stationary phases
- Low column bleed, compatible with MS applications
- Good column-to-column consistency

Specifications

| Product Name          | ChromCore Biphenyl                                |
|-----------------------|---|
| Functional Group      | Biphenyl  |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 µm  |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 12%   |
| End-capped            | Yes   |
| Pressure Limit        | 5000 psi for 5 µm<br>6000 psi for 3 µm            |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-9   |
| Aqueous Compatibility | 95% aqueous                                       |

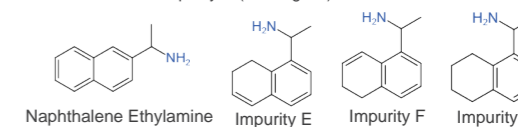
Applications

Naphthalene Ethylamine (Selectivity Comparison)

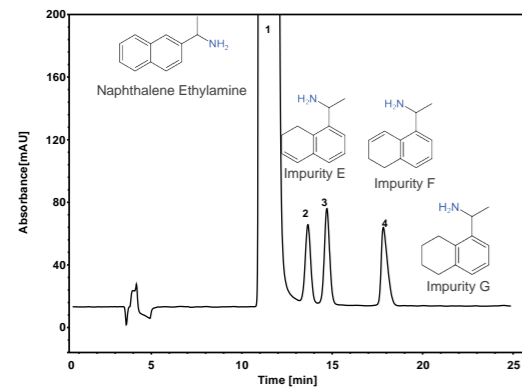


Columns: ChromCore Biphenyl, 5 µm  
 ChromCore PFP, 5 µm  
 ChromCore Phenyl, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 50/50 v/v MeOH/30 mM ammonium acetate buffer, pH5.8  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 10 µL  
 Detection: UV 223 nm  
 Peaks:

1. Naphthalene Ethylamine (0.25 mg/mL)
2. Impurity E (0.1 mg/mL)
3. Impurity F (0.1 mg/mL)
4. Impurity G (0.01 mg/mL)



**Naphthalene Ethylamine**



Column: ChromCore Biphenyl, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 45/55 v/v MeOH/30 mM ammonium acetate buffer, pH5.8  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 10 µL  
 Detection: UV 223 nm  
 Peaks:  
 1. Naphthalene Ethylamine (2 mg/mL)  
 2. Impurity E (20 µg/mL)  
 3. Impurity F (20 µg/mL)  
 4. Impurity G (20 µg/mL)

ChromCore 300 Å reversed phase columns are based on high-purity, wide-pore, monodispersed, spherical silica particles modified with C18, C8 or C4 functionality with exhaustive end-capping. They are designed for separating analytes with large size, including ginsenosides, PEG derivatives, peptides and small proteins.

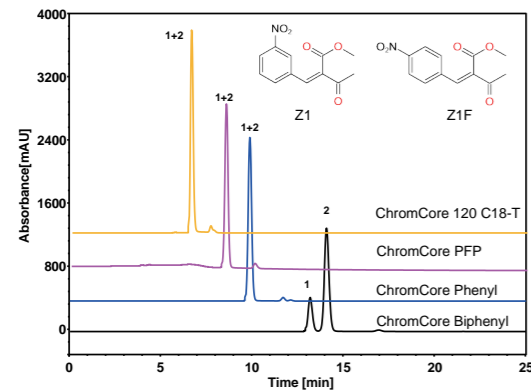
**Main Features**

- Innovative monodispersed particle technology for high column efficiency and high mechanical strength
- Advanced bonding chemistry for symmetrical peak shape of analytes
- Three different functional groups for a broad range of applications
- Good aqueous compatibility
- Good column-to-column consistency

**Specifications**

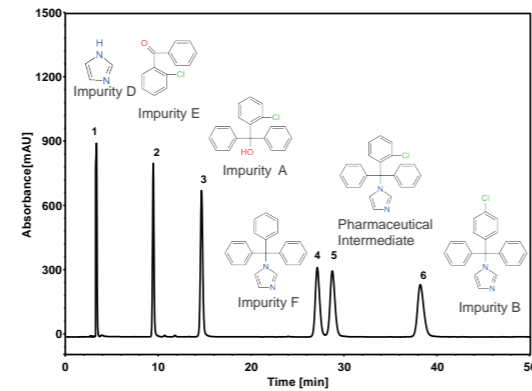
| Product Name          | ChromCore 300 C18                                 | ChromCore 300 C8 | ChromCore 300 C4-T |
|-----------------------|---|------------------|--------------------|
| Functional Group      | Octadecyl   | Octyl            | Butyl              |
| Substrate             | Monodispersed, porous, spherical silica particles |                  |                    |
| Particle Size         | 3 & 5 µm  |                  |                    |
| Pore Size             | 300 Å   |                  |                    |
| Surface Area          | 100 m <sup>2</sup> /g                             |                  |                    |
| Carbon Load           | 9%  | 4.5%             | 3%                 |
| End-capped            | Yes   |                  |                    |
| Pressure Limit        | 5000 psi for 5 µm, 6000 psi for 3 µm              |                  |                    |
| Temperature Limit     | 60°C  |                  |                    |
| pH Range              | 2-10  | 2-10             | 2-9                |
| Aqueous Compatibility | 100% aqueous                                      |                  |                    |

**Pharmaceutical Intermediate(Selectivity Comparison)**



Columns: ChromCore 120 C18-T, 5 µm  
 ChromCore PFP, 5 µm  
 ChromCore Phenyl, 5 µm  
 ChromCore Biphenyl, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 65/35 v/v MeOH/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 35 °C  
 Injection: 5 µL  
 Detection: UV 265 nm  
 Peaks: 1. Z1f  
 2. Z1

**Pharmaceutical Intermediate**



Columns: ChromCore Biphenyl, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 75/25 v/v MeOH/25 mM ammonium phosphate solution, pH6.5  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 10 µL  
 Detection: UV 215 nm  
 Sample: Mixed standards solution (0.05 mg/mL dissolved in 70% MeOH)  
 Peaks: 1. Impurity D 2. Impurity E 3. Impurity A  
 4. Impurity F 5. Pharmaceutical Intermediate 6. Impurity B

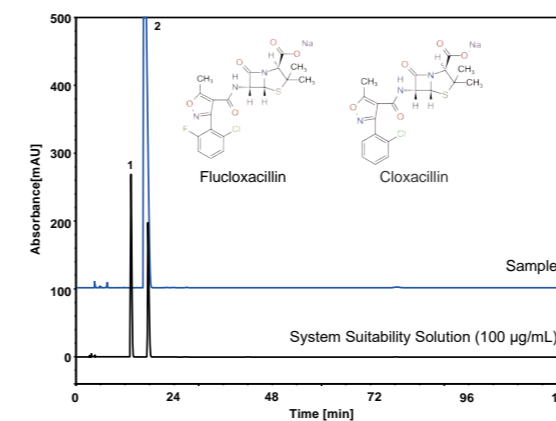
**Specifications**

» **ChromCore 300 C18**

**Ordering Information**

| Product Name       | Particle Size (µm) | Length (mm) | ID (mm)            |                    |                    |
|--------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                    |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore Biphenyl | 5                  | 250         | A211-050012-04625S | A211-050012-03025S | A211-050012-02125S |
|                    |                    | 150         | A211-050012-04615S | A211-050012-03015S | A211-050012-02115S |
|                    |                    | 100         | A211-050012-04610S | A211-050012-03010S | A211-050012-02110S |
|                    | 3                  | 50          | A211-050012-04605S | A211-050012-03005S | A211-050012-02105S |
|                    |                    | 150         | A211-030012-04615S | A211-030012-03015S | A211-030012-02115S |
|                    |                    | 100         | A211-030012-04610S | A211-030012-03010S | A211-030012-02110S |
|                    |                    | 50          | A211-030012-04605S | A211-030012-03005S | A211-030012-02105S |
|                    |                    | 30          | A211-030012-04603S | A211-030012-03003S | A211-030012-02103S |

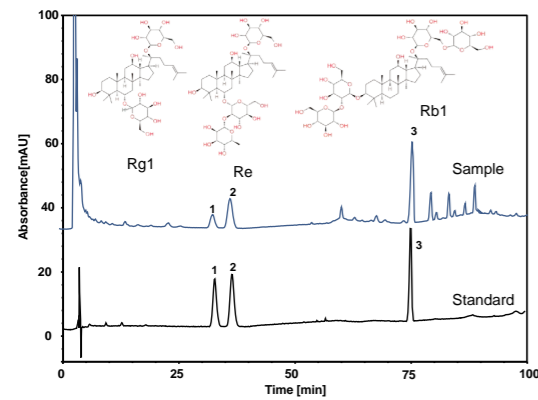
**Flucloxacillin Sodium**



Column: ChromCore 300 C18, 5 µm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 25/75 v/v MeCN/20 mM phosphate buffer, pH5.0  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20 µL  
 Detection: UV 225 nm  
 Peaks: 1. Cloxacillin  
 2. Flucloxacillin

|                | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|----------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Cloxacillin    | 13.353     | 12763                   | 1.84                 | /                | /                     |
| Flucloxacillin | 17.490     | 11951                   | 1.96                 | 7.43             | 166.6                 |

**Red Ginseng**



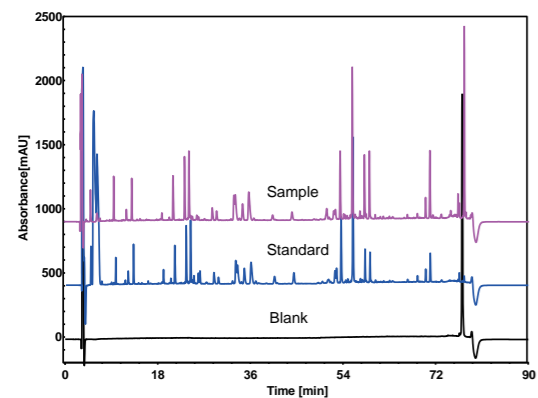
Column: ChromCore 300 C18, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: A) MeCN  
 B) H<sub>2</sub>O  
 Gradient: 

| t(min) | %A | %B |
|--------|----|----|
| 0      | 19 | 81 |
| 35     | 19 | 81 |
| 55     | 29 | 71 |
| 70     | 29 | 71 |
| 100    | 40 | 60 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10  $\mu$ L  
 Detection: UV 203 nm  
 Peaks: 1. Ginsenosides Rg1  
 2. Ginsenosides Re  
 3. Ginsenosides Rb1

**>> ChromCore 300 C8**

**Peptide Mapping of rhGH**

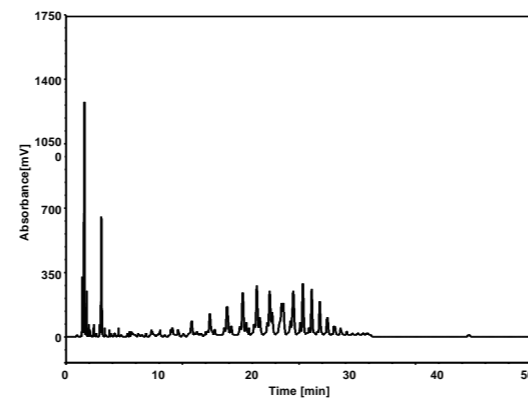


Column: ChromCore 300 C8, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: A) 0.1% TFA in H<sub>2</sub>O  
 B) 0.1% TFA in 90% MeCN/H<sub>2</sub>O  
 Gradient: 

| t(min) | %A  | %B |
|--------|-----|----|
| 0      | 100 | 0  |
| 20     | 80  | 20 |
| 45     | 75  | 25 |
| 70     | 50  | 50 |
| 75     | 20  | 80 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 35 °C  
 Injection: 100  $\mu$ L  
 Detection: UV 214 nm

**PEG Conjugates**



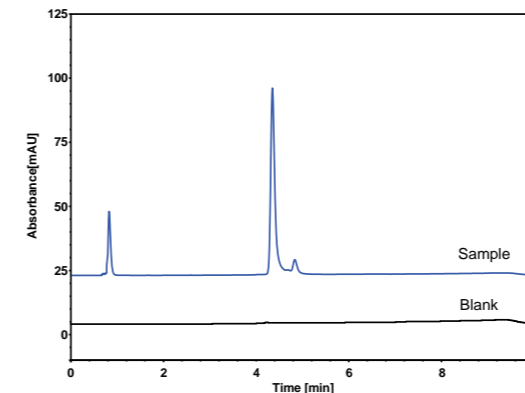
Column: ChromCore 300 C8, 3  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: A) 0.1% acetic acid in H<sub>2</sub>O  
 B) MeCN  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| 0      | 45 | 55  |
| 30     | 0  | 100 |
| 40     | 0  | 100 |
| 40.1   | 45 | 55  |
| 50     | 45 | 55  |

  
 Flow Rate: 0.25 mL/min  
 Temperature: 40 °C  
 Injection: 5  $\mu$ L  
 Detection: ELSD

**>> ChromCore 300 C4-T**

**BSA**

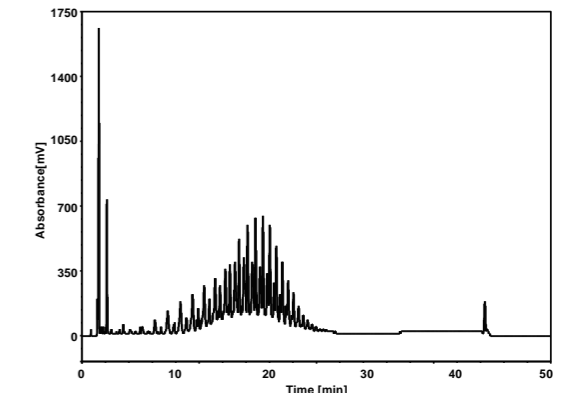


Column: ChromCore 300 C4-T, 5  $\mu$ m  
 Dimension: 4.6  $\times$  50 mm  
 Mobile Phase: A) 0.1% TFA in H<sub>2</sub>O  
 B) 0.1% TFA in MeCN  
 Gradient: 

| t(min) | %A | %B |
|--------|----|----|
| 0      | 75 | 25 |
| 8      | 40 | 60 |
| 9      | 75 | 25 |

  
 Flow Rate: 1.0 mL/min  
 Temperature: 70 °C  
 Injection: 10  $\mu$ L  
 Detection: UV 280 nm

**PEG Conjugates**



Column: ChromCore 300 C4-T, 3  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: A) 0.1% acetic acid in H<sub>2</sub>O  
 B) MeCN  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| 0      | 45 | 55  |
| 30     | 0  | 100 |
| 40     | 0  | 100 |
| 40.1   | 45 | 55  |
| 50     | 45 | 55  |

  
 Flow Rate: 0.25 mL/min  
 Temperature: 40 °C  
 Injection: 5  $\mu$ L  
 Detection: ELSD

**Ordering Information**

| Product Name       | Particle Size ( $\mu$ m) | Length (mm) | ID (mm)            |                    |                    |
|--------------------|--------------------------|-------------|--------------------|--------------------|--------------------|
|                    |                          |             | 4.6                | 3.0                | 2.1                |
| ChromCore 300 C18  | 5                        | 250         | A001-050030-04625S | A001-050030-03025S | A001-050030-02125S |
|                    |                          | 150         | A001-050030-04615S | A001-050030-03015S | A001-050030-02115S |
|                    |                          | 100         | A001-050030-04610S | A001-050030-03010S | A001-050030-02110S |
|                    | 3                        | 50          | A001-050030-04605S | A001-050030-03005S | A001-050030-02105S |
|                    |                          | 150         | A001-030030-04615S | A001-030030-03015S | A001-030030-02115S |
|                    |                          | 100         | A001-030030-04610S | A001-030030-03010S | A001-030030-02110S |
| ChromCore 300 C8   | 5                        | 250         | A007-050030-04625S | A007-050030-03025S | A007-050030-02125S |
|                    |                          | 150         | A007-050030-04615S | A007-050030-03015S | A007-050030-02115S |
|                    |                          | 100         | A007-050030-04610S | A007-050030-03010S | A007-050030-02110S |
|                    | 3                        | 50          | A007-050030-04605S | A007-050030-03005S | A007-050030-02105S |
|                    |                          | 150         | A007-030030-04615S | A007-030030-03015S | A007-030030-02115S |
|                    |                          | 100         | A007-030030-04610S | A007-030030-03010S | A007-030030-02110S |
| ChromCore 300 C4-T | 5                        | 250         | A226-050030-04625S | A226-050030-03025S | A226-050030-02125S |
|                    |                          | 150         | A226-050030-04615S | A226-050030-03015S | A226-050030-02115S |
|                    |                          | 100         | A226-050030-04610S | A226-050030-03010S | A226-050030-02110S |
|                    | 3                        | 50          | A226-050030-04605S | A226-050030-03005S | A226-050030-02105S |
|                    |                          | 150         | A226-030030-04615S | A226-030030-03015S | A226-030030-02115S |
|                    |                          | 100         | A226-030030-04610S | A226-030030-03010S | A226-030030-02110S |

## ChromCore™ Normal Phase/HILIC LC Columns

ChromCore Normal-Phase/HILIC HPLC columns are based on a combination of novel monodispersed particle technology, advanced column chemistry and well-established column packing process. These columns are suited for a broad range of applications, including pharmaceutical, food and beverage, clinical mass spectrometry, chemical, environmental, consumer products, and more.

### Main Features

- Monodispersed, high-purity, porous, spherical silica particles for high column efficiency and mechanical strength
- Versatile column chemistries for broad selectivity coverage
- Excellent chromatography performance for symmetrical peaks
- Good column-to-column consistency



**ChromCore™**  
LC Columns

## ChromCore™ Silica Columns



ChromCore Silica columns are based on unmodified, monodispersed, high-purity, porous silica particles, and designed for separating highly hydrophobic compounds under normal phase conditions.

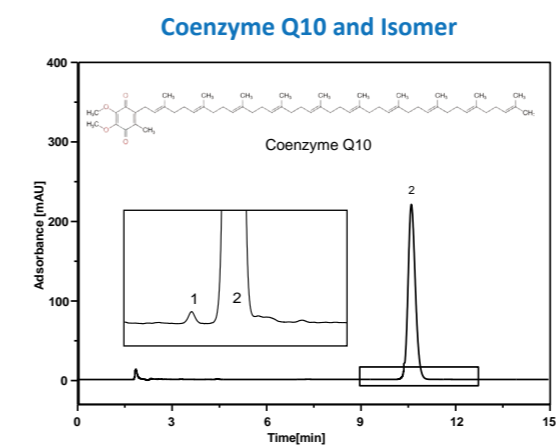
### Main Features

- Monodispersed, high-purity, porous, spherical silica particles for high column efficiency and mechanical strength
- Excellent chromatography performance for symmetrical peaks
- Good column-to-column consistency

### Specifications

| Product Name          | ChromCore Silica  |
|-----------------------|---|
| Functional Group      | Silanol   |
| Substrate             | Monodispersed, porous, spherical silica particles           |
| Particle Size         | 3 & 5 $\mu\text{m}$   |
| Pore Size             | 120 $\text{\AA}$  |
| Surface Area          | 300 $\text{m}^2/\text{g}$                                   |
| Carbon Load           | 0   |
| End-capped            | No  |
| Pressure Limit        | 5000 psi for 5 $\mu\text{m}$ , 6000 psi for 3 $\mu\text{m}$ |
| Temperature Limit     | 60 $^{\circ}\text{C}$                                       |
| pH Range              | 3-7   |
| Aqueous Compatibility | 100% aqueous  |

### Applications

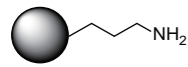


Column: ChromCore Silica, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 97/3 v/v hexane/ ethyl acetate  
 Flow Rate: 2.0 mL/min  
 Temperature: 30  $^{\circ}\text{C}$   
 Injection: 20  $\mu\text{L}$   
 Detection: UV 275 nm  
 Peaks:  
 1. Coenzyme Q10 Isomer  
 2. Coenzyme Q10

### Ordering Information

| Product Name     | Particle Size ( $\mu\text{m}$ ) | Length (mm) | ID (mm)            |                    |                    |
|------------------|---------------------------------|-------------|--------------------|--------------------|--------------------|
|                  |                                 |             | 4.6                | 3.0                | 2.1                |
| ChromCore Silica | 5                               | 250         | A003-050012-04625S | A003-050012-03025S | A003-050012-02125S |
|                  |                                 | 150         | A003-050012-04615S | A003-050012-03015S | A003-050012-02115S |
|                  | 3                               | 150         | A003-030012-04615S | A003-030012-03015S | A003-030012-02115S |
|                  |                                 | 100         | A003-030012-04610S | A003-030012-03010S | A003-030012-02110S |

### ChromCore™ NH<sub>2</sub> Columns



ChromCore NH<sub>2</sub> columns are based on high surface coverage propylamino modified silica particles. They are designed for separating polar and hydrophilic analytes, such as monosaccharides, oligosaccharides and sugar alcohols under HILIC conditions.

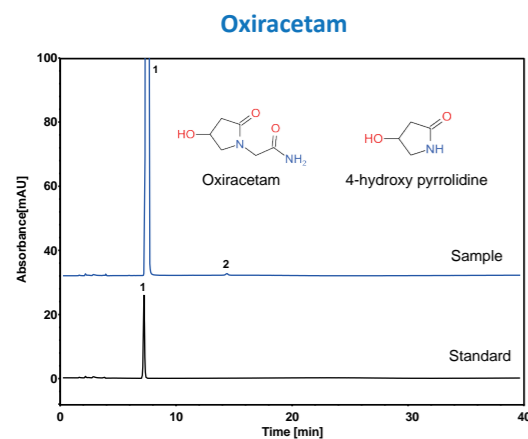
#### Main Features

- Desired selectivity for separating fructose, glucose, sucrose, maltose and lactose
- Monodispersed, high-purity, porous, spherical silica particles for high column efficiency
- Good column-to-column consistency

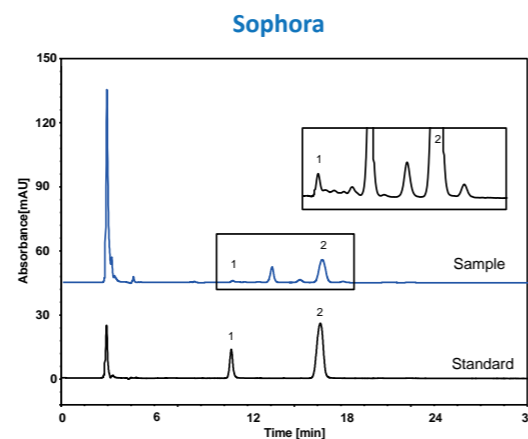
#### Specifications

| Product Name          | ChromCore NH <sub>2</sub>                         |
|-----------------------|---|
| Functional Group      | Propylamine                                       |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 μm  |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 4%  |
| End-capped            | No  |
| Pressure Limit        | 5000 psi for 5 μm, 6000 psi for 3 μm              |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-8   |
| Aqueous Compatibility | 100% aqueous                                      |

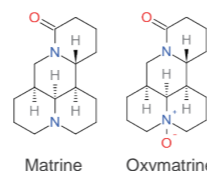
#### Applications



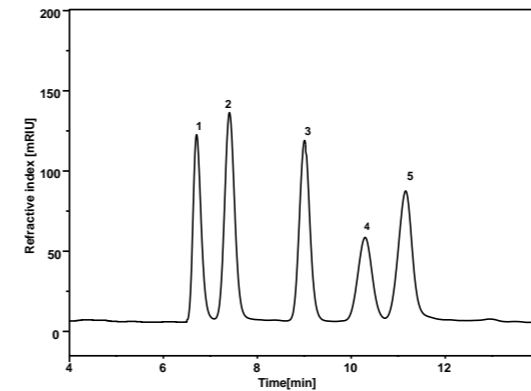
Column: ChromCore NH<sub>2</sub>, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 74/26 v/v MeCN/ 30mM phosphate buffer, pH3.5  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 210 nm  
 Peaks: 1. Oxiracetam  
 2. 4-hydroxy Pyrrolidine



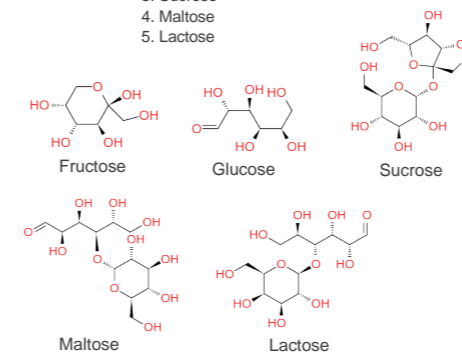
Column: ChromCore NH<sub>2</sub>, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: A) MeCN  
 B) EtOH  
 C) 3%(v/v)H<sub>3</sub>PO<sub>4</sub> in H<sub>2</sub>O  
 Gradient: A/B/C v/v/v 80/10/10  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 5 μL  
 Detection: UV 220 nm  
 Peaks: 1. Matrine  
 2. Oxymatrine



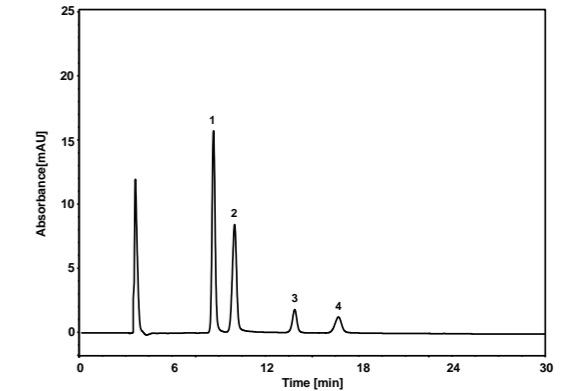
#### Sugars



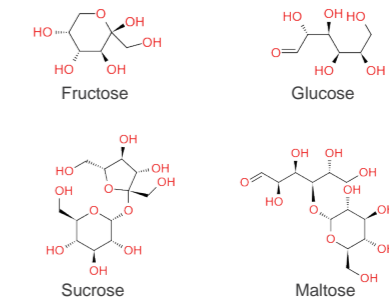
Column: ChromCore NH<sub>2</sub>, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 70/30 v/v MeCN/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 40 °C  
 Injection: 20 μL  
 Detection: RID  
 Peaks: 1. Fructose  
 2. Glucose  
 3. Sucrose  
 4. Maltose  
 5. Lactose



#### Honey



Column: ChromCore NH<sub>2</sub>, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 75/25 v/v MeCN/H<sub>2</sub>O  
 Flow Rate: 1.0 mL/min  
 Temperature: 35 °C  
 Injection: 15 μL  
 Detection: RID  
 Peaks: 1. Fructose  
 2. Glucose  
 3. Sucrose  
 4. Maltose

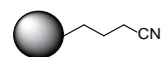


#### Ordering Information

| Product Name              | Particle Size (μm) | Length (mm) | ID (mm)            |                    |                    |
|---------------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                           |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore NH <sub>2</sub> | 5                  | 250         | A008-050012-04625S | A008-050012-03025S | A008-050012-02125S |
|                           |                    | 150         | A008-050012-04615S | A008-050012-03015S | A008-050012-02115S |
|                           | 3                  | 150         | A008-030012-04615S | A008-030012-03015S | A008-030012-02115S |
|                           |                    | 100         | A008-030012-04610S | A008-030012-03010S | A008-030012-02110S |
|                           |                    | 50          | A008-030012-04605S | A008-030012-03005S | A008-030012-02105S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ CN Columns



ChromCore CN columns are based on high surface coverage cyano modified silica particles, and designed for separating polar analytes, such as penicillins and steroids.

### Main Features

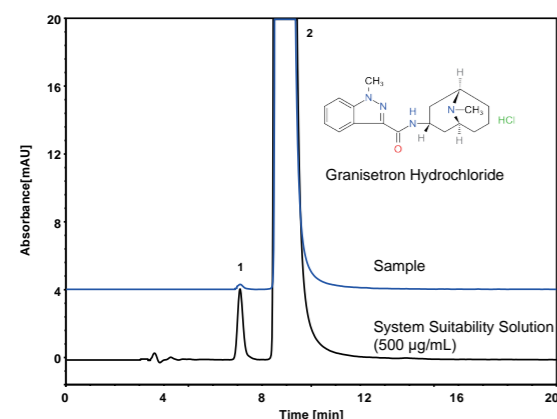
- Monodispersed, high-purity, porous, spherical silica particles for high column efficiency
- Suitable for separating hydrophobic, unsaturated and polar compounds
- Selectivity complementary to Silica and NH<sub>2</sub> phase in normal phase/HILIC mode

### Specifications

| Product Name          | ChromCore CN                                      |
|-----------------------|---|
| Functional Group      | Cyanopropyl                                       |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 μm  |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 6%  |
| End-capped            | No  |
| Pressure Limit        | 5000 psi for 5 μm, 6000 psi for 3 μm              |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-8   |
| Aqueous Compatibility | 100% aqueous                                      |

### Applications

#### Granisetron Hydrochloride



Column: ChromCore CN, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 50/50 v/v MeOH/0.25% (v/v) triethylamine in 50 mM sodium acetate solution  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Injection: 20 μL  
 Detection: UV 302 nm  
 Peaks: 1. Photodegradation Product  
 2. Granisetron

|                          | R.T. (min) | Theoretical Plate (USP) | Trailing Factor (USP) | Resolution (USP) | Signal To Noise (S/N) |
|--------------------------|------------|-------------------------|-----------------------|------------------|-----------------------|
| Photodegradation Product | 7.100      | 4734                    | 1.30                  | /                | /                     |
| Granisetron              | 8.700      | 3126                    | 1.85                  | 3.10             | 21.1                  |

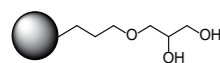
### Ordering Information

| Product Name | Particle Size (μm) | Length (mm) | ID (mm)            |                    |                    |
|--------------|--------------------|-------------|--------------------|--------------------|--------------------|
|              |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore CN | 5                  | 250         | A010-050012-04625S | A010-050012-03025S | A010-050012-02125S |
|              |                    | 150         | A010-050012-04615S | A010-050012-03015S | A010-050012-02115S |
|              | 3                  | 150         | A010-030012-04615S | A010-030012-03015S | A010-030012-02115S |
|              |                    | 100         | A010-030012-04610S | A010-030012-03010S | A010-030012-02110S |
|              |                    | 50          | A010-030012-04605S | A010-030012-03005S | A010-030012-02105S |

For more information, please visit <http://www.nanochrom.com>



## ChromCore™ HILIC-Diol Columns



ChromCore HILIC-Diol columns are based on proprietary diol modified silica particles. They provide a neutral surface with intermediate polarity, suited for separating pesticides, herbicides, pharmaceutical metabolites, polar natural products.

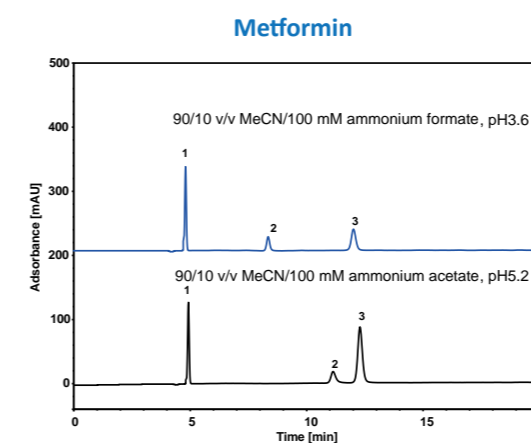
### Main Features

- Monodispersed, high-purity, porous, spherical silica particles for high column efficiency
- Suitable for separating compounds with intermediate to high polarity
- Suitable for both normal phase and HILIC conditions
- Good column-to-column consistency

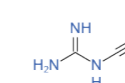
### Specifications

| Product Name          | ChromCore HILIC-Diol                              |
|-----------------------|---|
| Functional Group      | Diol  |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 μm  |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 10%   |
| End-capped            | No  |
| Pressure Limit        | 5000 psi for 5 μm, 6000 psi for 3 μm              |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-8   |
| Aqueous Compatibility | 100% aqueous                                      |

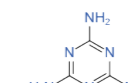
## Applications



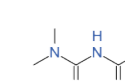
Column: ChromCore HILIC-Diol, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: See chromatogram  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 5 μL  
 Detection: UV 218 nm  
 Peaks: 1. Dicyandiamide  
 2. Metformin  
 3. Melamine



Dicyandiamide



Metformin



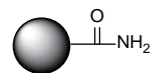
Melamine

## Ordering Information

| Product Name         | Particle Size (μm) | Length (mm) | ID (mm)            |                    |                    |
|----------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                      |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore HILIC-Diol | 5                  | 250         | A020-050012-04625S | A020-050012-03025S | A020-050012-02125S |
|                      |                    | 150         | A020-050012-04615S | A020-050012-03015S | A020-050012-02115S |
|                      |                    | 100         | A020-050012-04610S | A020-050012-03010S | A020-050012-02110S |
|                      | 3                  | 150         | A020-030012-04615S | A020-030012-03015S | A020-030012-02115S |
|                      |                    | 100         | A020-030012-04610S | A020-030012-03010S | A020-030012-02110S |
|                      |                    | 50          | A020-030012-04605S | A020-030012-03005S | A020-030012-02105S |

For more information, please visit <http://www.nanochrom.com>

### ChromCore™ HILIC-Amide Columns



ChromCore HILIC-Amide columns are based on proprietary amido modified silica particles. They provide higher polarity than ChromCore HILIC-Diol columns, designed for separating polar compounds in a broad range of applications.

#### Main Features

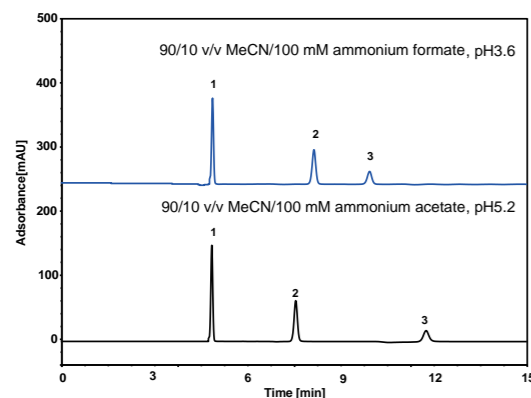
- Monodispersed, high-purity, porous silica particles for high column efficiency
- Unique selectivity for polar compounds
- Suited for small polar compounds and oligosaccharides analysis
- Good column-to-column consistency

#### Specifications

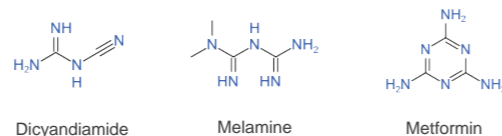
| Product Name          | ChromCore HILIC-Amide                             |
|-----------------------|---|
| Functional Group      | Amide   |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 μm  |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 7%  |
| End-capped            | No  |
| Pressure Limit        | 5000 psi for 5 μm, 6000 psi for 3 μm              |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-8   |
| Aqueous Compatibility | 100% aqueous                                      |

#### Applications

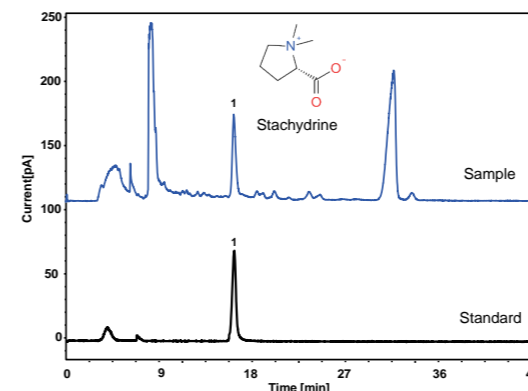
##### Metformin



Column: ChromCore HILIC-Amide, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: See chromatogram  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 5 μL  
 Detection: UV 218 nm  
 Peaks: 1. Dicyandiamide  
 2. Melamine  
 3. Metformin

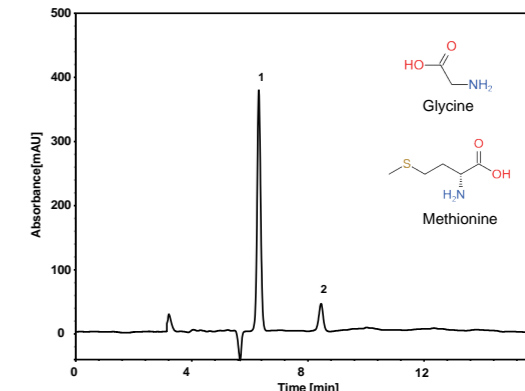


##### Leonuri Herba



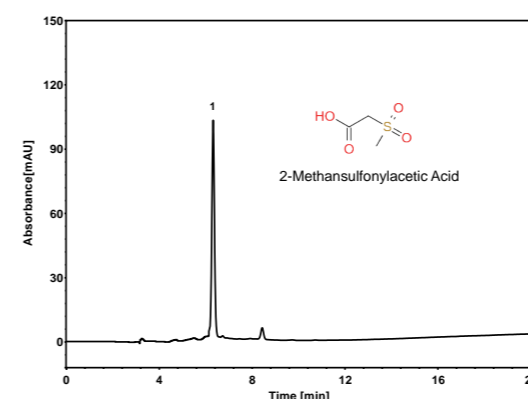
Column: ChromCore HILIC-Amide, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 80/20 v/v MeCN/0.2% acetic acid in H<sub>2</sub>O  
 Flow Rate: 0.5 mL/min  
 Temperature: 20 °C  
 Injection: 10 μL  
 Detection: CAD  
 Peak: 1. Stachydrine

##### Glycine and Methionine



Column: ChromCore HILIC-Amide, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 75/25 v/v MeCN/25 mM sodium dihydrogen phosphate in H<sub>2</sub>O, pH5.5  
 Flow Rate: 1.0 mL/min  
 Temperature: 35 °C  
 Injection: 10 μL  
 Detection: UV 210 nm  
 Sample: Glycine and Methionine  
 Peaks: 1. Methionine  
 2. Glycine

##### 2-Methansulfonylacetic Acid



Column: ChromCore HILIC-Amide, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: A) MeCN  
 B) 10 mM sodium dihydrogen phosphate in H<sub>2</sub>O  
 Gradient:
 

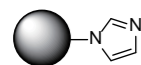
| t (min) | %A | %B |
|---------|----|----|
| 0       | 10 | 90 |
| 15      | 90 | 10 |
| 20      | 90 | 10 |
| 20.1    | 10 | 90 |
| 40      | 10 | 90 |

 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 20 μL  
 Detection: UV 210 nm  
 Sample: 2-Methansulfonylacetic Acid (0.5 mg/ml dissolved in 50% MeCN solution)  
 Peak: 1. 2-Methansulfonylacetic Acid

#### Ordering Information

| Product Name          | Particle Size (μm) | Length (mm) | ID (mm)            |                    |                    |
|-----------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                       |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore HILIC-Amide | 5                  | 250         | A068-050012-04625S | A068-050012-03025S | A068-050012-02125S |
|                       |                    | 150         | A068-050012-04615S | A068-050012-03015S | A068-050012-02115S |
|                       |                    | 100         | A068-050012-04610S | A068-050012-03010S | A068-050012-02110S |
|                       | 3                  | 150         | A068-030012-04615S | A068-030012-03015S | A068-030012-02115S |
|                       |                    | 100         | A068-030012-04610S | A068-030012-03010S | A068-030012-02110S |
|                       |                    | 50          | A068-030012-04605S | A068-030012-03005S | A068-030012-02105S |

## ChromCore™ HILIC-Imidazole Columns



ChromCore HILIC-Imidazole columns are based on proprietary polar imidazole modified silica particles. With a polar and N-containing ring structure, they provide weak anion exchange property with intermediate polarity, featuring a selectivity complementary to other HILIC columns for separating highly polar analytes in a broad range of applications.

### Main Features

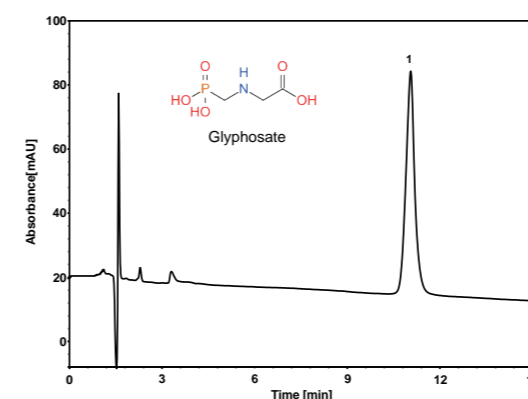
- Monodispersed, high-purity, porous silica particles for high column efficiency
- Unique selectivity based on HILIC and ion exchange mixed mode
- Suited for separating polar and anionic analytes
- Good column-to-column consistency

### Specifications

| Product Name          | ChromCore HILIC-Imidazole                         |
|-----------------------|---|
| Functional Group      | Proprietary imidazole                             |
| Substrate             | Monodispersed, porous, spherical silica particles |
| Particle Size         | 3 & 5 μm  |
| Pore Size             | 120 Å   |
| Surface Area          | 300 m <sup>2</sup> /g                             |
| Carbon Load           | 5%  |
| End-capped            | No  |
| Pressure Limit        | 5000 psi for 5 μm, 6000 psi for 3 μm              |
| Temperature Limit     | 60 °C   |
| pH Range              | 2-8   |
| Aqueous Compatibility | 100% aqueous                                      |

## Applications

### Glyphosate



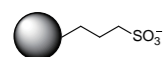
Columns: ChromCore HILIC-Imidazole, 5 μm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 3/97 v/v MeOH/2 mM potassium dihydrogen phosphate in H<sub>2</sub>O, pH1.9  
 Flow Rate: 1.5 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 195 nm  
 Peak: 1. Glyphosate (2 mg/mL)

## Ordering Information

| Product Name              | Particle Size (μm) | Length (mm) | ID (mm)            |                    |                    |
|---------------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                           |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore HILIC-Imidazole | 5                  | 250         | A208-050012-04625S | A208-050012-03025S | A208-050012-02125S |
|                           |                    | 150         | A208-050012-04615S | A208-050012-03015S | A208-050012-02115S |
|                           |                    | 100         | A208-050012-04610S | A208-050012-03010S | A208-050012-02110S |
|                           | 3                  | 150         | A208-030012-04615S | A208-030012-03015S | A208-030012-02115S |
|                           |                    | 100         | A208-030012-04610S | A208-030012-03010S | A208-030012-02110S |
|                           |                    | 50          | A208-030012-04605S | A208-030012-03005S | A208-030012-02105S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ SCX Columns



ChromCore SCX columns are based on sulfonate modified silica particles. These columns feature a strong cation exchange property and are suitable for cationic analytes.

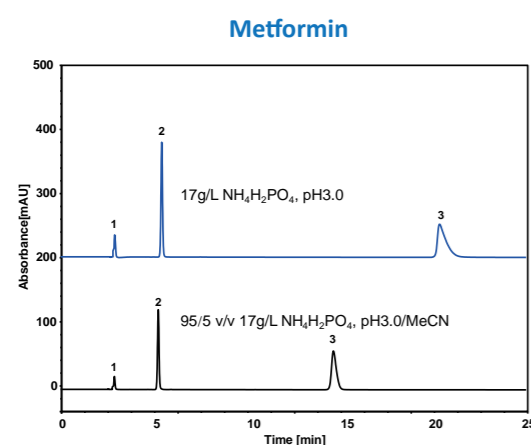
### Main Features

- Monodispersed, high-purity, porous silica particles for high column efficiency
- Suited for separating cationic analytes
- Good column-to-column consistency

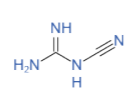
### Specifications

| Product Name      | ChromCore SCX                                     | ChromCore 300 SCX     |
|-------------------|---|-----------------------|
| Functional Group  | Sulfonate   |                       |
| Substrate         | Monodispersed, porous, spherical silica particles |                       |
| Particle Size     | 3 & 5 μm  |                       |
| Pore Size         | 120 Å   | 300 Å                 |
| Surface Area      | 300 m <sup>2</sup> /g                             | 100 m <sup>2</sup> /g |
| End-capped        | No  |                       |
| Pressure Limit    | 5000 psi for 5 μm<br>6000 psi for 3 μm            |                       |
| Temperature Limit | 60 °C   |                       |
| pH Range          | 2-8   |                       |

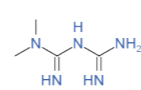
### Applications



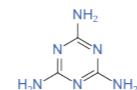
Column: ChromCore 300 SCX, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase:  
 Blue: 17 g/L ammonium dihydrogen phosphate in H<sub>2</sub>O, pH3.0  
 Black: 95/5 v/v 17 g/L ammonium dihydrogen phosphate in H<sub>2</sub>O, pH3.0/MeCN  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 5 μL  
 Detection: UV 218 nm  
 Peaks:  
 1. Dicyandiamide  
 2. Melamine  
 3. Metformin



Dicyandiamide

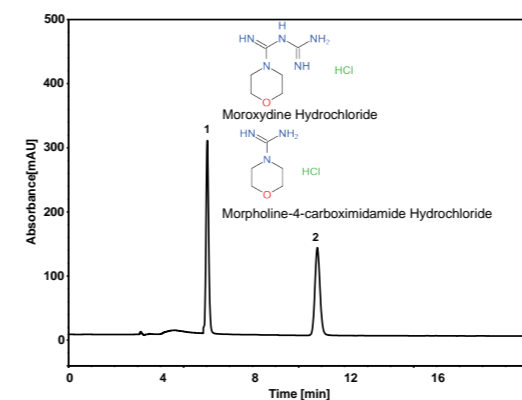


Melamine



Metformin

### Moroxydine Hydrochloride



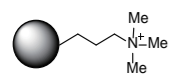
Column: ChromCore 300 SCX, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 10/90 v/v MeCN/150 mM ammonium dihydrogen phosphate in H<sub>2</sub>O, pH2.5  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 2 μL  
 Detection: UV 198 nm  
 Peaks:  
 1. Morpholine-4-carboximidamide Hydrochloride  
 2. Moroxydine Hydrochloride

### Ordering Information

| Product Name      | Particle Size (μm) | Length (mm) | ID (mm)            |                    |                    |
|-------------------|--------------------|-------------|--------------------|--------------------|--------------------|
|                   |                    |             | 4.6                | 3.0                | 2.1                |
| ChromCore SCX     | 5                  | 250         | A052-050012-04625S | A052-050012-03025S | A052-050012-02125S |
|                   |                    | 150         | A052-050012-04615S | A052-050012-03015S | A052-050012-02115S |
|                   |                    | 100         | A052-050012-04610S | A052-050012-03010S | A052-050012-02110S |
|                   | 3                  | 150         | A052-030012-04615S | A052-030012-03015S | A052-030012-02115S |
|                   |                    | 100         | A052-030012-04610S | A052-030012-03010S | A052-030012-02110S |
|                   |                    | 50          | A052-030012-04605S | A052-030012-03005S | A052-030012-02105S |
| ChromCore 300 SCX | 5                  | 250         | A052-050030-04625S | A052-050030-03025S | A052-050030-02125S |
|                   |                    | 150         | A052-050030-04615S | A052-050030-03015S | A052-050030-02115S |
|                   |                    | 100         | A052-050030-04610S | A052-050030-03010S | A052-050030-02110S |
|                   | 3                  | 150         | A052-030030-04615S | A052-030030-03015S | A052-030030-02115S |
|                   |                    | 100         | A052-030030-04610S | A052-030030-03010S | A052-030030-02110S |
|                   |                    | 50          | A052-030030-04605S | A052-030030-03005S | A052-030030-02105S |

For more information, please visit <http://www.nanochrom.com>

## ChromCore™ SAX Columns



ChromCore SAX columns are based on quaternary ammonium modified silica particles. These columns feature a strong anion exchange property, and are suitable for separating anionic analytes.

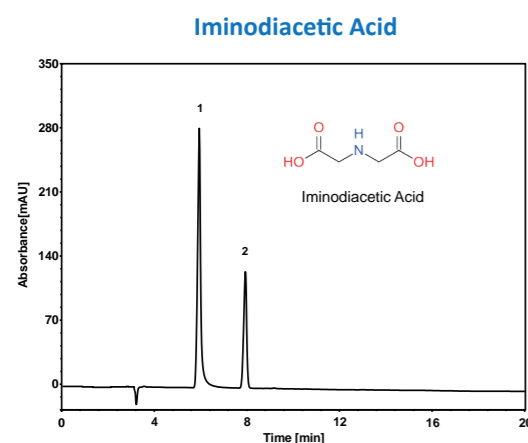
### Main Features

- Monodispersed, high-purity, porous silica particles for high column efficiency
- Suited for separating anionic analytes
- Good column-to-column consistency

### Specifications

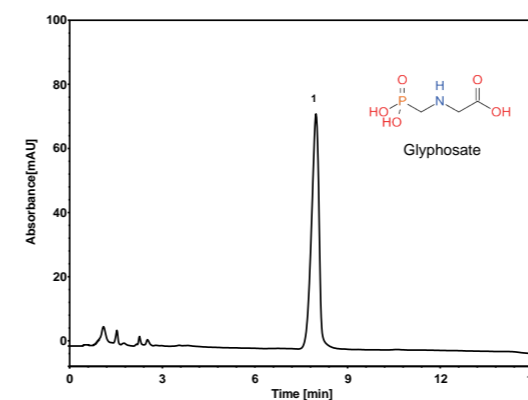
| Product Name      | ChromCore SAX   |
|-------------------|---|
| Functional Group  | Quaternary Ammonium   |
| Substrate         | Monodispersed, porous, spherical silica particles           |
| Particle Size     | 3 & 5 $\mu\text{m}$   |
| Pore Size         | 120 $\text{\AA}$  |
| Surface Area      | 300 $\text{m}^2/\text{g}$                                   |
| End-capped        | No  |
| Pressure Limit    | 5000 psi for 5 $\mu\text{m}$ , 6000 psi for 3 $\mu\text{m}$ |
| Temperature Limit | 60 $^{\circ}\text{C}$                                       |
| pH Range          | 2-8   |

### Applications



Column: ChromCore SAX, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 30 mM potassium dihydrogen phosphate in  $\text{H}_2\text{O}$ , pH6.0  
 Flow Rate: 1.0 mL/min  
 Temperature: 27  $^{\circ}\text{C}$   
 Injection: 10  $\mu\text{L}$   
 Detection: UV 195 nm  
 Peaks: 1. Iminodiacetic acid  
 2. Cl<sup>-</sup>

### Glyphosate



Column: ChromCore SAX, 5  $\mu\text{m}$   
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: 3/97 v/v MeOH/2 mM potassium dihydrogen phosphate in  $\text{H}_2\text{O}$ , pH1.9  
 Flow Rate: 1.5 mL/min  
 Temperature: 30  $^{\circ}\text{C}$   
 Injection: 10  $\mu\text{L}$   
 Detection: UV 195 nm  
 Peak: 1. Glyphosate (2 mg/mL)

### Ordering Information

| Product Name  | Particle Size ( $\mu\text{m}$ ) | Length (mm) | ID (mm)            |                    |                    |
|---------------|---------------------------------|-------------|--------------------|--------------------|--------------------|
|               |                                 |             | 4.6                | 3.0                | 2.1                |
| ChromCore SAX | 5                               | 250         | A014-050012-04625S | A014-050012-03025S | A014-050012-02125S |
|               |                                 | 150         | A014-050012-04615S | A014-050012-03015S | A014-050012-02115S |
|               |                                 | 100         | A014-050012-04610S | A014-050012-03010S | A014-050012-02110S |
|               | 3                               | 150         | A014-030012-04615S | A014-030012-03015S | A014-030012-02115S |
|               |                                 | 100         | A014-030012-04610S | A014-030012-03010S | A014-030012-02110S |
|               |                                 | 50          | A014-030012-04605S | A014-030012-03005S | A014-030012-02105S |

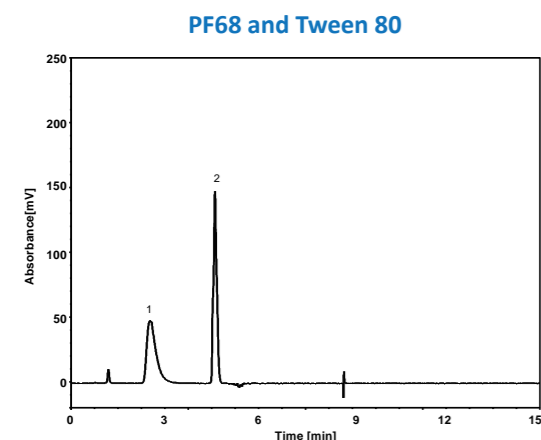
For more information, please visit <http://www.nanochrom.com>

### ChromCore™ Application-Specific Columns

ChromCore application-specific columns are designed to meet separation challenges for specific and difficult applications. Each of these columns provides guaranteed separation for its targeted applications under prescribed chromatographic conditions.

#### ChromCore™ SAA

Designed for surfactant analysis in (bio)pharmaceutical, chemical industry and environmental samples.



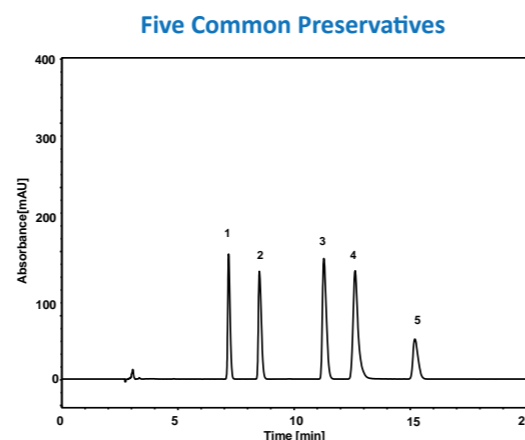
Column: ChromCore SAA, 5 μm  
 Dimension: 4.6×150 mm  
 Mobile Phase: A) 0.1% acetic acid in H<sub>2</sub>O  
 B) 0.1% acetic acid in isopropanol  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| 0      | 80 | 20  |
| 0.1    | 80 | 20  |
| 0.2    | 66 | 34  |
| 2.6    | 66 | 34  |
| 2.7    | 0  | 100 |
| 6.7    | 0  | 100 |
| 6.8    | 80 | 20  |
| 15     | 80 | 20  |

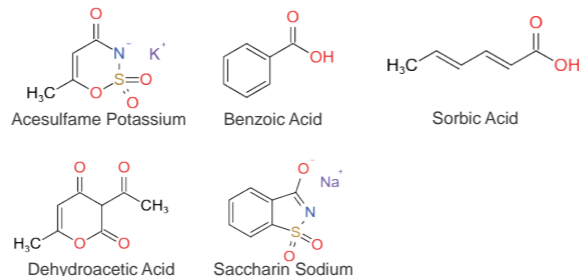
  
 Flow Rate: 1.2 mL/min  
 Temperature: 25 °C  
 Injection: 5 μL  
 Detection: ELSD (Evap: 65 °C, Neb: 55 °C, Gas: 1.6 SLM)  
 Peaks: 1. PF68  
 2. Tween 80

#### ChromCore™ C18-P

Designed for preservatives analysis in foods and beverages.



Column: ChromCore C18-P, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 95/5 v/v 20 mM ammonium acetate in H<sub>2</sub>O, pH6.9/MeOH  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 5 μL  
 Detection: UV 230 nm  
 Diluter: H<sub>2</sub>O  
 Peaks: 1. Acesulfame Potassium  
 2. Benzoic Acid  
 3. Sorbic Acid  
 4. Dehydroacetic Acid  
 5. Saccharin Sodium



#### Ordering Information

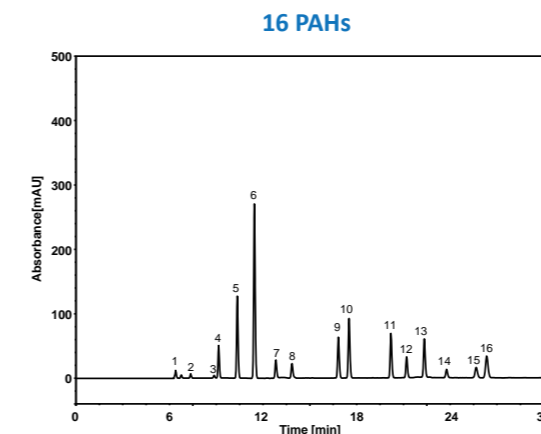
| Product Name  | Particle Size (μm) | Length (mm) | ID (mm)            |
|---------------|--------------------|-------------|--------------------|
|               |                    |             | 4.6                |
| ChromCore SAA | 5                  | 250         | S014-050018-04625S |
|               |                    | 150         | S014-050018-04615S |

#### Ordering Information

| Product Name    | Particle Size (μm) | Length (mm) | ID (mm)            |
|-----------------|--------------------|-------------|--------------------|
|                 |                    |             | 4.6                |
| ChromCore C18-P | 5                  | 250         | S010-050018-04625S |
|                 |                    | 150         | S010-050018-04615S |

#### ChromCore™ PAH

Designed for determination of 16 regulated polycyclic aromatic hydrocarbons.



Column: ChromCore PAH, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: A) H<sub>2</sub>O  
 B) MeCN  
 Gradient: 

| t(min) | %A | %B  |
|--------|----|-----|
| -10    | 40 | 60  |
| 0      | 40 | 60  |
| 2      | 40 | 60  |
| 20     | 0  | 100 |
| 30     | 0  | 100 |

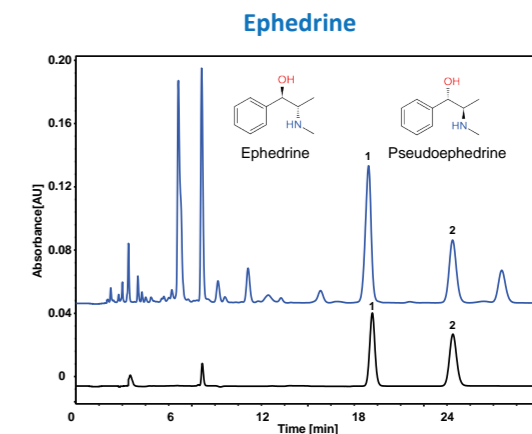
  
 Flow Rate: 1.5 mL/min  
 Temperature: 25 °C  
 Injection: 5 μL  
 Detection: UV 254 nm  
 Peaks: 1. Naphthalene 2. Acenaphthylene 3. Acenaphthene  
 4. Fluorene 5. Phenanthrene 6. Anthracene  
 7. Fluoranthene 8. Pyrene 9. Benzo(a)anthracene  
 10. Chrysene 11. Benzo(b)fluoranthene  
 12. Benzo(k)fluoranthene 13. Benzo(a)pyrene  
 14. Dibenzo(a,h)anthracene 15. Benzo(g,h,i)perylene  
 16. Indeno(1,2,3-cd)pyrene

#### Ordering Information

| Product Name  | Particle Size (μm) | Length (mm) | ID (mm)            |
|---------------|--------------------|-------------|--------------------|
|               |                    |             | 4.6                |
| ChromCore PAH | 5                  | 250         | A118-050018-04625S |
|               |                    | 150         | A118-030018-04615S |

#### ChromCore™ Ephedra

Designed for determination of ephedra in natural plants.



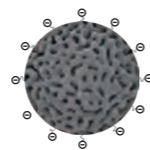
Column: ChromCore Ephedra, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 1.5/98.5 v/v MeOH/0.092% phosphoric acid in H<sub>2</sub>O containing 0.04% triethylamine and 0.02% dibutylamine  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 210 nm  
 Samples: Blue: System suitability solution  
 Black: Standards  
 Peaks: 1. Ephedrine  
 2. Pseudoephedrine

#### Ordering Information

| Product Name      | Particle Size (μm) | Length (mm) | ID (mm)            |
|-------------------|--------------------|-------------|--------------------|
|                   |                    |             | 4.6                |
| ChromCore Ephedra | 5                  | 250         | S011-050012-04625S |

## ChromCore™ Sugar Columns

ChromCore Sugar columns are prepared from monodispersed spherical PS/DVB particles by a unique sulfonation process to generate H<sup>+</sup>, Na<sup>+</sup>, or Ca<sup>2+</sup> forms for separating sugars, sugar alcohols, organic acids or their mixture.



### Main Features

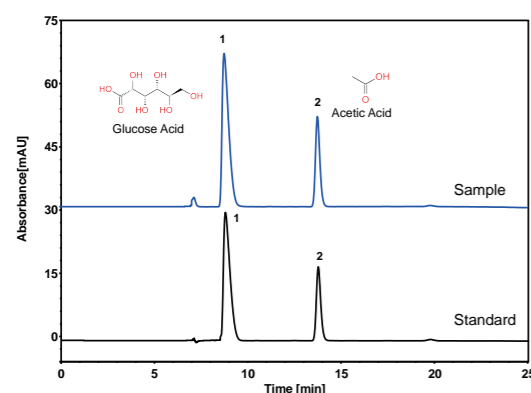
- Monodispersed, high-purity, porous silica particles for high column efficiency
- Three different forms for different applications
- Improved mechanical strength for longer column life
- Good column-to-column consistency

### Specifications

| Product Name       | Sugar-10H  | Sugar-10Ca                          | Sugar-10Na          |
|--------------------|--|-------------------------------------|---------------------|
| Functional Group   | -SO <sub>3</sub> H                                     | -(SO <sub>3</sub> ) <sub>2</sub> Ca | -SO <sub>3</sub> Na |
| Substrate          | Monodispersed, high-purity, spherical PS/DVB particles |                                     |                     |
| Particle Size      | 6 & 8 μm   |                                     |                     |
| Cross-linking      | 10%  |                                     |                     |
| Pressure Limit     | 1200 psi   |                                     |                     |
| Temperature Limit  | 95 °C  |                                     |                     |
| Operating pH Range | 1-3  | 5-9                                 | 5-9                 |

### Applications

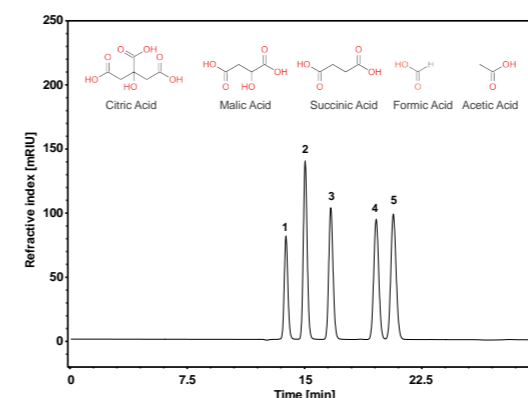
#### Multiple Electrolytes Injection



Column: ChromCore Sugar-10H, 6 μm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 25 mM H<sub>2</sub>SO<sub>4</sub> in H<sub>2</sub>O  
 Flow Rate: 0.6 mL/min  
 Temperature: 60 °C  
 Injection: 20 μL  
 Detection: UV 210 nm  
 Sample: Multiple Electrolytes Injection  
 Peaks: 1. Glucose Acid, 2. Acetic Acid

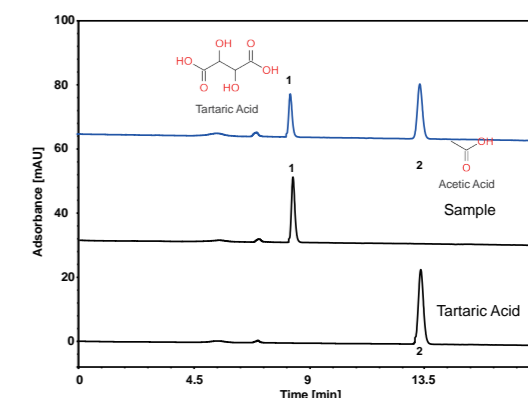
|              | R.T. (min) | Theoretical Plate | Tailing Factor | Resolution | Peak Area | Peak Height |
|--------------|------------|-------------------|----------------|------------|-----------|-------------|
| Glucose Acid | 8.799      | 2811              | 1.90           | /          | 886504    | 36446       |
| Acetic Acid  | 13.767     | 16158             | 1.22           | 8.88       | 345759    | 21059       |

#### Organic Acids



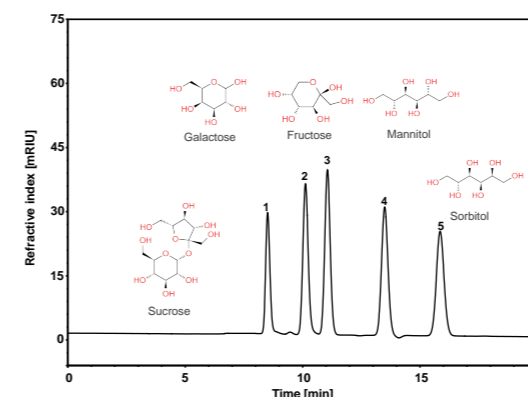
Column: ChromCore Sugar-10H, 6 μm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 9 mM H<sub>2</sub>SO<sub>4</sub> in H<sub>2</sub>O  
 Flow Rate: 0.5 mL/min  
 Temperature: 65 °C  
 Injection: 5 μL  
 Detection: RID  
 Peaks: 1. Citric Acid, 2. Malic Acid, 3. Succinic Acid, 4. Formic Acid, 5. Acetic Acid

#### Tartaric Acid and Acetic Acid



Column: ChromCore Sugar-10H, 6 μm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: 5 mM H<sub>2</sub>SO<sub>4</sub> in H<sub>2</sub>O  
 Flow Rate: 0.6 mL/min  
 Temperature: 80 °C  
 Injection: 10 μL  
 Detection: UV 210 nm  
 Peaks: 1. Tartaric Acid, 2. Acetic Acid

#### Sugars



Column: ChromCore Sugar-10Ca, 6 μm  
 Dimension: 7.8 × 300 mm  
 Mobile Phase: H<sub>2</sub>O  
 Flow Rate: 0.5 mL/min  
 Temperature: 80 °C  
 Injection: 5 μL  
 Detection: RID  
 Peaks: 1. Sucrose, 2. Galactose, 3. Fructose, 4. Mannitol, 5. Sorbitol

### Ordering Information

| Product Name         | Particle Size (μm) | Length (mm) | ID (mm)            |                    |
|----------------------|--------------------|-------------|--------------------|--------------------|
|                      |                    |             | 7.8                | 4.6                |
| ChromCore Sugar-10H  | 8                  | 300         | A017-080010-07830S | /                  |
|                      |                    | 250         | /                  | A017-080010-04625S |
|                      | 6                  | 300         | A017-060010-07830S | /                  |
|                      |                    | 250         | /                  | A017-060010-04625S |
| ChromCore Sugar-10Ca | 8                  | 300         | A019-080010-07830S | /                  |
|                      |                    | 250         | /                  | A019-080010-04625S |
|                      | 6                  | 300         | A019-060010-07830S | /                  |
|                      |                    | 250         | /                  | A019-060010-04625S |
| ChromCore Sugar-10Na | 8                  | 300         | A058-080010-07830S | /                  |
|                      |                    | 250         | /                  | A058-080010-04625S |
|                      | 6                  | 300         | A058-060010-07830S | /                  |
|                      |                    | 250         | /                  | A058-060010-04625S |

### ChromCore™ UHPLC Columns

ChromCore UHPLC columns are based on sub 2 μm high-purity, monodispersed, spherical porous silica particles with precisely controlled particle size and pore structure, as well as high mechanical strength, providing high efficiency and consistency. They provide better separation, higher detection sensitivity and shorter analysis time.

#### Main Features

- Advanced monodispersed particle technology for high column efficiency and mechanical strength
- Excellent chromatography performance for symmetrical peaks
- Low column bleed and good MS compatibility
- Good column-to-column consistency

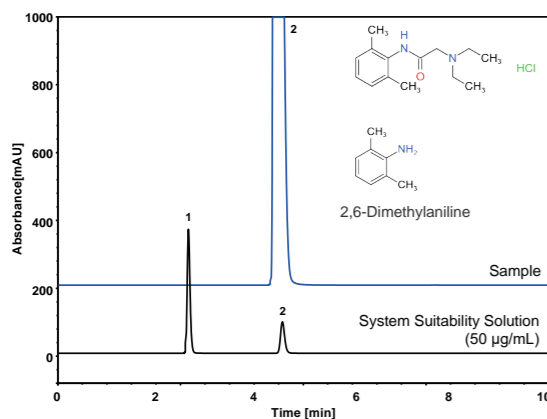
#### Specifications

| Product Name      | ChromCore 120 C18                                 | ChromCore AQ C18      | ChromCore 120 C8      | ChromCore AQ C8       |
|-------------------|---|-----------------------|-----------------------|-----------------------|
| Functional Group  | Octadecyl   |                       | Octyl                 |                       |
| Substrate         | Monodispersed, porous, spherical silica particles |                       |                       |                       |
| Particle Size     | 1.8 μm  |                       |                       |                       |
| Pore Size         | 120 Å   | 180 Å                 | 120 Å                 | 180 Å                 |
| Surface Area      | 300 m <sup>2</sup> /g                             | 200 m <sup>2</sup> /g | 300 m <sup>2</sup> /g | 200 m <sup>2</sup> /g |
| Carbon Load       | 17%   | 13%                   | 10%                   | 7%                    |
| End-capped        | Yes   |                       |                       |                       |
| Pressure Limit    | 12000 psi   |                       |                       |                       |
| Temperature Limit | 60 °C   |                       |                       |                       |
| pH Range          | 2-10  |                       |                       |                       |

#### Applications

##### >> ChromCore 120 C18

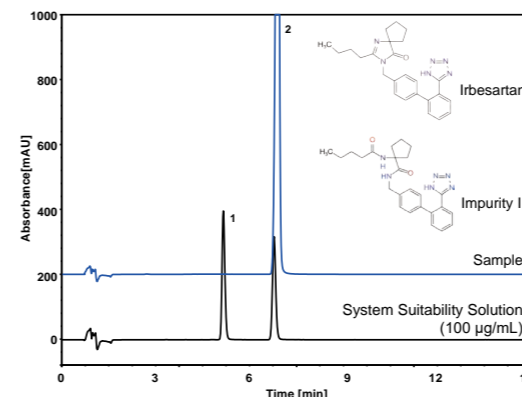
#### Lidocaine Hydrochloride



Column: ChromCore 120 C18, 1.8 μm  
 Dimension: 2.1 × 100 mm  
 Mobile Phase: 50/50 v/v MeCN/17.6 mM phosphate buffer, pH8.0  
 Flow Rate: 0.25 mL/min  
 Temperature: 25 °C  
 Injection: 5 μL  
 Detection: UV 230 nm  
 Peaks: 1. Impurity I (2,6-Dimethylaniline)  
 2. Lidocaine

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 2.653      | 10219                   | 1.25                 | /                | /                     |
| Lidocaine  | 4.570      | 14212                   | 1.18                 | 14.84            | 130.7                 |

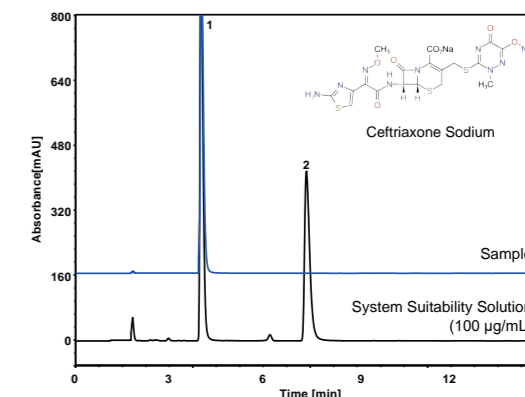
#### Irbesartan



Column: ChromCore 120 C18, 1.8 μm  
 Dimension: 2.1 × 100 mm  
 Mobile Phase: 38/62 v/v MeCN/ 1% phosphoric acid in H<sub>2</sub>O, pH3.2  
 Flow Rate: 0.25 mL/min  
 Temperature: 25 °C  
 Injection: 2 μL  
 Detection: UV 220 nm  
 Peaks: 1. Impurity I  
 2. Irbesartan

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 5.153      | 14905                   | 1.15                 | /                | /                     |
| Irbesartan | 6.777      | 20381                   | 1.08                 | 9.05             | 14.6                  |

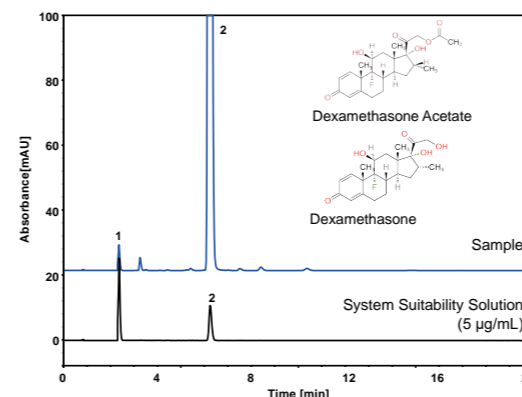
#### Ceftriaxone Sodium



Column: ChromCore 120 C18, 1.8 μm  
 Dimension: 2.1 × 100 mm  
 Mobile Phase: 27/73 v/v MeCN/0.02 mol/L octylamine solution, pH6.5  
 Flow Rate: 0.25 mL/min  
 Temperature: 25 °C  
 Injection: 20 μL  
 Detection: UV 254 nm  
 Peaks: 1. Ceftriaxone  
 2. Trans-isomer of Ceftriaxone

|                             | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|-----------------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Ceftriaxone                 | 4.000      | 8068                    | 1.68                 | /                | 20.9                  |
| Trans-isomer of Ceftriaxone | 7.373      | 9966                    | 1.71                 | 14.25            | /                     |

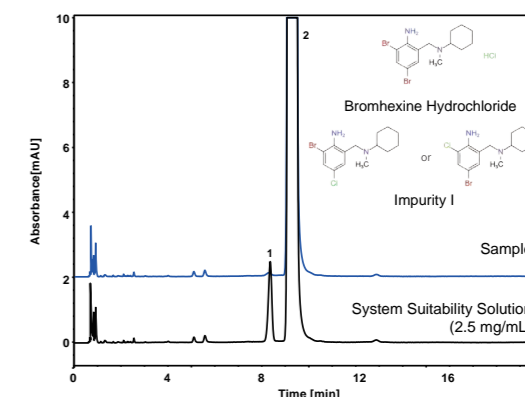
#### Dexamethasone



Column: ChromCore 120 C18, 1.8 μm  
 Dimension: 2.1 × 100 mm  
 Mobile Phase: 40/60 v/v MeCN/H<sub>2</sub>O  
 Flow Rate: 0.3 mL/min  
 Temperature: 25 °C  
 Injection: 5 μL  
 Detection: UV 240 nm  
 Peaks: 1. Dexamethasone  
 2. Dexamethasone Acetate

|                       | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|-----------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Dexamethasone         | 2.334      | 7309                    | 1.38                 | /                | /                     |
| Dexamethasone Acetate | 6.220      | 14020                   | 1.21                 | 24.34            | 55.2                  |

#### Bromhexine Hydrochloride

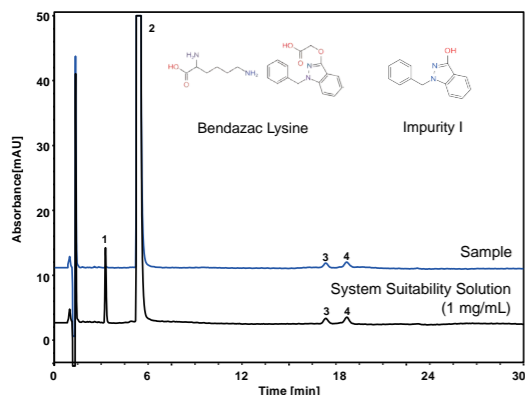


Column: ChromCore 120 C18, 1.8 μm  
 Dimension: 2.1 × 100 mm  
 Mobile Phase: 80/20 v/v MeCN/8.2 mM potassium dihydrogen phosphate pH7.0 adjusted by sodium hydroxide solution  
 Flow Rate: 0.3 mL/min  
 Temperature: 40 °C  
 Injection: 1 μL  
 Detection: UV 245 nm  
 Peaks: 1. Impurity I  
 2. Bromhexine Hydrochloride

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 8.057      | 21276                   | 1.04                 | /                | /                     |
| Bromhexine | 9.003      | 22926                   | 1.00                 | 4.13             | 46.4                  |



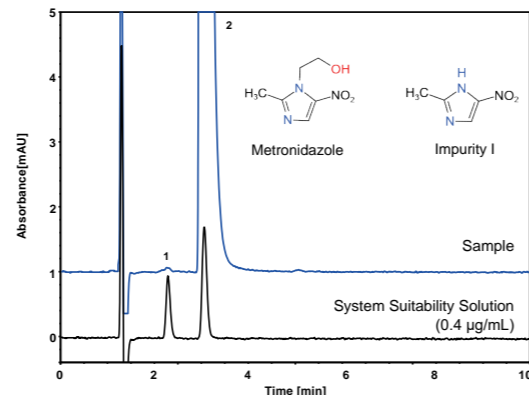
### Bendazac Lysine



Column: ChromCore 120 C18, 1.8  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: 47/53 v/v MeCN/100 mM acetic acid solution, pH2.88  
 Flow Rate: 0.2 mL/min  
 Temperature: 25  $^{\circ}$ C  
 Injection: 2  $\mu$ L  
 Detection: UV 227 nm  
 Peaks: 1. Impurity I  
 2. Bendazac Lysine  
 3. Impurity 1  
 4. Impurity 2

|                 | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|-----------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity 1      | 3.247      | 7758                    | 1.21                 | /                | /                     |
| Bendazac Lysine | 5.333      | 9589                    | 1.28                 | 11.42            | 18.7                  |
| Impurity 1      | 17.340     | 12971                   | 1.09                 | 29.04            | /                     |
| Impurity 2      | 18.697     | 17146                   | 0.78                 | 2.30             | /                     |

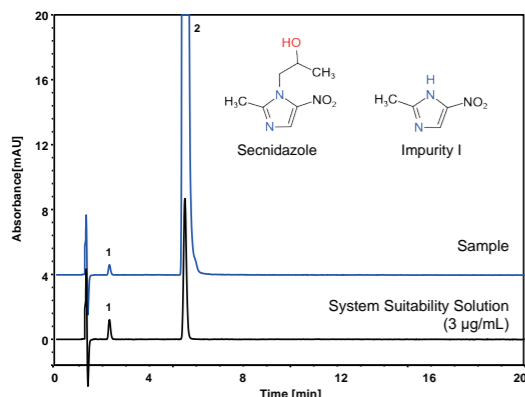
### Metronidazole



Column: ChromCore 120 C18, 1.8  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: 20/80 v/v MeOH/H<sub>2</sub>O  
 Flow Rate: 0.2 mL/min  
 Temperature: 40  $^{\circ}$ C  
 Injection: 2  $\mu$ L  
 Detection: UV 315 nm  
 Peaks: 1. Impurity I  
 2. Metronidazole

|               | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|---------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I    | 2.270      | 3041                    | 1.23                 | /                | /                     |
| Metronidazole | 3.047      | 4304                    | 1.21                 | 4.43             | 22.5                  |

### Secnidazole

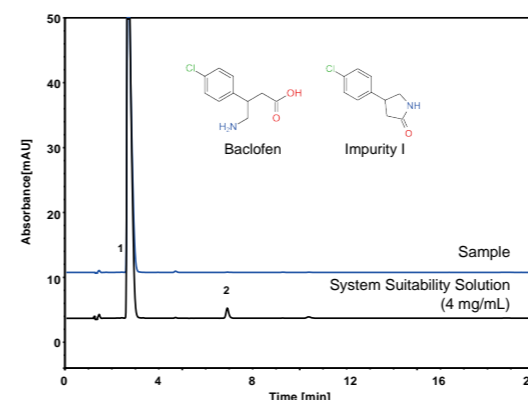


Column: ChromCore 120 C18, 1.8  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: 20/80 v/v MeOH/H<sub>2</sub>O  
 Flow Rate: 0.2 mL/min  
 Temperature: 40  $^{\circ}$ C  
 Injection: 2  $\mu$ L  
 Detection: UV 318 nm  
 Peaks: 1. Impurity I  
 2. Secnidazole

|             | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|-------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I  | 2.273      | 2904                    | 1.20                 | /                | /                     |
| Secnidazole | 5.493      | 9455                    | 1.17                 | 16.32            | 22.6                  |

### ChromCore AQ C18

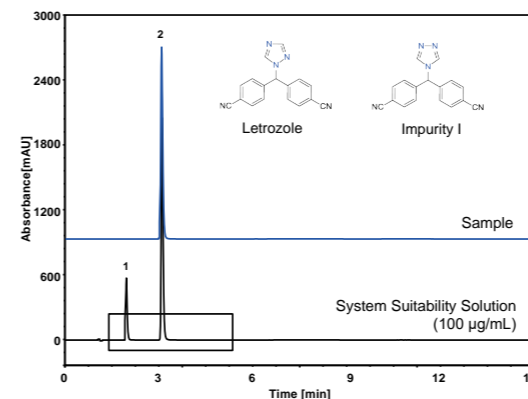
#### Baclofen



Column: ChromCore AQ C18, 1.8  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: 55/44/2 v/v/v 0.3 M acetic acid solution/MeOH/0.36 M sodium pentanesulfonate solution  
 Flow Rate: 0.208 mL/min  
 Temperature: 25  $^{\circ}$ C  
 Injection: 2  $\mu$ L  
 Detection: UV 265 nm  
 Peaks: 1. Baclofen  
 2. Impurity I

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Baclofen   | 2.638      | 1392                    | 2.53                 | /                | 33.4                  |
| Impurity I | 6.872      | 17178                   | 1.30                 | 17.19            | /                     |

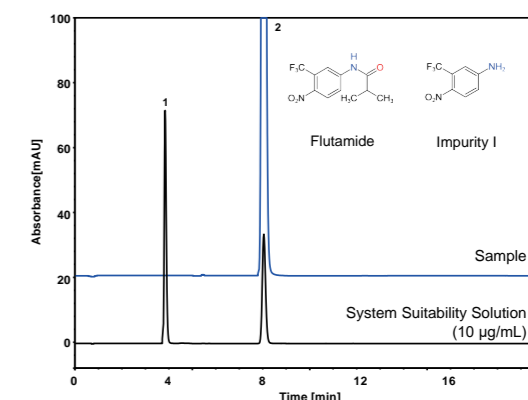
#### Letrozole



Column: ChromCore AQ C18, 1.8  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: A) H<sub>2</sub>O  
 B) MeCN  
 Gradient: (min) %A %B  
 0 60 40  
 5 20 80  
 5.1 60 40  
 15 60 40  
 Flow Rate: 0.25 mL/min  
 Temperature: 25  $^{\circ}$ C  
 Injection: 5  $\mu$ L  
 Detection: UV 230 nm  
 Peaks: 1. Impurity I  
 2. Letrozole

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 1.950      | 9906                    | 1.36                 | /                | /                     |
| Letrozole  | 3.087      | 14119                   | 1.35                 | 12.47            | 29.2                  |

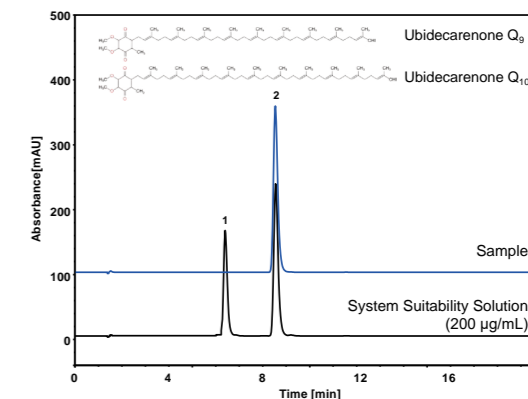
#### Flutamide



Column: ChromCore AQ C18, 1.8  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: 55/45 v/v H<sub>2</sub>O/MeCN  
 Flow Rate: 0.208 mL/min  
 Temperature: 25  $^{\circ}$ C  
 Injection: 5  $\mu$ L  
 Detection: UV 240 nm  
 Peaks: 1. Impurity I  
 2. Flutamide

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 3.825      | 9666                    | 1.25                 | /                | /                     |
| Flutamide  | 8.035      | 15538                   | 1.12                 | 20.37            | 45.4                  |

#### Ubidecarenone Q<sub>10</sub>

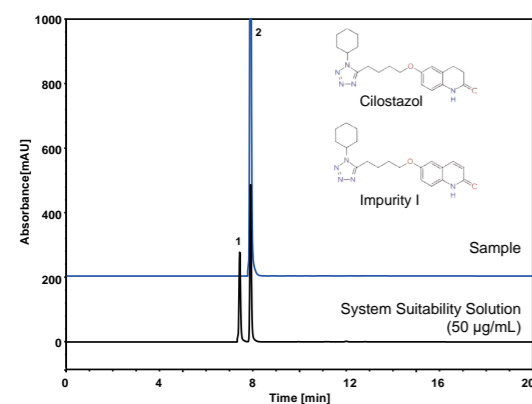


Column: ChromCore AQ C18, 1.8  $\mu$ m  
 Dimension: 2.1  $\times$  100 mm  
 Mobile Phase: 50/50 v/v MeOH/EtOH  
 Flow Rate: 0.2 mL/min  
 Temperature: 25  $^{\circ}$ C  
 Injection: 2  $\mu$ L  
 Detection: UV 275 nm  
 Peaks: 1. Ubidecarenone Q<sub>9</sub>  
 2. Ubidecarenone Q<sub>10</sub>

|                               | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|-------------------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Ubidecarenone Q <sub>9</sub>  | 6.387      | 7975                    | 1.34                 | /                | /                     |
| Ubidecarenone Q <sub>10</sub> | 8.540      | 10376                   | 1.30                 | 6.93             | 18.5                  |

### >> ChromCore 120 C8

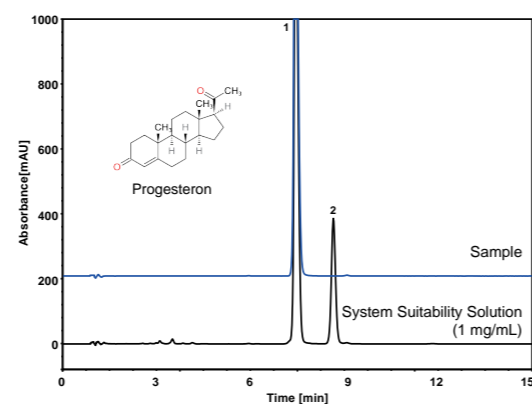
#### Cilostazol



Column: ChromCore 120 C8, 1.8 µm  
 Dimension: 2.1 × 100 mm  
 Mobile Phase: A) H<sub>2</sub>O  
 B) MeCN  
 Gradient: t(min) %A %B  
 0 70 30  
 2 60 40  
 5 30 70  
 10 30 70  
 11 70 30  
 20 70 30  
 Flow Rate: 0.25 mL/min  
 Temperature: 40 °C  
 Injection: 5 µL  
 Detection: UV 254 nm  
 Peaks: 1. Impurity I  
 2. Cilostazol

|            | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Impurity I | 7.427      | 60540                   | 1.24                 | /                | /                     |
| Cilostazol | 7.893      | 73247                   | 1.21                 | 3.93             | 19.7                  |

#### Progesterone



Column: ChromCore 120 C8, 1.8 µm  
 Dimension: 2.1 × 100 mm  
 Mobile Phase: 25/35/40 v/v/v MeOH/MeCN/H<sub>2</sub>O  
 Flow Rate: 0.25 mL/min  
 Temperature: 25 °C  
 Injection: 2 µL  
 Detection: UV 241 nm  
 Peaks: 1. Progesterone  
 2. Degradation products

|                      | R.T. (min) | Theoretical Plate (USP) | Tailing Factor (USP) | Resolution (USP) | Signal to Noise (S/N) |
|----------------------|------------|-------------------------|----------------------|------------------|-----------------------|
| Progesterone         | 7.440      | 17828                   | 1.30                 | /                | 23.3                  |
| Degradation products | 8.647      | 20443                   | 1.05                 | 5.19             | /                     |

### Ordering Information

| Product Name      | Particle Size (µm) | Length (mm) | ID (mm)            |                    |
|-------------------|--------------------|-------------|--------------------|--------------------|
|                   |                    |             | 3.0                | 2.1                |
| ChromCore 120 C18 | 1.8                | 150         | A001-018012-03015S | A001-018012-02115S |
|                   |                    | 100         | A001-018012-03010S | A001-018012-02110S |
|                   |                    | 50          | A001-018012-03005S | A001-018012-02105S |
|                   |                    | 30          | A001-018012-03003S | A001-018012-02103S |
| ChromCore AQ C18  | 1.8                | 150         | A201-018018-03015S | A201-018018-02115S |
|                   |                    | 100         | A201-018018-03010S | A201-018018-02110S |
|                   |                    | 50          | A201-018018-03005S | A201-018018-02105S |
|                   |                    | 30          | A201-018018-03003S | A201-018018-02103S |
| ChromCore 120 C8  | 1.8                | 150         | A007-018012-03015S | A007-018012-02115S |
|                   |                    | 100         | A007-018012-03010S | A007-018012-02110S |
|                   |                    | 50          | A007-018012-03005S | A007-018012-02105S |
|                   |                    | 30          | A007-018012-03003S | A007-018012-02103S |
| ChromCore AQ C8   | 1.8                | 150         | A207-018018-03015S | A207-018018-02115S |
|                   |                    | 100         | A207-018018-03010S | A207-018018-02110S |
|                   |                    | 50          | A207-018018-03005S | A207-018018-02105S |
|                   |                    | 30          | A207-018018-03003S | A207-018018-02103S |

For more information, please visit <http://www.nanochrom.com>

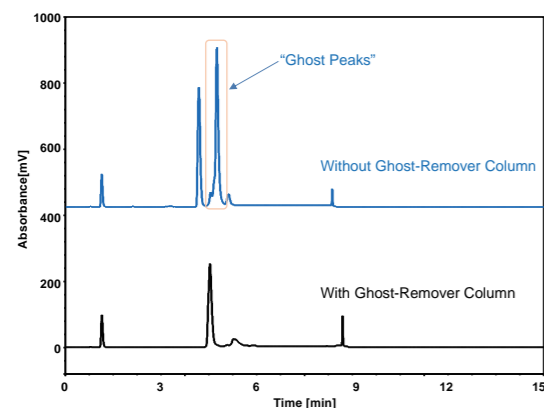
## NanoChrom™ Ghost-Remover Columns

In HPLC, it is not uncommon to observe “ghost peaks” especially when a gradient method is used. This can cause severe interference, and negatively impact the limit of detection. NanoChrom Ghost-Remover columns are designed to minimize such “ghost peaks” to improve sensitivity and the quality of data.

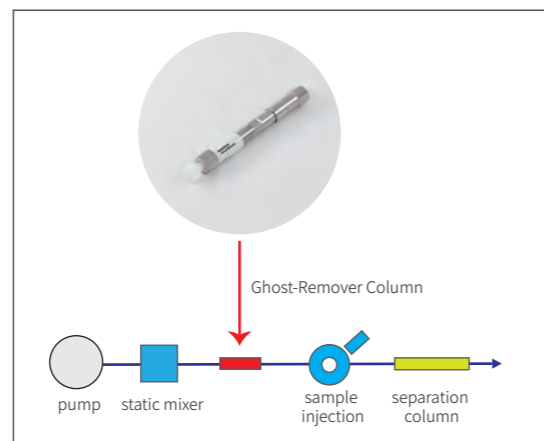
### Main Features

- High “ghost peak” removing ability
- Easy installation
- Various formats for both HPLC and UHPLC applications

### Applications



Columns: ChromCore SAA, 5 μm, 4.6×150 mm  
 Mobile Phase: A) 0.1% acetic acid in H<sub>2</sub>O  
 B) 0.1% acetic acid in isopropanol  
 Gradient: t(min) %A %B  
 0 80 20  
 0.9 80 20  
 1.0 66 34  
 2.4 66 34  
 2.5 0 100  
 6.5 0 100  
 6.6 80 20  
 15 80 20  
 Flow Rate: 1.2 mL/min  
 Temperature: 25 °C  
 Injection: 5 μL  
 Detection: ELSD ( Evap: 65 °C, Neb: 55 °C, Gas: 1.6 SLM )  
 Samples: Tween 20



Installation

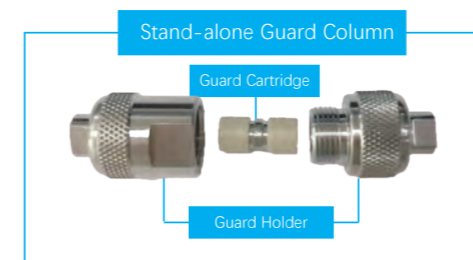
### Ordering Information

| Product Name                    | Length (mm) | ID (mm) |         |           |
|---------------------------------|-------------|---------|---------|-----------|
|                                 |             | 4.6     | 3.0     | 2.1       |
| NanoChrom Ghost-Remover         | 50          | GR4605S | GR3005S | GR2105S   |
|                                 | 30          | /       | /       | GR2103S   |
| NanoChrom Ghost-Remover (UHPLC) | 50          | /       | /       | GR2105S-U |

## Guard Columns

NanoChrom provides various guard columns/cartridges for ChromCore and BioCore analytical, semi-preparative and preparative columns to efficiently extend column lifetimes.

A stand-alone guard column consists of a holder and a guard cartridge (see figure below).



### Ordering Information

#### Guard Holder

| Product Name               | P/N           |
|----------------------------|---------------|
| Guard Holder (Stand-alone) | Guard-HPLC-A1 |

#### Guard Cartridge

| Product Name        | Particle Size (μm) | Length (mm) | ID (mm)               |                       |                       |
|---------------------|--------------------|-------------|-----------------------|-----------------------|-----------------------|
|                     |                    |             | 4.6                   | 3.0                   | 2.1                   |
| ChromCore 120 C18   | 5                  | 10          | A001-050012-04601S-B1 | A001-050012-03001S-B1 | A001-050012-02101S-B1 |
|                     | 3                  |             | A001-030012-04601S-B1 | A001-030012-03001S-B1 | A001-030012-02101S-B1 |
| ChromCore AQ C18    | 5                  | 10          | A201-050018-04601S-B1 | A201-050018-03001S-B1 | A201-050018-02101S-B1 |
|                     | 3                  |             | A201-030018-04601S-B1 | A201-030018-03001S-B1 | A201-030018-02101S-B1 |
| ChromCore AR C18    | 5                  | 10          | A401-050012-04601S-B1 | A401-050012-03001S-B1 | A401-050012-02101S-B1 |
|                     | 3                  |             | A401-030012-04601S-B1 | A401-030012-03001S-B1 | A401-030012-02101S-B1 |
| ChromCore BR C18    | 5                  | 10          | A301-050018-04601S-B1 | A301-050018-03001S-B1 | A301-050018-02101S-B1 |
|                     | 3                  |             | A301-030018-04601S-B1 | A301-030018-03001S-B1 | A301-030018-02101S-B1 |
| ChromCore 120 C18-T | 5                  | 10          | A501-050012-04601S-B1 | A501-050012-03001S-B1 | A501-050012-02101S-B1 |
|                     | 3                  |             | A501-030012-04601S-B1 | A501-030012-03001S-B1 | A501-030012-02101S-B1 |
| ChromCore Polar C18 | 5                  | 10          | A060-050012-04601S-B1 | A060-050012-03001S-B1 | A060-050012-02101S-B1 |
|                     | 3                  |             | A060-030012-04601S-B1 | A060-030012-03001S-B1 | A060-030012-02101S-B1 |
| ChromCore 120 C8    | 5                  | 10          | A007-050012-04601S-B1 | A007-050012-03001S-B1 | A007-050012-02101S-B1 |
|                     | 3                  |             | A007-030012-04601S-B1 | A007-030012-03001S-B1 | A007-030012-02101S-B1 |
| ChromCore AQ C8     | 5                  | 10          | A207-050018-04601S-B1 | A207-050018-03001S-B1 | A207-050018-02101S-B1 |
|                     | 3                  |             | A207-030018-04601S-B1 | A207-030018-03001S-B1 | A207-030018-02101S-B1 |
| ChromCore C30       | 5                  | 10          | A062-050018-04601S-B1 | A062-050018-03001S-B1 | A062-050018-02101S-B1 |
|                     | 3                  |             | A062-030018-04601S-B1 | A062-030018-03001S-B1 | A062-030018-02101S-B1 |
| ChromCore 300 C18   | 5                  | 10          | A001-050030-04601S-B1 | A001-050030-03001S-B1 | A001-050030-02101S-B1 |
|                     | 3                  |             | A001-030030-04601S-B1 | A001-030030-03001S-B1 | A001-030030-02101S-B1 |
| ChromCore 300 C8    | 5                  | 10          | A007-050030-04601S-B1 | A007-050030-03001S-B1 | A007-050030-02101S-B1 |
|                     | 3                  |             | A007-030030-04601S-B1 | A007-030030-03001S-B1 | A007-030030-02101S-B1 |
| ChromCore 300 C4-T  | 5                  | 10          | A226-050030-04601S-B1 | A226-050030-03001S-B1 | A226-050030-02101S-B1 |
|                     | 3                  |             | A226-030030-04601S-B1 | A226-030030-03001S-B1 | A226-030030-02101S-B1 |

| Product Name              | Particle Size (µm) | Length (mm) | ID (mm)               |                       |                       |
|---------------------------|--------------------|-------------|-----------------------|-----------------------|-----------------------|
|                           |                    |             | 4.6                   | 3.0                   | 2.1                   |
| ChromCore Phenyl          | 5                  | 10          | A011-050012-04601S-B1 | A011-050012-03001S-B1 | A011-050012-02101S-B1 |
|                           | 3                  |             | A011-030012-04601S-B1 | A011-030012-03001S-B1 | A011-030012-02101S-B1 |
| ChromCore PFP             | 5                  | 10          | A043-050012-04601S-B1 | A043-050012-03001S-B1 | A043-050012-02101S-B1 |
|                           | 3                  |             | A043-030012-04601S-B1 | A043-030012-03001S-B1 | A043-030012-02101S-B1 |
| ChromCore Biphenyl        | 5                  | 10          | A211-050012-04601S-B1 | A211-050012-03001S-B1 | A211-050012-02101S-B1 |
|                           | 3                  |             | A211-030012-04601S-B1 | A211-030012-03001S-B1 | A211-030012-02101S-B1 |
| ChromCore NH2             | 5                  | 10          | A008-050012-04601S-B1 | A008-050012-03001S-B1 | A008-050012-02101S-B1 |
|                           | 3                  |             | A008-030012-04601S-B1 | A008-030012-03001S-B1 | A008-030012-02101S-B1 |
| ChromCore Silica          | 5                  | 10          | A003-050012-04601S-B1 | A003-050012-03001S-B1 | A003-050012-02101S-B1 |
|                           | 3                  |             | A003-030012-04601S-B1 | A003-030012-03001S-B1 | A003-030012-02101S-B1 |
| ChromCore CN              | 5                  | 10          | A010-050012-04601S-B1 | A010-050012-03001S-B1 | A010-050012-02101S-B1 |
|                           | 3                  |             | A010-030012-04601S-B1 | A010-030012-03001S-B1 | A010-030012-02101S-B1 |
| ChromCoreHILIC-Amide      | 5                  | 10          | A068-050012-04601S-B1 | A068-050012-03001S-B1 | A068-050012-02101S-B1 |
|                           | 3                  |             | A068-030012-04601S-B1 | A068-030012-03001S-B1 | A068-030012-02101S-B1 |
| ChromCore HILIC-Diol      | 5                  | 10          | A020-050012-04601S-B1 | A020-050012-03001S-B1 | A020-050012-02101S-B1 |
|                           | 3                  |             | A020-030012-04601S-B1 | A020-030012-03001S-B1 | A020-030012-02101S-B1 |
| ChromCore HILIC-Imidazole | 5                  | 10          | A208-050012-04601S-B1 | A208-050012-03001S-B1 | A208-050012-02101S-B1 |
|                           | 3                  |             | A208-030012-04601S-B1 | A208-030012-03001S-B1 | A208-030012-02101S-B1 |
| ChromCore SCX             | 5                  | 10          | A052-050012-04601S-B1 | A052-050012-03001S-B1 | A052-050012-02101S-B1 |
|                           | 3                  |             | A052-030012-04601S-B1 | A052-030012-03001S-B1 | A052-030012-02101S-B1 |
| ChromCore 300 SCX         | 5                  | 10          | A052-050030-04601S-B1 | A052-050030-03001S-B1 | A052-050030-02101S-B1 |
|                           | 3                  |             | A052-030030-04601S-B1 | A052-030030-03001S-B1 | A052-030030-02101S-B1 |
| ChromCore SAX             | 5                  | 10          | A014-050012-04601S-B1 | A014-050012-03001S-B1 | A014-050012-02101S-B1 |
|                           | 3                  |             | A014-030012-04601S-B1 | A014-030012-03001S-B1 | A014-030012-02101S-B1 |
| ChromCore Sugar-10H       | 8                  | 10          | A017-080010-04601S-B1 | /                     | /                     |
|                           | 6                  |             | A017-060010-04601S-B1 | /                     | /                     |
| ChromCore Sugar-10Ca      | 8                  | 10          | A019-080010-04601S-B1 | /                     | /                     |
|                           | 6                  |             | A019-060010-04601S-B1 | /                     | /                     |
| ChromCore Sugar-10Na      | 8                  | 10          | A058-080010-04601S-B1 | /                     | /                     |
|                           | 6                  |             | A058-060010-04601S-B1 | /                     | /                     |

## Preparative Columns

NanoChrom provides a selection of semi-preparative columns and preparative columns for easy scale-up from analytical scales. Various stationary phases are available for both small-molecule and large-molecule separations.

### Main Features

- Advanced monodispersed particle technology for high efficiency and mechanical strength
- Various stationary phases are available for both small molecules and large bio-molecules
- High sample load from milligram to gram level
- Easy scale-up for fast method development



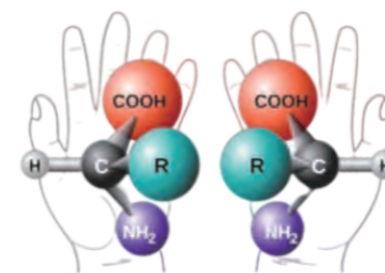
### Ordering Information

| Product Name      | Particle Size (µm) | Length (mm) | ID (mm)            |                    |
|-------------------|--------------------|-------------|--------------------|--------------------|
|                   |                    |             | 10                 | 20                 |
| BioCore SEC-120   | 5                  | 300         | /                  | B213-050012-20030S |
|                   |                    | 250         | /                  | B213-050012-20025S |
| BioCore SEC-150   | 5                  | 300         | /                  | B213-050015-20030S |
|                   |                    | 250         | /                  | B213-050015-20025S |
| BioCore SEC-300   | 5                  | 300         | /                  | B213-050030-20030S |
|                   |                    | 250         | /                  | B213-050030-20025S |
| BioCore SEC-500   | 5                  | 300         | /                  | B213-050050-20030S |
|                   |                    | 250         | /                  | B213-050050-20025S |
| BioCore WCX       | 10                 | 250         | B311-100000-10025P | B311-100000-20025P |
|                   |                    | 150         | B311-100000-10015P | B311-100000-20015P |
|                   | 5                  | 250         | B311-050000-10025P | B311-050000-20025P |
|                   |                    | 150         | B311-050000-10015P | B311-050000-20015P |
| BioCore SCX       | 10                 | 250         | B411-100000-10025P | B411-100000-20025P |
|                   |                    | 150         | B411-100000-10015P | B411-100000-20015P |
|                   | 5                  | 250         | B411-050000-10025P | B411-050000-20025P |
|                   |                    | 150         | B411-050000-10015P | B411-050000-20015P |
| BioCore SAX       | 10                 | 250         | B611-100000-10025P | B611-100000-20025P |
|                   |                    | 150         | B611-100000-10015P | B611-100000-20015P |
|                   | 5                  | 250         | B611-050000-10025P | B611-050000-20025P |
|                   |                    | 150         | B611-050000-10015P | B611-050000-20015P |
| BioCore HIC-Butyl | 5                  | 250         | B713-050100-10025S | B713-050100-20025S |
|                   |                    | 150         | B713-050100-10015S | B713-050100-20015S |

| Product Name              | Particle Size (μm) | Length (mm) | ID (mm)            |                    |                    |                    |
|---------------------------|--------------------|-------------|--------------------|--------------------|--------------------|--------------------|
|                           |                    |             | 10                 | 20                 | 30                 | 50                 |
| ChromCore 120 C18         | 5                  | 250         | A001-050012-10025S | A001-050012-20025S | A001-050012-30025S | A001-050012-50025S |
|                           |                    | 150         | A001-050012-10015S | A001-050012-20015S | A001-050012-30015S | A001-050012-50015S |
| ChromCore AQ C18          | 5                  | 250         | A201-050018-10025S | A201-050018-20025S | A201-050018-30025S | A201-050018-50025S |
|                           |                    | 150         | A201-050018-10015S | A201-050018-20015S | A201-050018-30015S | A201-050018-50015S |
| ChromCore AR C18          | 5                  | 250         | A401-050012-10025S | A401-050012-20025S | A401-050012-30025S | A401-050012-50025S |
|                           |                    | 150         | A401-050012-10015S | A401-050012-20015S | A401-050012-30015S | A401-050012-50015S |
| ChromCore BR C18          | 5                  | 250         | A301-050018-10025S | A301-050018-20025S | A301-050018-30025S | A301-050018-50025S |
|                           |                    | 150         | A301-050018-10015S | A301-050018-20015S | A301-050018-30015S | A301-050018-50015S |
| ChromCore Polar C18       | 5                  | 250         | A060-050012-10025S | A060-050012-20025S | A060-050012-30025S | A060-050012-50025S |
|                           |                    | 150         | A060-050012-10015S | A060-050012-20015S | A060-050012-30015S | A060-050012-50015S |
| ChromCore 120 C8          | 5                  | 250         | A007-050012-10025S | A007-050012-20025S | A007-050012-30025S | A007-050012-50025S |
|                           |                    | 150         | A007-050012-10015S | A007-050012-20015S | A007-050012-30015S | A007-050012-50015S |
| ChromCore AQ C8           | 5                  | 250         | A207-050018-10025S | A207-050018-20025S | A207-050018-30025S | A207-050018-50025S |
|                           |                    | 150         | A207-050018-10015S | A207-050018-20015S | A207-050018-30015S | A207-050018-50015S |
| ChromCore C30             | 5                  | 250         | A062-050018-10025S | A062-050018-20025S | A062-050018-30025S | A062-050018-50025S |
|                           |                    | 150         | A062-050018-10015S | A062-050018-20015S | A062-050018-30015S | A062-050018-50015S |
| ChromCore 300 C18         | 5                  | 250         | A001-050030-10025S | A001-050030-20025S | A001-050030-30025S | A001-050030-50025S |
|                           |                    | 150         | A001-050030-10015S | A001-050030-20015S | A001-050030-30015S | A001-050030-50015S |
| ChromCore 300 C8          | 5                  | 250         | A007-050030-10025S | A007-050030-20025S | A007-050030-30025S | A007-050030-50025S |
|                           |                    | 150         | A007-050030-10015S | A007-050030-20015S | A007-050030-30015S | A007-050030-50015S |
| ChromCore 300 C4-T        | 5                  | 250         | A226-050030-10025S | A226-050030-20025S | A226-050030-30025S | A226-050030-50025S |
|                           |                    | 150         | A226-050030-10015S | A226-050030-20015S | A226-050030-30015S | A226-050030-50015S |
| ChromCore Phenyl          | 5                  | 250         | A011-050012-10025S | A011-050012-20025S | A011-050012-30025S | A011-050012-50025S |
|                           |                    | 150         | A011-050012-10015S | A011-050012-20015S | A011-050012-30015S | A011-050012-50015S |
| ChromCore Phenyl-Hexyl    | 5                  | 250         | A311-050012-10025S | A311-050012-20025S | A311-050012-30025S | A311-050012-50025S |
|                           |                    | 150         | A311-050012-10015S | A311-050012-20015S | A311-050012-30015S | A311-050012-50015S |
| ChromCore PFP             | 5                  | 250         | A043-050012-10025S | A043-050012-20025S | A043-050012-30025S | A043-050012-50025S |
|                           |                    | 150         | A043-050012-10015S | A043-050012-20015S | A043-050012-30015S | A043-050012-50015S |
| ChromCore NH2             | 5                  | 250         | A008-050012-10025S | A008-050012-20025S | A008-050012-30025S | A008-050012-50025S |
|                           |                    | 150         | A008-050012-10015S | A008-050012-20015S | A008-050012-30015S | A008-050012-50015S |
| ChromCore Silica          | 5                  | 250         | A003-050012-10025S | A003-050012-20025S | A003-050012-30025S | A003-050012-50025S |
|                           |                    | 150         | A003-050012-10015S | A003-050012-20015S | A003-050012-30015S | A003-050012-50015S |
| ChromCore HILIC-Amide     | 5                  | 250         | A068-050012-10025S | A068-050012-20025S | A068-050012-30025S | A068-050012-50025S |
|                           |                    | 150         | A068-050012-10015S | A068-050012-20015S | A068-050012-30015S | A068-050012-50015S |
| ChromCore HILIC-Diol      | 5                  | 250         | A020-050012-10025S | A020-050012-20025S | A020-050012-30025S | A020-050012-50025S |
|                           |                    | 150         | A020-050012-10015S | A020-050012-20015S | A020-050012-30015S | A020-050012-50015S |
| ChromCore HILIC-Imidazole | 5                  | 250         | A208-050012-10025S | A208-050012-20025S | A208-050012-30025S | A208-050012-50025S |
|                           |                    | 150         | A208-050012-10015S | A208-050012-20015S | A208-050012-30015S | A208-050012-50015S |

# Chiral HPLC Columns

UniChiral® HPLC Columns



UniChiral CND  
 UniChiral CNJ  
 UniChiral CNZ  
 UniChiral CMS  
 UniChiral CMD  
 UniChiral CMZ

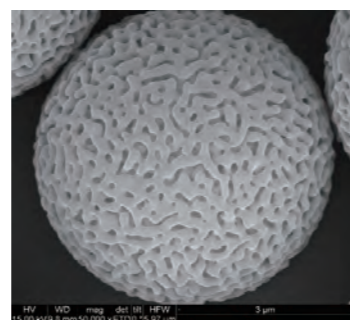
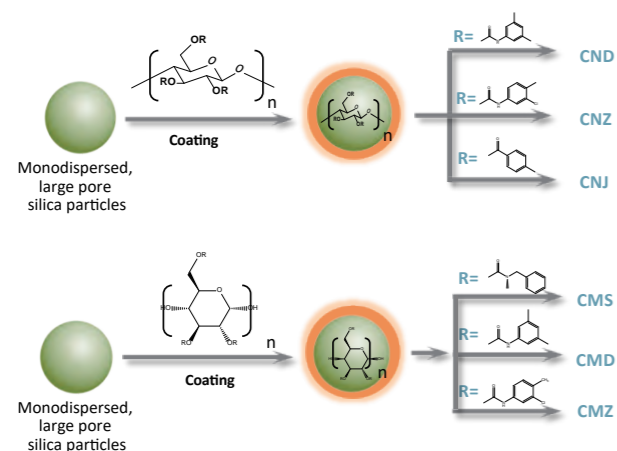
NANOCHROM

### UniChiral® HPLC Columns

UniChiral® is a family of Chiral HPLC columns for analytical and semi-preparative purification applications, based on unique silica matrix with monodispersed particle size and large pore morphology. This product line includes CND, CNJ, CNZ, CMS, CMD, and CMZ, which employs Cellulose and Amylose as the surface coating followed by derivatization of various chiral selectors. These columns provide a variety of complementary selectivity that allow for effective chiral separation and purification.

#### Main Features

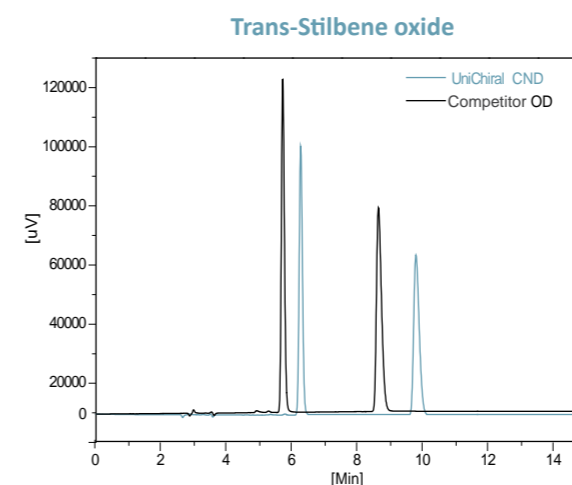
- High enantioselectivity and column efficiency
- Good mechanical strength for extended column life time
- A host of selectivity selection for broad application range
- Satisfactory performance at economical costs



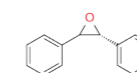
SEM of UniChiral particles

| Product Name  | Surface Functional Groups | Column Specification  |
|---------------|---------------------------|---|
| UniChiral CND |                           | 5 μm, 4.6×50 mm<br>5 μm, 4.6×100 mm<br>5 μm, 4.6×150 mm<br>5 μm, 4.6×250 mm |
| UniChiral CNJ |                           |   |
| UniChiral CNZ |                           |   |
| UniChiral CMS |                           |   |
| UniChiral CMD |                           |   |
| UniChiral CMZ |                           |   |

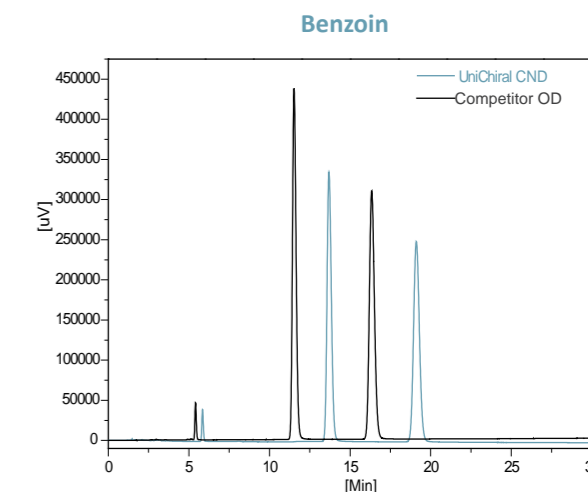
### Applications



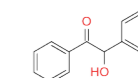
Column: UniChiral CND, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 90/10 v/v Hexane/IPA  
 Flow Rate: 1 mL/min  
 Temperature: 25 °C  
 Detection: UV 254 nm  
 Sample: Trans-Stilbene oxide



|               |        | Theoretical Plate (USP) | Tailing Factor (USP) | α    |
|---------------|--------|-------------------------|----------------------|------|
| UniChiral CND | peak 1 | 16222                   | 1.149                | 2.07 |
|               | peak 2 | 14779                   | 1.345                |      |
| Competitor OD | peak 1 | 15267                   | 1.214                | 2.07 |
|               | peak 2 | 13740                   | 1.437                |      |

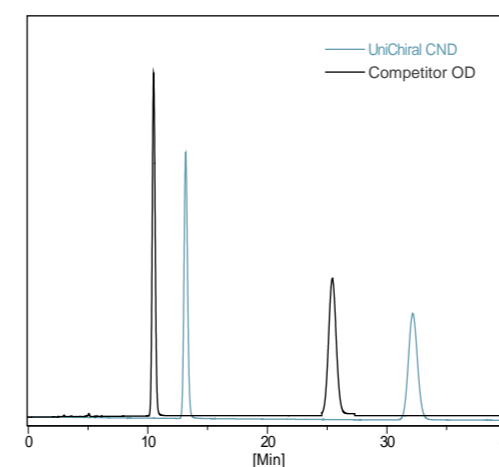


Column: UniChiral CND, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 90/10 v/v Hexane/IPA  
 Flow Rate: 1 mL/min  
 Temperature: 25 °C  
 Detection: UV 254 nm  
 Sample: Benzoin

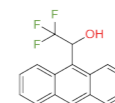


|               |        | Theoretical Plate (USP) | Tailing Factor (USP) | α    |
|---------------|--------|-------------------------|----------------------|------|
| UniChiral CND | peak 1 | 11899                   | 1.167                | 1.50 |
|               | peak 2 | 12707                   | 1.114                |      |
| Competitor OD | peak 1 | 12219                   | 1.197                | 1.56 |
|               | peak 2 | 12150                   | 1.154                |      |

### 2,2,2-Trifluoro-1-(9-anthryl)ethanol

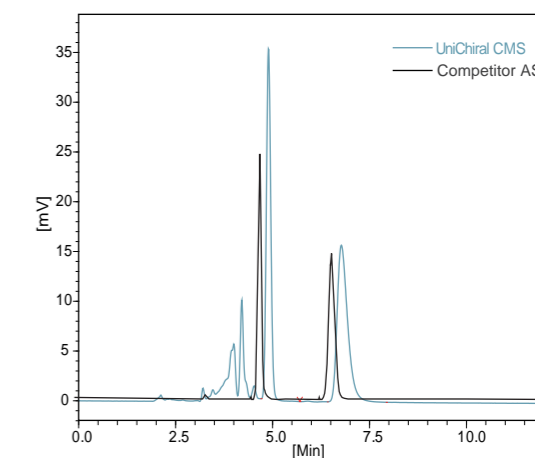


Column: UniChiral CND, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: 90/10 v/v Hexane/IPA  
 Flow Rate: 1 mL/min  
 Temperature: 25 °C  
 Detection: UV 254 nm  
 Sample: 2,2,2-Trifluoro-1-(9-anthryl)ethanol

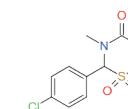


|               |        | Theoretical Plate (USP) | Tailing Factor (USP) | α    |
|---------------|--------|-------------------------|----------------------|------|
| UniChiral CND | peak 1 | 9138                    | 1.101                | 2.85 |
|               | peak 2 | 8287                    | 1.066                |      |
| Competitor OD | peak 1 | 8300                    | 1.090                | 2.99 |
|               | peak 2 | 7205                    | 1.058                |      |

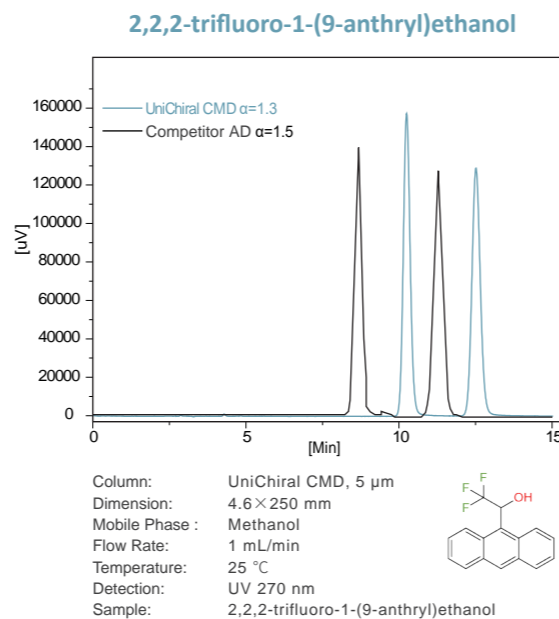
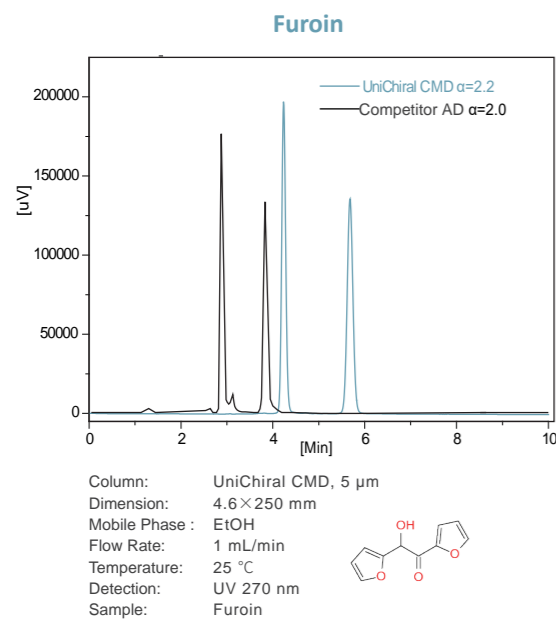
### Chlormezanone



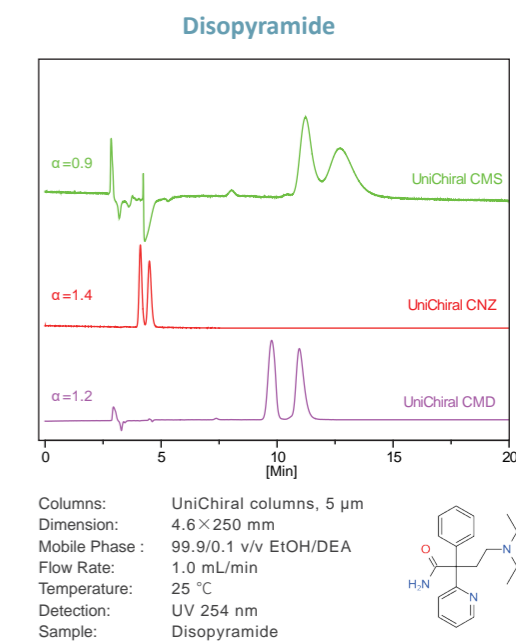
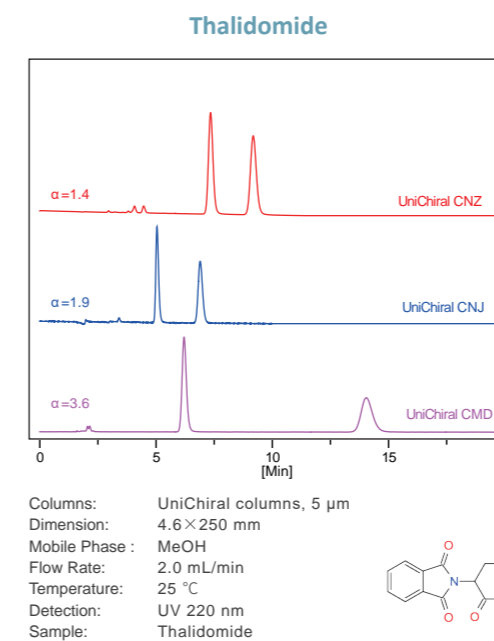
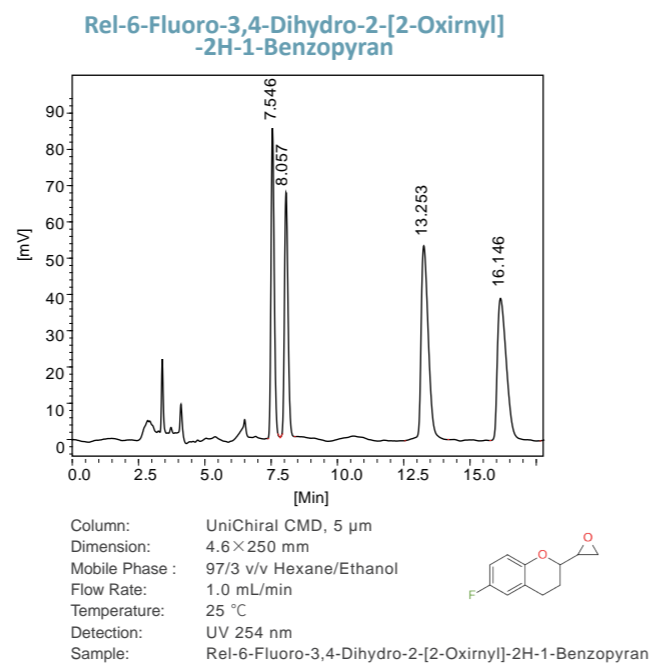
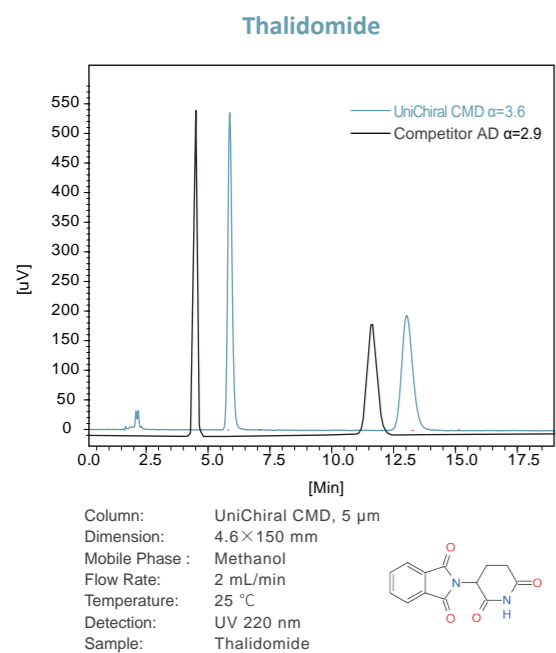
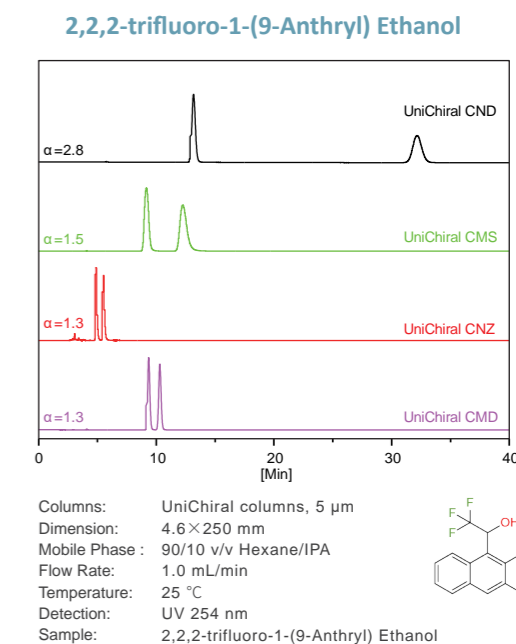
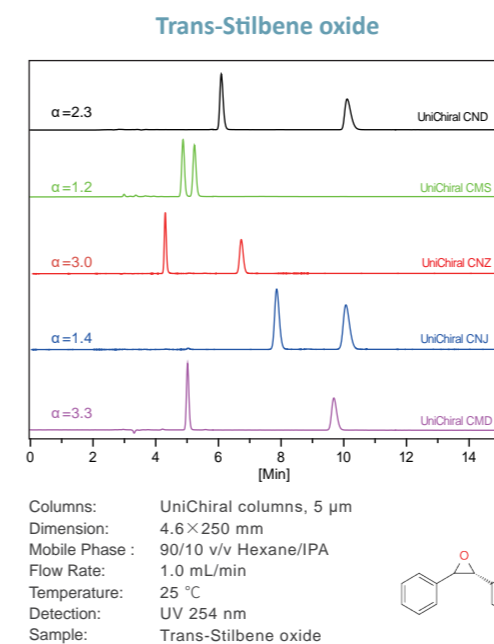
Column: UniChiral CMS, 5 μm  
 Dimension: 4.6×250 mm  
 Mobile Phase: Methanol  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Detection: UV 254 nm  
 Sample: Chlormezanone



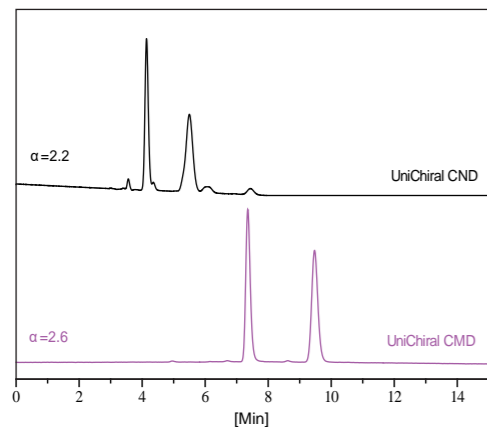
>> UniChiral CMD



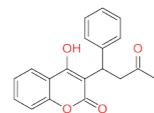
>> Optimization of Unichiral columns process conditions



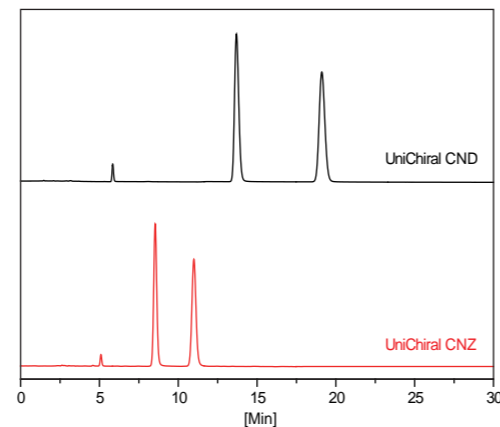
Warfarin



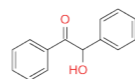
Column: UniChiral columns, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 99.9/0.1 v/v EtOH/HAC  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Detection: UV 254 nm  
 Sample: Warfarin



Benzoin



Column: UniChiral columns, 5 µm  
 Dimension: 4.6 × 250 mm  
 Mobile Phase: 80/20 v/v Hexane/EtOH  
 Flow Rate: 1.0 mL/min  
 Temperature: 25 °C  
 Detection: UV 270 nm  
 Sample: Benzoin



Ordering Information

| Product Name  | Particle Size (µm) | Length (mm) | ID (mm)            |
|---------------|--------------------|-------------|--------------------|
|               |                    |             | 4.6                |
| UniChiral CND | 5                  | 250         | CAOD-050100-04625S |
|               |                    | 150         | CAOD-050100-04615S |
|               |                    | 100         | CAOD-050100-04610S |
| UniChiral CNJ | 5                  | 250         | CAOJ-050100-04625S |
|               |                    | 150         | CAOJ-050100-04615S |
|               |                    | 100         | CAOJ-050100-04610S |
| UniChiral CNZ | 5                  | 250         | CAOZ-050100-04625S |
|               |                    | 150         | CAOZ-050100-04615S |
|               |                    | 100         | CAOZ-050100-04610S |
| UniChiral CMD | 5                  | 250         | CAAD-050100-04625S |
|               |                    | 150         | CAAD-050100-04615S |
|               |                    | 100         | CAAD-050100-04610S |
| UniChiral CMS | 5                  | 250         | CAAS-050100-04625S |
|               |                    | 150         | CAAS-050100-04615S |
|               |                    | 100         | CAAS-050100-04610S |
| UniChiral CMZ | 5                  | 250         | CAAZ-050100-04625S |
|               |                    | 150         | CAAZ-050100-04615S |
|               |                    | 100         | CAAZ-050100-04610S |

Sample Preparation Products  
 SelectCore™ SPE & QuEChERS



|                                     |            |
|-------------------------------------|------------|
| <b>Sample Preparation Portfolio</b> | <b>111</b> |
| <b>Solid Phase Extraction</b>       | <b>112</b> |
| PVP-DVB Based SPE                   | 114        |
| PS-DVB Based SPE                    | 120        |
| Silica Based SPE                    | 121        |
| Affinity SPE                        | 122        |
| <b>QuEChERS</b>                     | <b>123</b> |

NANOCHROM



### Sample Preparation Portfolio

SelectCore Sample Preparation Portfolio consists of a full range of SPE cartridges and QuEChERS products to meet various application demands.

#### Main features of NanoChrom Sample Preparation Products

- Large commercial scale manufacturing capability and dual production sites for security of supply
- World-leading monodispersed microsphere technology platform
- Proprietary expertise in controlling particle morphology and surface chemistry
- Strong R&D and application teams for sustainable innovation
- Rigorous quality assurance and customer-focused culture

#### ◆ Solid Phase Extraction

| PVP-DVB Matrix | PS-DVB Matrix | Silica Matrix   | Inorganic Adsorbents |
|----------------|---------------|-----------------|----------------------|
| HLB            | PSL           | Silica          | Florisil             |
| MCX            | PSS           | C18             | Alumina              |
| MAX            | PSCX          | NH <sub>2</sub> | GCB                  |
| WCX            | X3 GPC        | PSA             | PA                   |
| WAX            |               | SCX             | AC                   |
|                |               | SAX             | Celite               |

| Affinity  | Ion Chromatography | Multilayer          | Application-specific |
|-----------|--------------------|---------------------|----------------------|
| Heparin   | IC-Ag              | GCB/NH <sub>2</sub> | BAP                  |
| AFT       | IC-Na              | GCB/PSA             | DPT                  |
| OTA       | IC-C18             | C18/PSA             | SDR                  |
| DON       | IC-RP              |                     | HR-C18               |
| ZEA       |                    |                     | PSA/Silica           |
| Protein A |                    |                     |                      |
| Protein G |                    |                     |                      |

#### ◆ QuEChERS

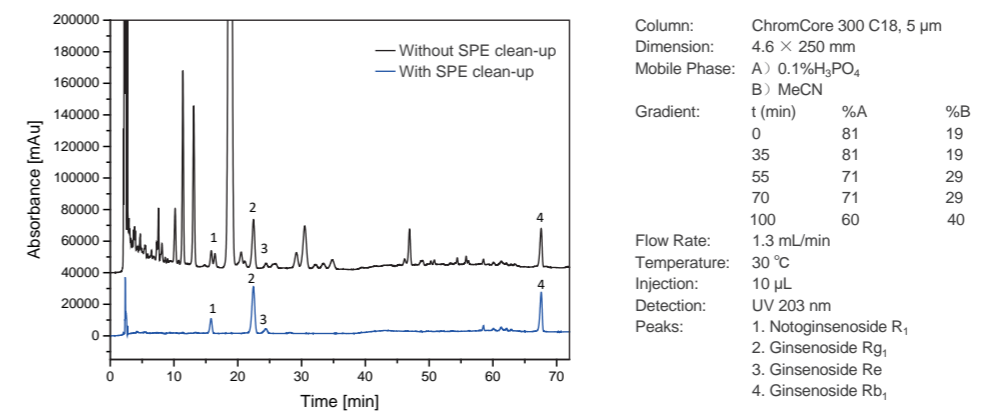
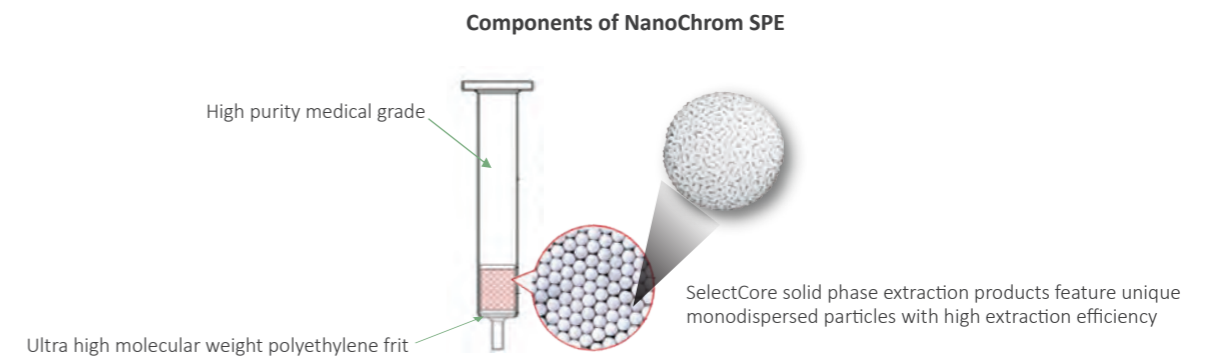
| Extraction Salts                          | Clean-up Tubes  |
|---|---|
| AOAC 2007.01 Method<br>EN-15662 EU Method | General fruits and vegetables<br>Highly pigmented fruits and vegetables<br>Fruits and vegetables with fats and waxes<br>Tea with high levels of chlorophyll<br>Animal Origin Food |

### Solid Phase Extraction

Solid Phase Extraction (SPE) is a sample preparation technique based on the selective partitioning of multi-components. SPE cartridges are commonly used in sample preparation and analysis of food, agriculture, cosmetics and environmental samples, etc. Effective separation by SPE primarily depends on proper choice of the sorbent. NanoChrom offers a comprehensive portfolio of SPE products based on advanced monodispersed particle technology and surface chemistry to meet accurate quantification demands.

#### Benefits of SPE

- Improve the detection sensitivity by integrating sample enrichment and purification
- Remove sample interference that coelute with an analyte of interest
- Protect the analytical column from contaminants
- Save solvent compared with Liquid/Liquid Extraction



Herbal medicine sample HPLC analysis with or without SPE clean-up  
SPE cartridge: SelectCore HR-C18 500mg/6mL

Main Features of SelectCore SPE

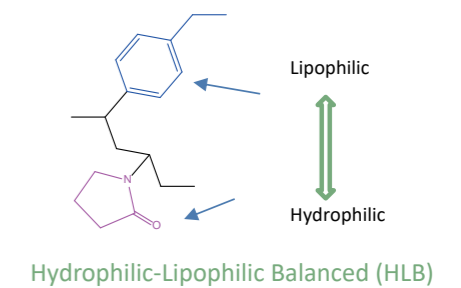
|  | Matrix  | Separation Mode | Product                       | Main Features  |
|--|---------|-----------------|-------------------------------|--|
|  | PVP-DVB | Hydrophobic     | HLB                           | Monodispersed matrix, hydrophilic and lipophilic, wide range of applications |
|  |         | IEX             | MCX, MAX, WCX, WAX            |  |
|  | PS-DVB  | Hydrophobic     | PSL, PSS                      | Monodispersed matrix, high hydrophobicity, high ability to adsorb impurities |
|  |         | IEX             | PSCX                          |  |
|  |         | SEC             | X3                            |  |
|  | PMMA    | Affinity        | Heparin, Protein A, Protein G | Monodispersed matrix, good hydrophilicity for affinity                       |
|  | Silica  | Normal Phase    | Silica, NH <sub>2</sub>       | High purity spherical silica, good selectivity, high resolution              |
|  |         | Reversed phase  | C18                           |  |
|  |         | IEX             | PSA, SCX, SAX                 |  |

PVP-DVB based SPE

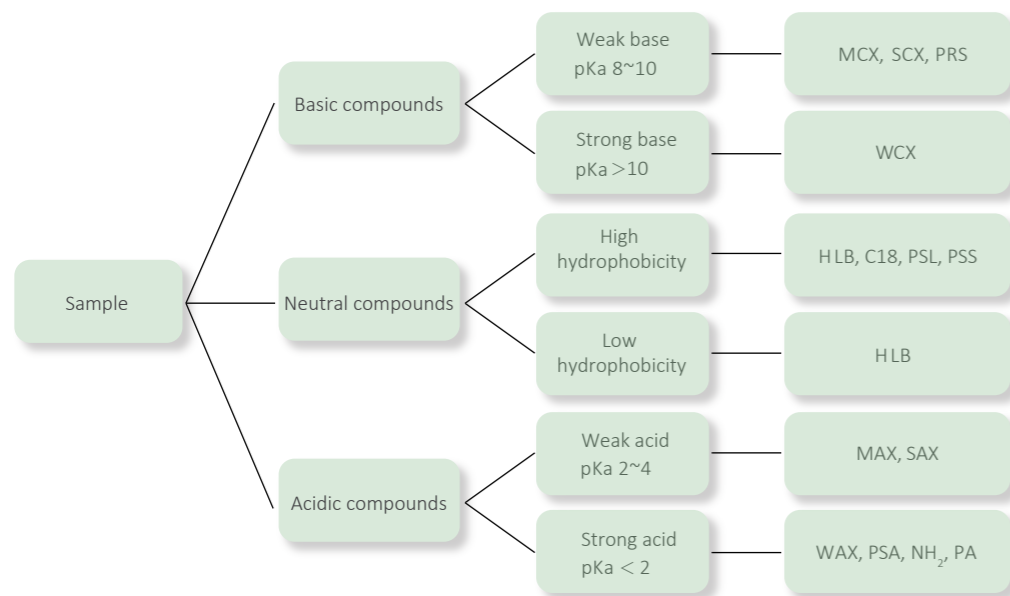
SelectCore HLB based on co-polymerization of N-vinylpyrrolidone (hydrophilic) and divinylbenzene (hydrophobic), is designed for a broad range of compounds from aqueous samples. Due to its unique features such as monodispersed particles, good chemical and mechanical stability and optimized surface chemistry, SelectCore HLB is popularly employed in the sample preparation for advanced liquid and gas chromatography.

Main Features

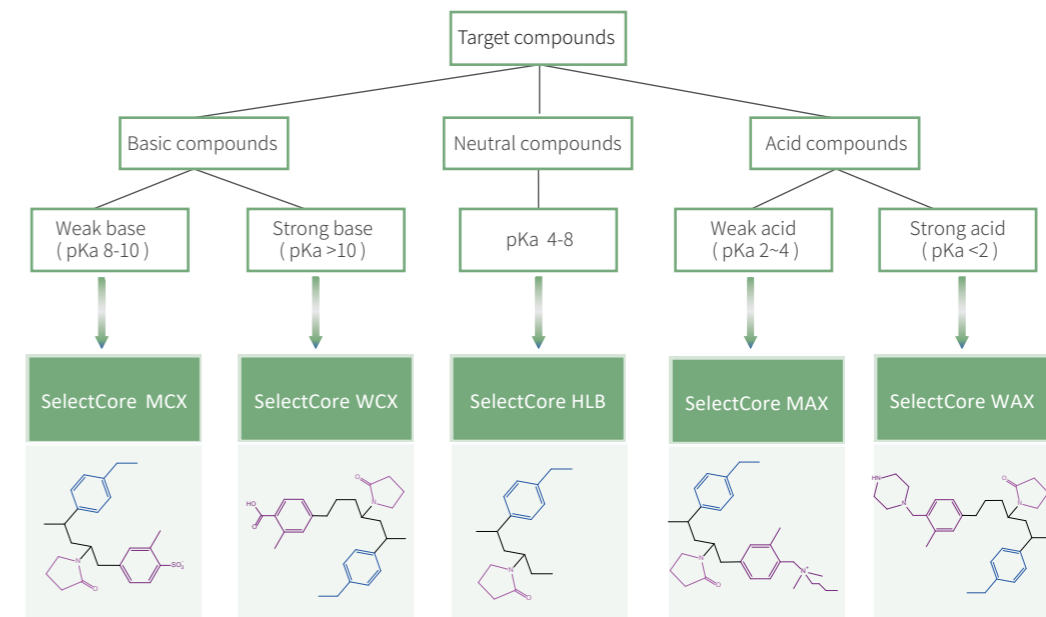
- Optimized pore size distribution and surface functional group density
- Compressed adsorption and elution volume enable less solvent consumption
- Good recovery with a broad range of compounds from aqueous samples
- Good lot-to-lot consistency



SPE Product Selection Guide

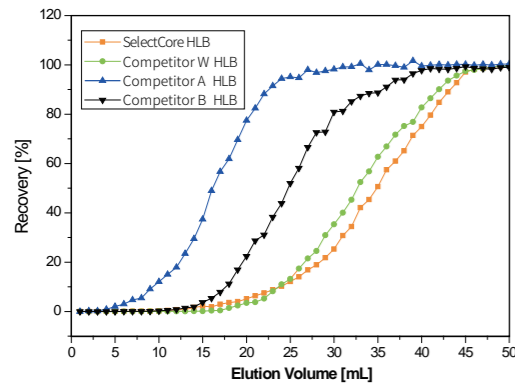


SelectCore PVP/DVB based SPE



### 01 High sample dynamic binding capacity

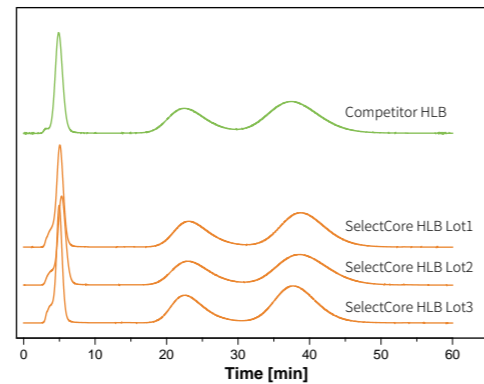
An important factor affecting the extraction efficiency in solid phase extraction procedure is the dynamic adsorption capacity and desorption capacity of the sorbent. Due to the unique monodispersed polymer matrix, SelectCore HLB exhibits high dynamic binding capacity.



SelectCore HLB dynamic binding capacity

### 02 Batch-to-batch reproducibility

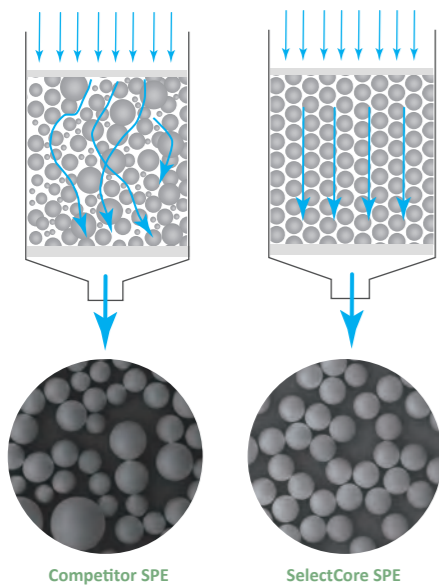
Based on the unique monodispersed polymer matrix, SelectCore HLB can provide more stable elution time and volume, hence reproducible results.



SelectCore HLB batch-to-batch reproducibility

### 03 Fast and stable drop speed

In SPE, the main factors affecting the column SPE drop speed are the particle size and particle size distribution of the sorbent. Because SelectCore HLB uses monodispersed spherical particles with narrower particle size distribution, the absence of fine particles can improve the flow rate and shorten the time for sample preparation.



### 04 Good recovery

Due to the use of monodispersed PVP/DVB particles, SelectCore HLB products exhibit good recovery with a broad range of compounds and results were highly reproducible across different product lots.

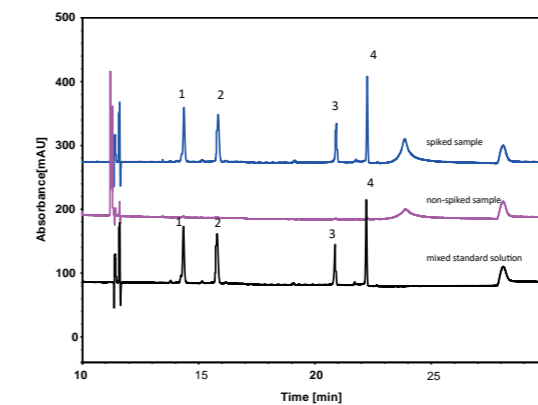
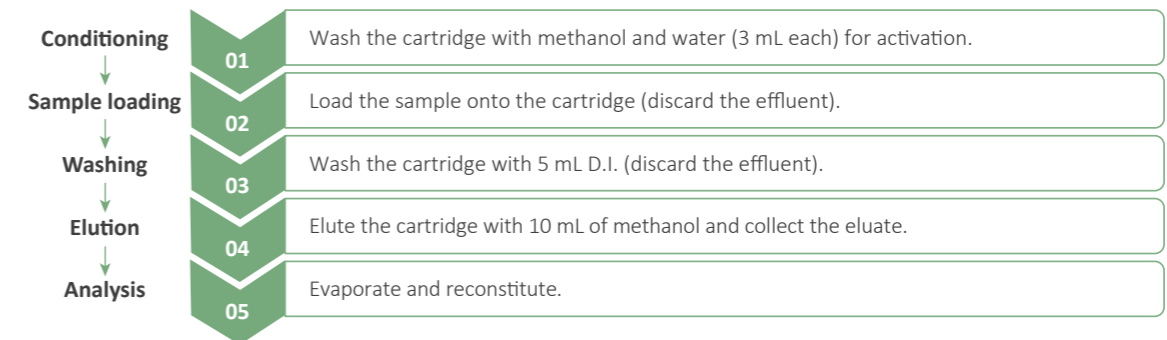
| Compound by elution solvent | Specification recovery % | Average recovery% (n=6) |
|-----------------------------|--------------------------|-------------------------|
| Ranitidine                  | ≥90                      | 96.5                    |
| Acetaminophen               | ≥90                      | 99.5                    |
| Oxytetracycline             | ≥90                      | 94.8                    |
| Tetracycline                | ≥90                      | 95.4                    |
| Chlortetracycline           | ≥90                      | 105.6                   |
| Doxycycline                 | ≥90                      | 102.4                   |

Recoveries of six analytes by SelectCore HLB sorbent

## Applications

### Antibiotic residue determination in egg

Egg samples were spiked with the oxytetracycline, tetracycline, chlortetracycline and doxycycline. The samples were then treated using SelectCore HLB 150mg/6mL cartridges.

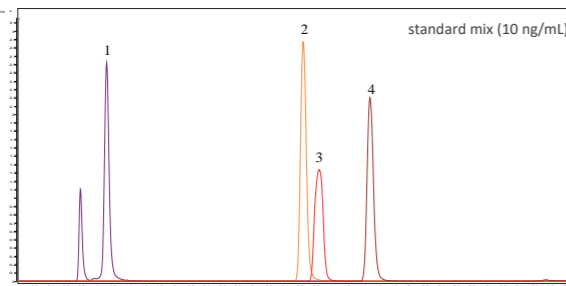
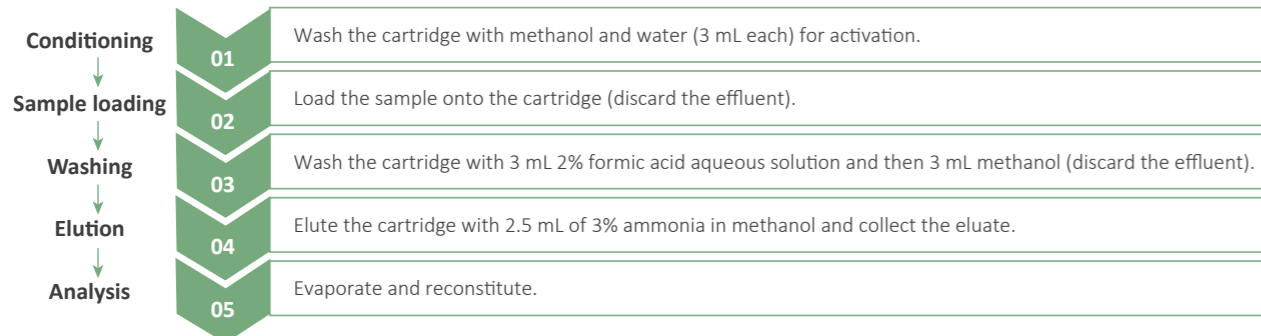


Column: ChromCore C18, 3 μm  
 Dimension: 4.6 × 150 mm  
 Mobile Phase: A) 0.01 mol/L oxalic acid  
 B) MeCN  
 Gradient: t(min) %A %B  
 0 85 15  
 6 85 15  
 15 70 30  
 20 70 30  
 22 85 15  
 25 85 15  
 Flow Rate: 1.0 mL/min  
 Temperature: 30 °C  
 Injection: 10 μL  
 Detection: UV 350 nm  
 Peaks: 1. oxytetracycline  
 2. tetracycline  
 3. chlortetracycline  
 4. doxycycline

| Compound          | Recovery(%)<br>0.4 mg/Kg |
|-------------------|--------------------------|
| oxytetracycline   | 95%                      |
| tetracycline      | 88%                      |
| chlortetracycline | 99%                      |
| doxycycline       | 91%                      |

**β-receptor agonist residue determination in pork**

Pork samples were spiked with the salbutamol, clorprenaline, ractompamine, clebuterol. The samples were then treated using SelectCore MCX cartridges (60mg/3mL).

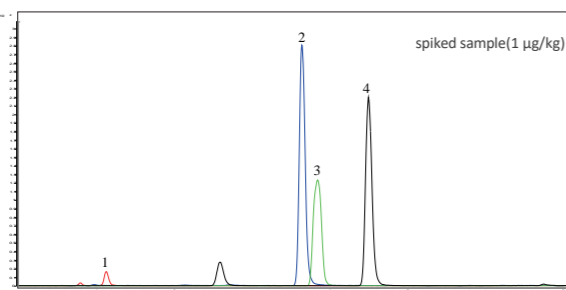
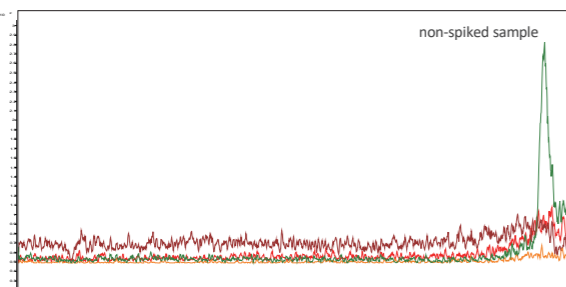


Column: ChromCore C18, 3 μm  
 Dimension: 2.1 × 100 mm  
 Mobile Phase: A) 0.1% formic acid  
 B) MeCN  
 Gradient:

| t (min) | %A | %B |
|---------|----|----|
| 0       | 90 | 10 |
| 1       | 80 | 20 |
| 4       | 75 | 25 |
| 5       | 5  | 95 |
| 7       | 5  | 95 |
| 7.1     | 90 | 10 |
| 10      | 90 | 10 |

Flow Rate: 0.4 mL/min  
 Temperature: 30 °C  
 Injection: 2 μL  
 Detection: MS (ESI Positive)  
 Peaks:  
 1. Salbutamol  
 2. Clorprenaline  
 3. Ractompamine  
 4. Clebuterol

| Compound      | Recovery (%)<br>1 μg/kg |
|---------------|-------------------------|
| Salbutamol    | 96.5%                   |
| Clorprenaline | 98.4%                   |
| Ractompamine  | 101.2%                  |
| Clebuterol    | 97.3%                   |



**Ordering Information**

| Package           | HLB             | MCX             | WCX             | MAX             | WAX             |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 30mg/1mL; 100/pkg | HLB060-010030-1 | MCX060-010030-1 | WCX060-010030-1 | MAX060-010030-1 | WAX060-010030-1 |
| 60mg/3mL; 50/pkg  | HLB060-030060-1 | MCX060-030060-1 | WCX060-030060-1 | MAX060-030060-1 | WAX060-030060-1 |
| 150mg/6mL; 30/pkg | HLB060-060150-1 | MCX060-060150-1 | WCX060-060150-1 | MAX060-060150-1 | WAX060-060150-1 |
| 200mg/6mL; 30/pkg | HLB060-060200-1 | MCX060-060200-1 | WCX060-060200-1 | MAX060-060200-1 | WAX060-060200-1 |
| 500mg/6mL; 30/pkg | HLB060-060500-1 | MCX060-060500-1 | WCX060-060500-1 | MAX060-060500-1 | WAX060-060500-1 |



SelectCore™  
SPE

## PS-DVB based SPE

SelectCore PS-DVB sorbents are based on cross-linked polystyrene-divinyl benzene copolymer particles. These products exhibit different selectivity, from HLB high binding capacity and wide pH range, allowing for rapid adsorption and separation of hydrophobic substances, such as phenol, surfactants, pyridine bromide, antibiotics, amino acids and peptides, etc.

### Specifications

| Product         | Matrix | Particle size | Main features  |
|-----------------|--------|---------------|--|
| SelectCore PSL  | PS-DVB | 100 µm        | Can be used as an alternative to octadecyl-bonded silica for preparation of analytes that weakly adsorb to silica-based reversed phase sorbents. Compatible with sample or eluents at high and low   |
| SelectCore PSS  | PS-DVB | 40 µm         | Narrow particle size distribution and excellent resolution. Can be used as an alternative to octadecyl-bonded silica for preparation of analytes that weakly adsorb to silica-based reversed phase sorbents. Compatible with sample or eluents at high and low |
| SelectCore PSCX | PS-DVB | 40 µm         | Narrow particle size distribution and excellent resolution.  |
| SelectCore X3   | PS-DVB | 42 µm         | Narrow styrene divinylbenzene particles with 3% crosslinkage for gel permeation chromatography, ≤2,000 MW limit.   |

### Ordering Information

| Package           | PSL             | PSS             |
|-------------------|-----------------|-----------------|
| 60mg/3mL; 50/pkg  | PSL100-030060-1 | PSS040-030060-1 |
| 150mg/6mL; 30/pkg | PSL100-060150-1 | PSS040-060150-1 |
| 200mg/6mL; 30/pkg | PSL100-060200-1 | PSS040-060200-1 |
| 500mg/6mL; 30/pkg | PSL100-060500-1 | PSS040-060500-1 |

## Silica based SPE

Compared with low-purity irregular silica, SelectCore silica based SPE cartridges utilize high-purity spherical silica particles as the matrix, and exhibit reproducible recoveries for quick and effective extraction, isolation and concentration of pharmaceuticals from biological fluids and other aqueous sample matrices.

### Specifications

| Product                    | Particle size | Main Features   |
|----------------------------|---------------|---|
| SelectCore Silica          | 50 µm         | Polar sorbent, used primarily to adsorb analytes from non-polar solvents like hydrocarbons, chloro- or fluoro-substituted hydrocarbons or less polar esters and ethers; elution with more polar solvents like polar esters, ethers, alcohols, acetonitrile or water; the binding mechanism can be hydrogen bonding or dipole-dipole interaction.  |
| SelectCore C18             | 50 µm         | Silica based bonded phase, used to adsorb analytes of even weak hydrophobicity from aqueous solutions; typical applications include drugs and their metabolites in serum, plasma or urine, desalting of peptides, trace organics in environmental water samples, organic acids in beverages.  |
| SelectCore NH <sub>2</sub> | 50 µm         | Silica based bonded phase with weakly basic surface; can be used as a polar sorbent, like silica, with different selectivity for acidic/basic analytes or as weak anion exchanger in aqueous medium below pH 8; applications include phenols and phenolic pigments, petroleum fractionation, saccharides, drugs and drug metabolites.   |
| SelectCore PSA             | 50 µm         | Silica based phase with ethylenediamine-N-propyl that contains both primary and secondary amines; A weak anion exchanger with a pKa of 10.1 and 10.9; Similar to aminopropyl SPE phases (NH <sub>2</sub> ) in terms of selectivity, but has a much higher capacity due to presence of secondary amine; Strong affinity and high capacity for removing fatty acids, organic acids, and some polar pigments and sugars when conducting multi-residue pesticide analysis in foods. |

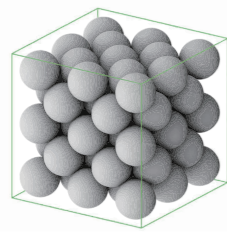
### Ordering Information

| Package            | Silica         | C18             | NH <sub>2</sub> | PSA             |
|--------------------|----------------|-----------------|-----------------|-----------------|
| 100mg/1mL; 100/pkg | SI050-010100-1 | C18050-010100-1 | NH050-010100-1  | PSA050-010100-1 |
| 200mg/3mL; 50/pkg  | SI050-030200-1 | C18050-030200-1 | NH050-030200-1  | PSA050-030200-1 |
| 500mg/3mL; 50/pkg  | SI050-030500-1 | C18050-030500-1 | NH050-030500-1  | PSA050-030500-1 |
| 500mg/6mL; 30/pkg  | SI050-060500-1 | C18050-060500-1 | NH050-060500-1  | PSA050-060500-1 |
| 1000mg/6mL; 30/pkg | SI050-061000-1 | C18050-061000-1 | NH050-061000-1  | PSA050-061000-1 |

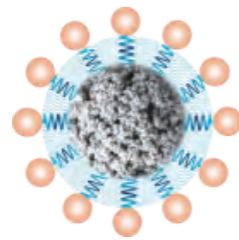
### Affinity SPE

To improve purification efficiency of monoclonal antibodies and proteins, NanoChrom SelectCore Affinity SPE products are based on rigid, mono-sized polymethacrylate matrices with proprietary surface hydrophilization, resulting in minimal non-specific binding and high mechanical strength for fast flow operation. Its optimal surface bonding and leading genetic-engineered ligand provide excellent protein binding and good recovery.

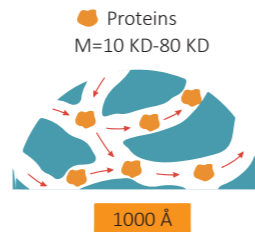
### Main Features



**Monodispersed particles**  
High column efficiency  
Stable flow rate  
Good consistency



**Excellent surface chemistry**  
Low non-specific adsorption  
High recovery

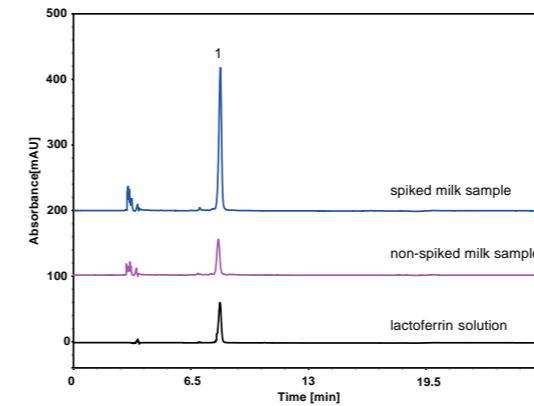
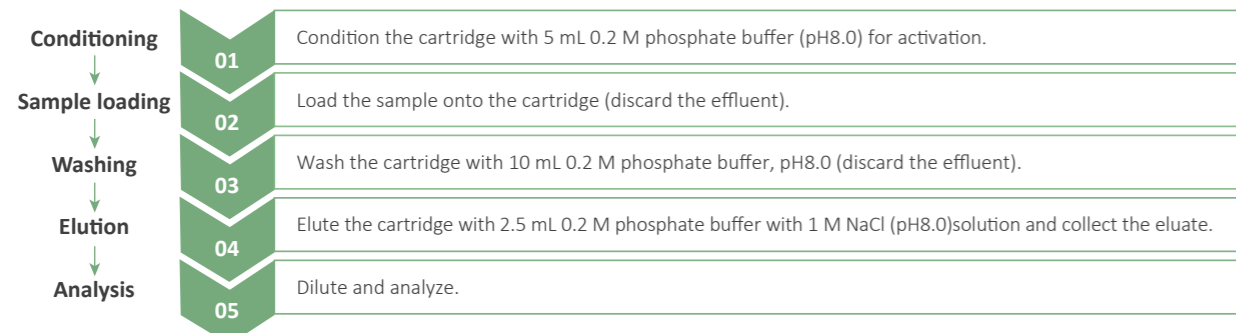
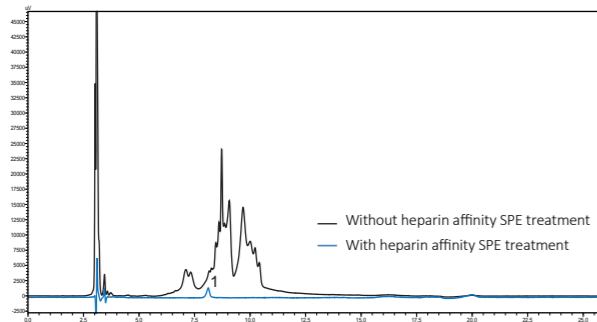


**Large pore size**  
High mass transfer

### Applications

#### Lactoferrin determination in milk

To analyze lactoferrin in infant milk, Heparin SPE is required to remove interferences in this complex sample, the target substance can be detected and quantified. In contrast, without such treatment, the target substance is “buried” in the sample matrix, thus failing to give desired result.



Column: ChromCore 300 C4-T, 5  $\mu$ m  
 Dimension: 4.6  $\times$  250 mm  
 Mobile Phase: A) 0.1%TFA  
 B) MeCN  
 Gradient: t (min) %A %B  
 0 70 30  
 15 40 60  
 16 70 30  
 26 70 30  
 Flow Rate: 1.0 mL/min  
 Temperature: 30  $^{\circ}$  C  
 Injection: 20  $\mu$ L  
 Detection: UV 280 nm  
 Peaks: 1. Lactoferrin

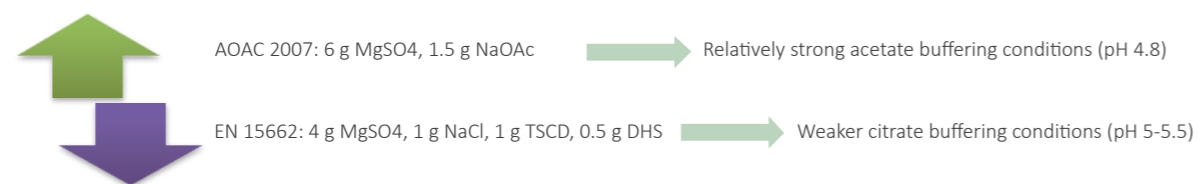
| Spiked added | Recovery |
|--------------|----------|
| 10 mg/100 g  | 94.30%   |
| 50 mg/100 g  | 95.61%   |

### Ordering Information

| Package     | Heparin         | Protein A       | Protein G        |
|-------------|-----------------|-----------------|------------------|
| 1mL; 20/pkg | HEP065-030001-1 | PTA050-030001-1 | PTG065-030001-1M |

### SelectCore™ QuEChERS Salts

SelectCore QuEChERS extractions prevent exothermic reaction, prevent degradation of sample and ensure maximum recoveries.



### SelectCore™ QuEChERS Clean-up Tube

SelectCore QuEChERS clean-up tube contains the PSA/C18/GCB sorbent blend, which retain present potential interferences and not the analytes of interest.

- ◆ MgSO<sub>4</sub> for removal of remaining water
- ◆ PSA for removal of sugars and fatty acids, organic acids, lipids and polar pigments
- ◆ C18 for removal of long carbon chain and fatty compounds, sterols and other nonpolar interferences
- ◆ GCB for removal of pigments, polyphenols, and other polar compounds

| Matrices  | Product description  | Part No.  |
|---|--|-----------|
| General fruits and vegetables:<br>Removes polar organic acids and sugars  | SelectCore QuEChERS salt 4g MgSO <sub>4</sub> , 1g NaCl, 1g TSCD, 0.5g DHS; 50/pkg                         | QS-001    |
|   | SelectCore QuEChERS ceramic homogenizer  | Q-50CH    |
|   | SelectCore QuEChERS clean-up tube 2mL, 150mg MgSO <sub>4</sub> , 25mg PSA; 100/pkg                         | Q-02P02   |
|   | SelectCore QuEChERS clean-up tube 15mL, 900mg MgSO <sub>4</sub> , 150mg PSA; 50/pkg                        | Q-15P02   |
| Highly pigmented fruits and vegetables:<br>Removes polar organic acids, sugars and high levels of carotenoids and chlorophyll | SelectCore QuEChERS salt 4g MgSO <sub>4</sub> , 1g NaCl, 1g TSCD, 0.5g DHS; 50/pkg                         | QS-001    |
|   | SelectCore QuEChERS ceramic homogenizer  | Q-50CH    |
|   | SelectCore QuEChERS clean-up tube 2mL, 150mg MgSO <sub>4</sub> , 25mg PSA, 2.5 mg GCB; 100/pkg             | Q-02PG01  |
|   | SelectCore QuEChERS clean-up tube 15mL, 885mg MgSO <sub>4</sub> , 150mg PSA, 15mg GCB; 50/pkg              | Q-15PG01  |
|   | SelectCore QuEChERS clean-up tube 15mL, 855 mg MgSO <sub>4</sub> , 150mg PSA, 45mg GCB; 50/pkg             | Q-15PG02  |
|   | SelectCore QuEChERS clean-up tube 15mL, Pesticide Residue A01; 50/pkg                                      | Q-15A01   |
| Fruits and vegetables with fats and waxes:<br>Removes polar organic acids, sugars, lipids and sterols                         | SelectCore QuEChERS salt 6g MgSO <sub>4</sub> , 1.5g NaOAc; 50/pkg   | QS-002    |
|   | SelectCore QuEChERS ceramic homogenizer  | Q-50CH    |
|   | SelectCore QuEChERS clean-up tube 2mL, 150mg MgSO <sub>4</sub> , 50mg PSA, 50mg C18; 100/pkg               | Q-02PC02  |
|   | SelectCore QuEChERS clean-up tube 15mL, 1200mg MgSO <sub>4</sub> , 400mg PSA, 400mg C18; 50/pkg            | Q-15PC01  |
| Tea:<br>Removes polyphenols, caffeine and high levels of chlorophyll  | SelectCore QuEChERS salt 6g MgSO <sub>4</sub> , 1.5g NaOAc; 50/pkg   | QS-002    |
|   | SelectCore QuEChERS ceramic homogenizer  | Q-50CH    |
|   | SelectCore QuEChERS clean-up tube 2mL, 150mg MgSO <sub>4</sub> , 50mg PSA, 50mg C18, 25 mg GCB; 100/pkg    | Q-02PCG03 |
|   | SelectCore QuEChERS clean-up tube 15mL, 1200mg MgSO <sub>4</sub> , 400mg PSA, 400mg C18, 200mg GCB; 50/pkg | Q-15PCG02 |
| Animal Origin Food:<br>Removes matrix interferences such as lipids and proteins   | SelectCore QuEChERS salts, Vet Drugs Residue; 50/pkg   | QS-004    |
|   | SelectCore QuEChERS clean-up tube 2ml, Vet Drugs Residue 01; 100/pkg                                       | Q-02VR01  |
|   | SelectCore QuEChERS clean-up tube 15ml, Vet Drugs Residue 01; 50/pkg                                       | Q-15VR01  |

# GC Columns

NanoChrom™ BP GC Columns



|                         |     |
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NANOCHROM

## NanoChrom™ BP GC Columns

NanoChrom BP Column product line includes polysiloxane phases, polyethylene glycol phases, porous-layer-open tubular (PLOT) phases, low column bleed or MS (Mass Spec) grade columns and custom-made columns. NanoChrom BP Column is designed for achieving the lowest possible detection limits for analyzing light gases, solvents, environmental, forensic, and food applications.

### Main Features

- Easy transfer from one brand to another
- Excellent column inertness
- Low column bleed
- High column efficiency
- Reliable results



## NanoChrom™ BP GC Columns





| USP Code | Stationary Phase   | NanoChrom GC Columns                         | Temperature Range (°C) | Equivalent GC Columns   |
|----------|--|--|------------------------|---|
| G1       | Dimethylpolysiloxane, oil  | BP-1<br>BP-1MS<br>BP-1MSInert                | -60 to 325/350         | HP-1, DB-1, VF-1, Rtx-1, Rxi-1, SP-1, ZB-1<br>HP-1MS, DB-1MS, CP-Sil 5CB MS, VF-1MS, Rtx-1MS, Rxi-1MS                     |
| G2       | Dimethylpolysiloxane gum   | BP-1<br>BP-1MS<br>BP-1MSInert                | -60 to 325/350         | HP-1, DB-1, VF-1, Rtx-1, Rxi-1, SP-1, ZB-1<br>HP-1MS, DB-1MS, CP-Sil 5CB MS, VF-1MS, Rtx-1MS, Rxi-1MS                     |
| G3       | 50% phenyl<br>50% methylpolysiloxane   | BP-50+ MS                                    | 40 to 320/340          | DB-17, DB-17MS, HP-50+, CP-Sil 24CB, VF-17MS<br>Rxt-50, Rtx-17  |
| G7       | 50% cyanopropylmethyl<br>50% phenylmethylpolysiloxane                        | BP-225MS                                     | 40 to 220/240          | DB-225, DB-225MS, Rtx-225   |
| G14      | Polyethylene glycol<br>average MW 950-1,050                                  | BP-INOWAX                                    | 40 to 260/280          | HP-Innowax, DB-Wax, DB-Waxer, CP-Wax 52, VF-Wax<br>Rxt-Stabilwax, Rtx-Wax, Omega-Wax                                      |
| G15      | Polyethylene glycol<br>average MW 3,000-3,700                                | BP-INOWAX<br>BP-<br>CarboWax20M<br>BP-Wax-AQ | 40 to 260/280          | HP-Innowax, DB-Wax, DB-Waxer, CP-Wax 52, VF-Wax<br>Rxt-Stabilwax, Rtx-Wax, Omega-Wax, HP-20M, DB-CAM<br>CP-Sil 57Wax      |
| G16      | Polyethylene glycol<br>average MW 15,000                                     | BP-INOWAX<br>BP-<br>CarboWax20M<br>BP-Wax-AQ | 40 to 200/220          | HP-20M, DB-CAM, CP-Sil 57Wax  |
| G17      | Poly(75% diphenyl<br>25% dimethylsiloxane)                                   | BP-50+ MS                                    | 40 to 320/340          | DB-17, DB-17MS, HP-50+, CP-Sil 24CB, VF-17MS<br>Rxt-50, Rtx-17  |
| G20      | Polyethylene glycol<br>average MW 380-420                                    | BP-INOWAX                                    | 40 to 260/280          | HP-Innowax, DB-Wax, DB-Waxer, CP-Wax 52, VF-Wax<br>Rxt-Stabilwax, Rtx-Wax, Omega-Wax                                      |
| G25      | Polyethylene glycol<br>TPA (Carbowax 20M<br>Terephthalic acid)               | BP-FFAP                                      | 40 to 260/280          | HP-FFAP, DB-FFAP, Rxt-Stabilwa-DA, CP-FFAP  |
| G27      | 5% phenyl<br>95% methylpolysiloxane  | BP-5<br>BP-5MS<br>BP-5MSUI                   | -60 to 325/350         | HP-5, DB-5, VF-5MS, Rtx-5, Rxi-5, SP-5, ZB-5<br>HP-5MS, DB-5MS, CP-Sil 8CB MS, VF-5MS, Rtx-5MS<br>SP-5MS, ZB-5MS          |
| G28      | 25% phenyl<br>75% methylpolysiloxane   | BP-35MS                                      | 40 to 320/340          | DB-35, DB-35MS, HP-35, Rtx-35, ZB-35, VF-35   |
| G32      | 20% phenylmethyl<br>80% dimethylpolysiloxane                                 | BP-35MS                                      | 40 to 320/340          | DB-35, DB-35MS, HP-35, Rtx-35, ZB-35, VF-35   |
| G35      | Polyethylene glycol &<br>diepoxide esterified with<br>nitroterephthalic acid | BP-FFAP                                      | 40 to 260/280          | HP-FFAP, DB-FFAP, Rxt-Stabilwa-DA, CP-FFAP  |
| G36      | 1% vinyle<br>5% phenylmethylpolysiloxane                                     | BP-5<br>BP-5MS<br>BP-5MSUI                   | -60 to 325/350         | HP-5, DB-5, VF-5MS, Rtx-5, Rxi-5, SP-5, ZB-5<br>HP-5MS, DB-5MS, CP-Sil 8CB MS, VF-5MS, Rtx-5MS<br>SP-5MS, ZB-5MS          |
| G38      | Phase G1 plus tailing inhibitor  | BP-1,<br>BP-1MS                              | -60 to 325/350         | HP-1, DB-1, VF-1, Rtx-1, Rxi-1, SP-1, ZB-1<br>HP-1MS, DB-1MS, CP-Sil 5CB MS, VF-1MS, Rtx-1MS, Rxi-1MS                     |
| G39      | Polyethylene glycol<br>average MW 1500                                       | BP-INOWAX                                    | 40 to 260/280          | HP-Innowax, DB-Wax, DB-Waxer, CP-Wax 52, VF-Wax<br>Rxt-Stabilwax, Rtx-Wax, Omega-Wax                                      |
| G41      | Phenylmethyldimethylsilicone<br>(10% phenyl substituted)                     | BP-5<br>BP-5MS<br>BP-5MSUI                   | -60 to 325/350         | HP-5, DB-5, VF-5MS, Rtx-5, Rxi-5, SP-5, ZB-5<br>HP-5MS, DB-5MS, CP-Sil 8CB MS, VF-5MS, Rtx-5MS<br>Rxi-5MS, SP-5MS, ZB-5MS |
| G42      | 35% diphenyl<br>65% dimethylvinylsiloxane                                    | BP-35MS                                      | 40 to 320/340          | DB-35, DB-35MS, HP-35, Rtx-35, ZB-35, VF-35   |
| G43      | 6% cyanopropylphenyl<br>94% dimethylpolysiloxane                             | BP-1301<br>BP-624<br>BP-VMS Bleed            | -20 to 280/300         | DB-1301, CP-1301, VF-1301, Rtx-1301<br>DB-624, DB-VRX, Rtx-624, Rtx-VMS, DB 502.2, VOCCol                                 |
| G45      | Divinylbenzene ethylene<br>glycol dimethacrylate                             | BP-PLOT U                                    | -80 to 190/200         | HP-PLOT U, CP-Porapak U   |
| G46      | 14% cyanopropylphenyl<br>86% methylpolysiloxane                              | BP-1701<br>BP-1701MS                         | -20 to 280/300         | DB-1701, Rtx-1701, CP-Sil 19CB, VF-1701   |

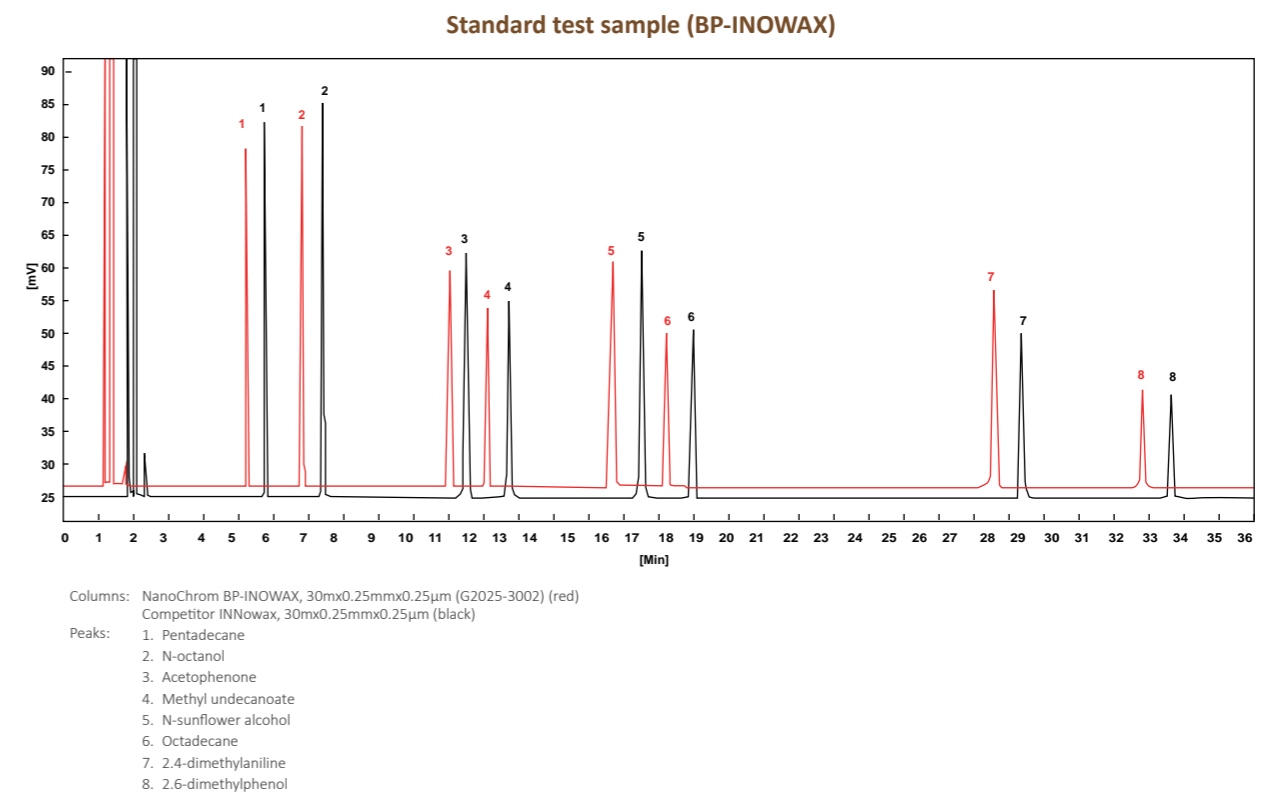
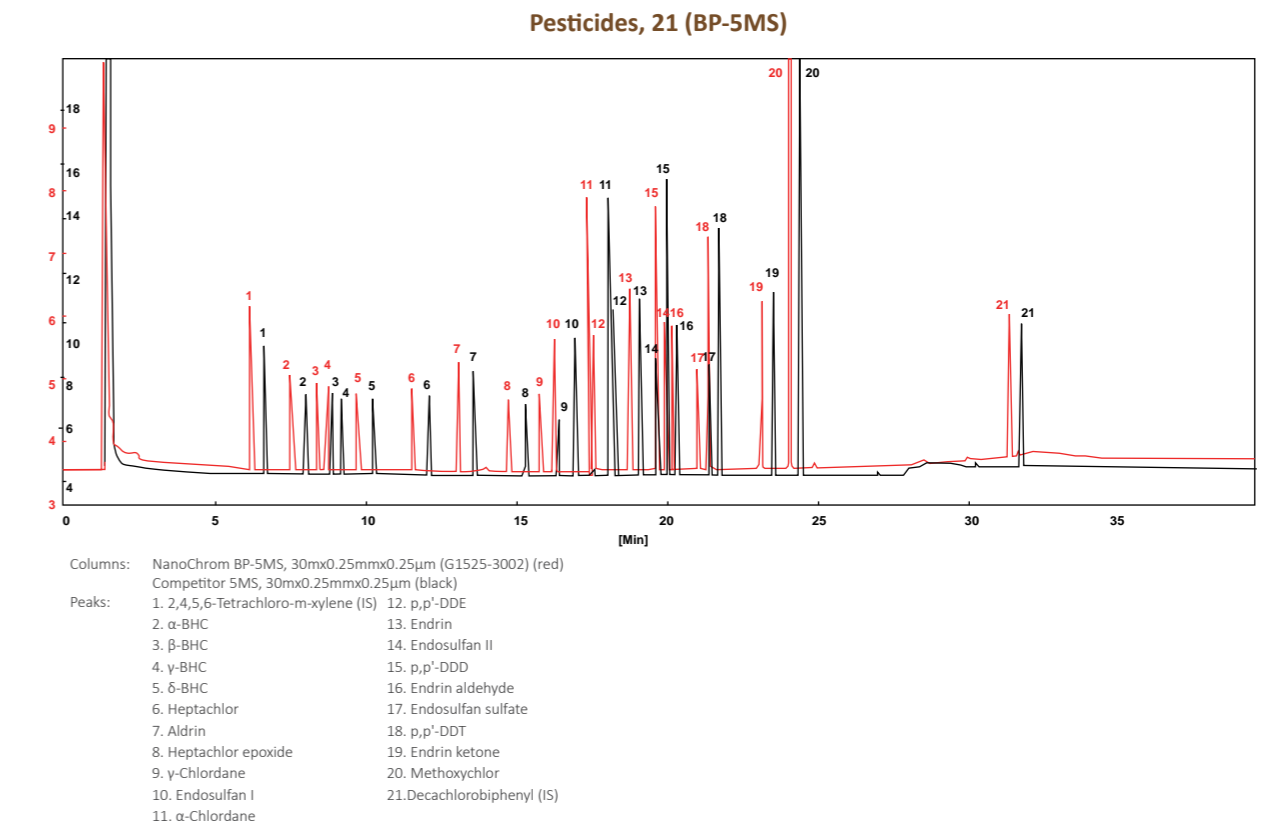
| ASTM Designation | Testing Method       | Method Title   | Recommended NanoChrom GC Columns   | P/N                      |
|------------------|----------------------|--|--|--------------------------|
| D1945            | GC                   | Standard test method for the analysis of natural gas   | NanoChrom BP-PLOT MoleSieve, 15mx0.53mmx50µm<br>NanoChrom BP-PLOT Q, 15mx0.53mmx30µm   | G8453-1550<br>G8653-1530 |
| D1946            | GC                   | Standard test method for the analysis of reformed gas  | NanoChrom BP-PLOT MoleSieve, 15mx0.53mmx50µm<br>NanoChrom BP-PLOT Q, 15mx0.53mmx30µm   | G8453-1550<br>G8653-1530 |
| D1983            | GLC of methyl ether  | Standard test method for the analysis of fatty acid compositions   | NanoChrom BP-INOWAX, 30mx0.25mmx0.25µm   | G2025-3002               |
| D2163            | GC                   | Standard test method for the analysis of liquified petroleum gases and propene concentration                           | NanoChrom BP-PLOT Al <sub>2</sub> O <sub>3</sub> "KCl", 30mx0.53mmx15µm<br>NanoChrom BP-PLOT Al <sub>2</sub> O <sub>3</sub> "S", 50mx0.53mmx15µm | G8153-3015<br>G8253-3015 |
| D2268            | Capillary GC         | Standard test method for the analysis of high purity nheptane and iso-octane   | NanoChrom BP-1, 60mx0.25mmx0.5µm   | G0125-6005               |
| D2306            | GC                   | Standard test method for C8 aromatic hydrocarbons  | NanoChrom BP-INOWAX, 60mx0.25mmx0.25µm   | G2025-6002               |
| D2426            | GC                   | Standard test method for the butadiene dimer and styrene in butadiene concentration                                    | NanoChrom BP-1, 30mx0.53mmx5.0µm   | G0153-3050               |
| D2427            | GC                   | Standard test method for determination of C2 through C5 hydrocarbons in gasoline                                       | NanoChrom BP-1, 30mx0.53mmx5.0µm<br>NanoChrom BP-PLOT Al <sub>2</sub> O <sub>3</sub> "M", 30mx0.53mmx15µm  | G0153-3050<br>G8353-3015 |
| D2504            | GC                   | Standard test method for noncondensable gases in C2 and for lighter hydrocarbon products                               | NanoChrom BP-PLOT MoleSieve, 30mx0.53mmx50µm   | G8453-3050               |
| D2505            | GC                   | Standard test method for other hydrocarbons and carbon dioxide in high-purity ethylene                                 | NanoChrom BP-PLOT GasPro, 60mx0.32mmx5µm   | G8532-6005               |
| D2593            | GC                   | Standard test method for butadiene purity and hydrocarbon impurities   | NanoChrom BP-PLOT Al <sub>2</sub> O <sub>3</sub> "M", 30mx0.53mmx15µm  | G8353-3015               |
| D2712            | GC                   | Standard test method for hydrocarbon traces in concentrated propylene  | NanoChrom BP-PLOT Al <sub>2</sub> O <sub>3</sub> "M", 50mx0.53mmx15µm  | G8353-5015               |
| D2804            | GC                   | Standard test method for the purity of methyl ethyl ketone   | NanoChrom BP-INOWAX, 30mx0.53mmx1.0µm  | G2053-3010               |
| Extended D2887   | GC                   | Standard test method for analysis of the boiling range distribution of petroleum fractions to C60                      | NanoChrom BP-1, 10mx0.53mmx0.88µm<br>NanoChrom BP-1, 5mx0.53mmx0.88µm  | G0153-1008<br>G0153-0508 |
| D2908            | Aqueous-injection GC | Standard practice for measuring volatile organic matter in water   | Contact NanoChrom for recommended VOC columns  |                          |
| D3054            | GC                   | Standard test method for analysis of cyclohexane   | NanoChrom BP-1, 60mx0.32mmx0.5µm   | G0132-6005               |
| D3257            | GC                   | Standard test method for the analysis of aromatics in mineral spirits  | NanoChrom BP-624, 30mx0.53mmx3.0µm   | G6253-3030               |
| D3329            | GC                   | Standard test method for the purity of methyl isobutyl ketone  | NanoChrom BP-INOWAX, 30mx0.53mmx1.0µm<br>NanoChrom BP-624, 30mx0.53mmx3.0µm  | G2053-3010<br>G6253-3030 |
| D3432            | GC                   | Standard test method for the analysis of unreacted toluene diisocyanates in urethane prepolymers and coating solutions | NanoChrom BP-1MS, 30mx0.32mmx1.0µm   | G1132-3010               |

| ASTM Designation | Testing Method                                | Method Title   | Recommended NanoChrom GC Columns  | P/N                      |
|------------------|---|--|---|--------------------------|
| D3447            | GC  | Standard test method for the purity of halogenated organic solvents  | NanoChrom BP-624, 30mx0.53mmx3.0µm  | G6253-3030               |
| D3534            | GC  | Standard test method for the analysis of PCB's in water  | NanoChrom BP-1MS, 30mx0.32mmx1.0µm  | G1132-3010               |
| D3545            | GC  | Standard test method for the analysis of alcohol content and the purity of acetate esters                                  | NanoChrom BP-624, 30mx0.53mmx3.0µm  | G6253-3030               |
| D3687            | The activated charcoal tube adsorption method | Standard practice for the analysis of collected organic vapors   | NanoChrom BP-INOWAX, 30mx0.53mmx1.0µm   | G2053-3010               |
| D3695            | Direct aqueous injection GC                   | Standard test method for the analysis of volatile alcohols in water  | NanoChrom BP-INOWAX, 30mx0.53mmx1.0µm   | G2053-3010               |
| D3760            | GC  | Standard test method for the analysis of isopropylbenzene (Cumene)   | NanoChrom BP-INOWAX, 60mx0.32mmx0.25µm<br>NanoChrom BP-1, 50mx0.32mmx0.52µm   | G2032-6002<br>G0132-5005 |
| D3797            | GC  | Standard test method for the analysis of o-xylene  | NanoChrom BP-INOWAX, 60mx0.32mmx0.50µm  | G2032-6005               |
| D3798            | GC  | Standard test method for the analysis of p-xylene  | NanoChrom BP-INOWAX, 60mx0.32mmx0.50µm  | G2032-6005               |
| D3871            | Headspace sampling                            | Standard test method for the analysis of purgeable organic compounds in water  | NanoChrom BP-624, 30mx0.53mmx3.0µm  | G6253-3030               |
| D3893            | GC  | Standard test method for the purity of methyl amyl ketone and methyl isoamyl ketone  | NanoChrom BP-624, 30mx0.53mmx3.0µm  | G6253-3030               |
| D3973            | GC  | Standard test method for the analysis of hydrocarbons with low molecular weights in water                                  | NanoChrom BP-1, 30mx0.53mmx2.65µm   | G0153-3026               |
| D4415            | GC  | Standard test method for the determination of dimers in acrylic acid   | NanoChrom BP-FFAP, 30mx0.32mmx0.25µm  | G2132-3002               |
| D4424            | GC  | Standard test method for butylene analyses   | NanoChrom BP-PLOT Al <sub>2</sub> O <sub>3</sub> "S", 50mx0.53mmx15µm         | G8253-5015               |
| D4443            | Headspace GC                                  | Standard test method for the residual vinyl chloride monomer content in PPB in vinyl chloride homo- and copolymers         | NanoChrom BP-1, 30mx0.53mmx2.65µm   | G0153-3026               |
| D4864            | GC  | Standard test method for the determination of traces of methanol in propylene concentrates                                 | NanoChrom BP-INOWAX, 30mx0.53mmx1.0µm<br>NanoChrom BP-PLOT Q, 30mx0.53mmx30µm | G2053-3010<br>G8653-3030 |
| D4947            | GC  | Standard test method for the analysis of chlordane and heptachlor residues in indoor air                                   | NanoChrom BP-5, 30mx0.53mmx1.5µm  | G0553-3015               |
| D4961            | GC  | Standard test method for the analysis of major organic impurities in phenol produced by the cumene process                 | NanoChrom BP-PLOT Q, 15mx0.53mmx30µm  | G8653-1530               |
| D4983            | Direct aqueous injection GC                   | Standard test method for the analysis of cyclohexylamine, morpholine, and diethylaminoethanol in water and condensed steam | NanoChrom BP-5MS, 30mx0.32mmx1.00µm   | G1532-3010               |
| D5008            | GC  | Standard test method for ethyl methyl pentonal content and the purity value of 2-ethylhexanol                              | NanoChrom BP-1, 15mx0.53mmx5.0µm<br>NanoChrom BP-INOWAX, 30mx0.32mmx0.25µm    | G0153-1550<br>G2032-3002 |

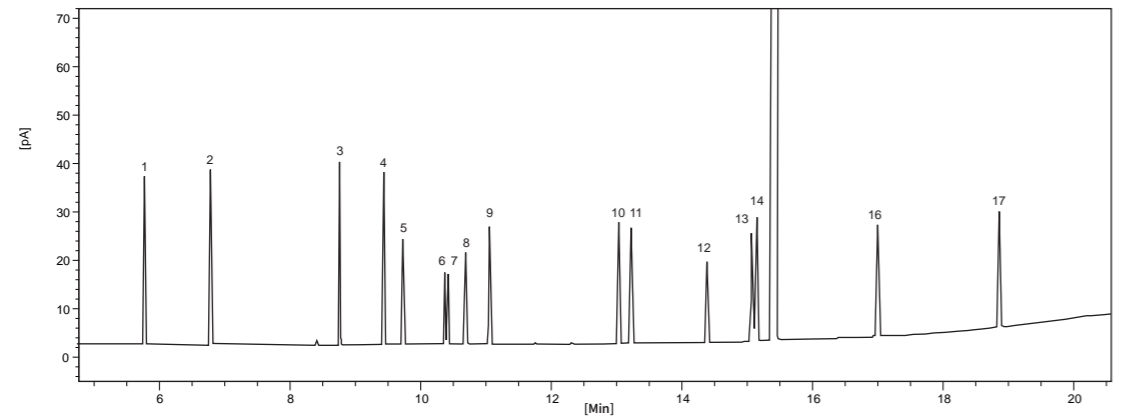
| ASTM Designation | Testing Method                                   | Method Title  | Recommended NanoChrom GC Columns  | P/N                                    |
|------------------|--|---|---|--|
| D5060            | GC   | Standard test method for determining the impurities in high-purity ethylbenzene   | NanoChrom BP-INOWAX, 60mx0.32mmx0.5µm   | G2032-6005                             |
| D5075            | GC   | Standard test method for the analysis of nicotine in indoor air   | NanoChrom BP-5, 30m x0.53mmx1.5µm<br>NanoChrom BP-5, 30mx0.32mmx1.0µm   | G0553-3015<br>G0532-3010               |
| D5135            | Capillary GC                                     | Standard test method for the analysis of sryreme  | NanoChrom BP-INOWAX, 60mx0.32mmx0.5µm<br>NanoChrom BP-5, 30m x0.53mmx1.5µm<br>NanoChrom BP-5, 30mx0.32mmx1.0µm      | G2032-6005<br>G0553-3015<br>G0532-3010 |
| D5303            | GC   | Standard test method for the analysis of carbonyl sulfide in propylene  | NanoChrom BP-PLOT GasPro, 30mx0.32mmx5µm  | G8532-3005                             |
| D5307            | GC   | Standard test method the determination of the boiling range distribution of crude petroleum   | NanoChrom BP-1, 7.5mx0.53mmx5.0µm   | G0153-0750                             |
| D5310            | Capillary GC                                     | Standard test method for the analysis of tar acid composition   | NanoChrom BP-5MS, 30mx0.25mmx0.25µm   | G1525-3002                             |
| D5316            | Microextraction and GC                           | Standard test method for 1, 2-dibromoethane and 1, 2-dibromo-3-chloropropane in water   | NanoChrom BP-1MS, 30mx0.32mmx1.0µm<br>NanoChrom BP-PLOT Q, 30mx0.53mmx30µm  | G1132-3010<br>G8653-3030               |
| D5317            | GC with an electron capture detector             | Standard test method for the determination of chlorinated organic acid compounds in water   | NanoChrom BP-5MS, 30mx0.25mmx0.25µm<br>NanoChrom BP-1701, 30mx0.25mmx0.25µm<br>NanoChrom BP-35MS, 30mx0.25mmx0.25µm | G1525-3002<br>G6125-3002<br>G3525-3002 |
| D5320            | GC   | Standard test method for the determination of 1,1-trichloroethane and methylene chloride in stabilized trichloroethylene and tetrachloroethylene              | NanoChrom BP-1, 30mx0.53mmx3.0µm<br>NanoChrom BP-624, 30mx0.32mmx1.8µm  | G0153-3030<br>G6232-3018               |
| D5441            | GC   | Standard test method for the analysis of methyl tert-butyl ether (MTBE)   | NanoChrom BP-PLOT Q, 30mx0.53mmx30µm  | G8653-3030                             |
| D5442            | GC   | Standard test method for the analysis of petroleum waxe   | NanoChrom BP-5, 15mx0.25mmx0.25µm   | G0525-1502                             |
| D5475            | GC with a nitro-gen phosphorus detector          | Standard test method for the analysis of nitrogen and phosphorus-containing pesticides in water   | NanoChrom BP-5MS, 30mx0.25mmx0.25µm<br>NanoChrom BP-35MS, 30mx0.25mmx0.25µm<br>NanoChrom BP-1701, 30mx0.25mmx0.25µm | G1525-3002<br>G3525-3002<br>G6125-3002 |
| D5501            | GC   | Standard test method for the determination of ethanol content in denatured fuel ethanol   | NanoChrom BP-1, 100mx0.25mmx0.50µm  | G0125-A005                             |
| D5507            | Capillary column/multi dimensional GC            | Standard test method for the determination of trace organic impurities in monomer grade vinyl chloride  | NanoChrom BP-PLOT Q 15mx0.53mmx30µm<br>NanoChrom BP-PLOT U 30mx0.53mmx20µm  | G8653-1530<br>G8753-3020               |
| D5508            | Headspace-capillary GC                           | Standard test method for the determination of residual acrylonitrile monomers in styrene-acrylonitrile copolymer resins and nitrile-butadiene rubbers         | NanoChrom BP-PLOT Q, 30mx0.53mmx30µm  | G8653-3030                             |
| D5580            | GC   | Standard test method for the determination of benzene, toluene, ethylbenzene, p/m-xylene, C9, and heavier aromatics, and total aromatics in finished gasoline | NanoChrom BP-1, 30mx0.53 mmx5.0µm   | G0153-3050                             |
| D5599            | GC and oxygenselective flameionization detection | Standard test method for the determination of oxygenates in gasoline  | NanoChrom BP-1, 60mx0.25mmx1.0µm  | G0125-6010                             |
| D5623            | GC and sulfur selective detection                | Standard test method for analysis of sulfur compounds in light petroleum liquids  | NanoChrom BP-1, 30mx0.32mmx4.0µm  | G0132-3040                             |

| ASTM Designation | Testing Method   | Method Title  | Recommended NanoChrom GC Columns   | P/N                                    |
|------------------|--|---|--|--|
| D5739            | GC and positive ion electron impact low resolution mass spectrometry | Standard practice for oil spill source identification   | NanoChrom BP-5, 30mx0.25mmx0.25µm  | G0525-3002                             |
| D5769            | GC/MS  | Standard test method for the determination of benzene, toluene, and total aromatics in finished gasoline                              | NanoChrom BP-1, 60mx0.25mmx1.0µm   | G0125-6010                             |
| D5790            | Capillary column GC/MS   | Standard practice for the measurement of purgeable organic compounds in water   | NanoChrom BP-624, 30mx0.53mmx3.0µm   | G6253-3030                             |
| D5812            | Capillary column GC  | Standard test method for the determination of organochlorine pesticides in water  | NanoChrom BP-5MS, 30mx0.25mmx0.25µm<br>NanoChrom BP-35MS, 30mx0.25mmx0.25µm<br>NanoChrom BP-1701, 30mx0.25mmx0.25µm  | G1525-3002<br>G3525-3002<br>G6125-3002 |
| D5917            | GC and external-calibration  | Standard test method for the analysis of trace impurities in monocyclic aromatic hydrocarbons   | NanoChrom BP-INOWAX, 60mx0.32mmx0.25µm   | G2032-6002                             |
| D5986            | GC/FTIR  | Standard test method for the determination of oxygenates benzene, toluene, C8-C12 aromatics, and total aromatics in finished gasoline | NanoChrom BP-1, 60mx0.53mmx5.0µm   | G0153-6050                             |
| D6144            | Capillary GC   | Standard test method for the analysis of trace impurities in alpha-methylstyrene  | NanoChrom BP-1, 60mx0.25mmx1.0µm   | G0125-6010                             |
| D6159            | GC   | Standard test method for the determination of hydrocarbon impurities in ethylene  | NanoChrom BP-PLOT Al <sub>2</sub> O <sub>3</sub> "KCl", 50mx0.53mmx15µm<br>NanoChrom BP-PLOT Al <sub>2</sub> O <sub>3</sub> "M", 50mx0.53mmx15µm<br>NanoChrom BP-1, 30mx0.53mmx5.0µm | G8153-5015<br>G8353-5015<br>G0153-3050 |
| D6160            | GC   | Standard test method for the determination of PCB's in waste materials  | NanoChrom BP-5MS, 30mx0.32mmx0.25µm  | G1532-3002                             |
| D2360            | GC   | Standard test method for the analysis of trace impurities in monocyclic aromatic hydrocarbons   | NanoChrom BP-INOWAX, 60mx0.32mm x0.25µm  | G2032-6002                             |
| E1616            | GC   | Standard test method for the analysis of acetic anhydride   | NanoChrom BP-1, 50mx0.32mmx0.52µm  | G0132-5005                             |
| E1863            | GC   | Standard test method for the analysis of acrylonitrile  | NanoChrom BP-INOWAX, 30mx0.32mmx1.0µm<br>NanoChrom BP-PLOT Q, 30mx0.32mmx 15.0µm   | G2032-3010<br>G8632-3015               |
| E202             | GC   | Standard test method for the analysis of ethylene glycols and propylene glycols   | NanoChrom BP-624, 30mx0.53mmx3.0µm   | G6253-3030                             |
| E475             | GC   | Standard test method for the assay of di-tert-butyl peroxide  | NanoChrom BP-5, 30mx0.53mmx5.0µm   | G0553-3050                             |

Applications

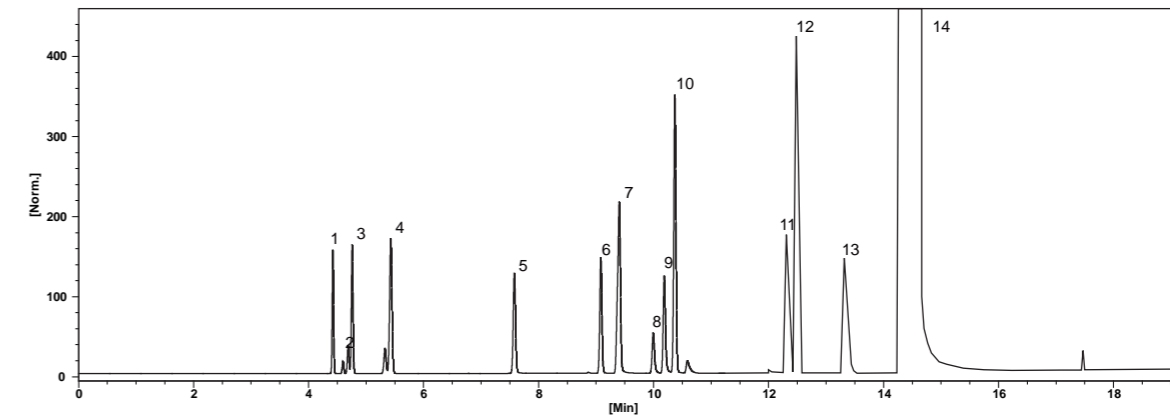


## Phthalate esters (NanoChrom BP-5MS)



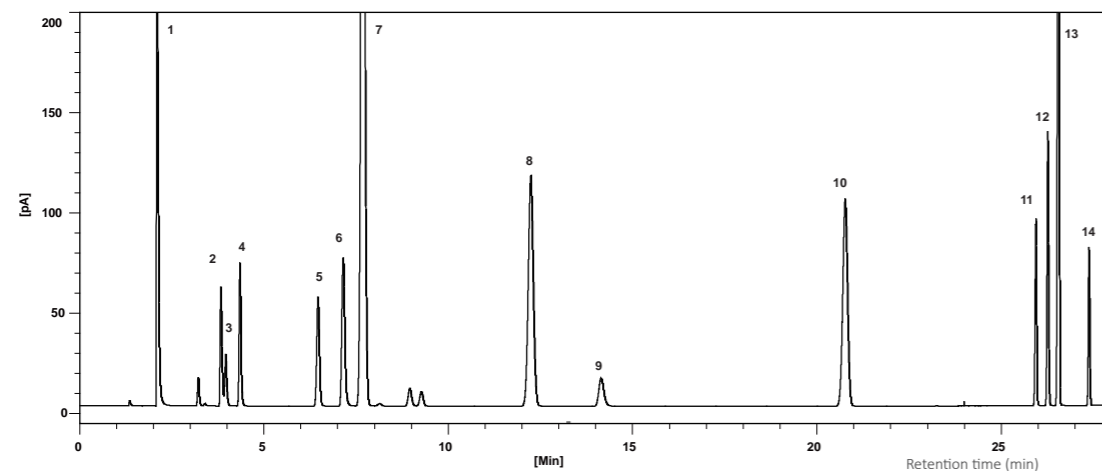
|               |  |        |  |        |
|---------------|--|--------|--|--------|
| Column:       | NanoChrom BP-5MS   | Peaks: | 1. Dimethylphthalate                       | 5.799  |
| Dimension:    | 30mx0.25mmx0.25µm  |        | 2. Diethylphthalate                        | 6.807  |
| Carrier:      | Hydrogen, flow 1.5 mL/min  |        | 3. Phthalic acid diisobutyl ester          | 8.791  |
| Inlet:        | Split, 275°C, split flow 60 mL/min   |        | 4. Di-n-butylphthalate                     | 9.462  |
| Oven:         | 80 °C (hold 0.5 min) to 160 °C at 30 °C/min, to 240 °C (hold 2 min) at 15 °C/min to 320 °C (hold 1 min) at 8 °C/min. |        | 5. Bis(2-methoxyethyl)phthalate            | 9.753  |
| Inlet Volume: | EPA 8061 standard 1 µL   |        | 6. Bis(4-methyl-2-pentyl) phthalate isomer | 10.403 |
| Detector:     | FID 325 °C   |        | 7. Bis(4-methyl-2-pentyl)phthalate         | 10.435 |
|               |  |        | 8. Bis(2-ethoxyethyl)phthalate             | 10.711 |
|               |  |        | 9. Diamyl phthalate                        | 11.078 |
|               |  |        | 10. Di-n-hexyl phthalate                   | 13.046 |
|               |  |        | 11. Benzyl butyl phthalate                 | 13.241 |
|               |  |        | 12. Bis(2-n-butoxyethyl)phthalate          | 14.400 |
|               |  |        | 13. Phthalic acid dicyclohexyl ester       | 15.088 |
|               |  |        | 14. Bis(2-ethylhexyl)phthalate             | 15.155 |
|               |  |        | 15. Dipentylphthalate                      | 15.445 |
|               |  |        | 16. Di-n-octyl phthalate                   | 17.005 |
|               |  |        | 17. Di-nonyl phthalate                     | 18.863 |

## Hydrocarbons and benzene series in gasoline (NanoChrom BP-FFAP)



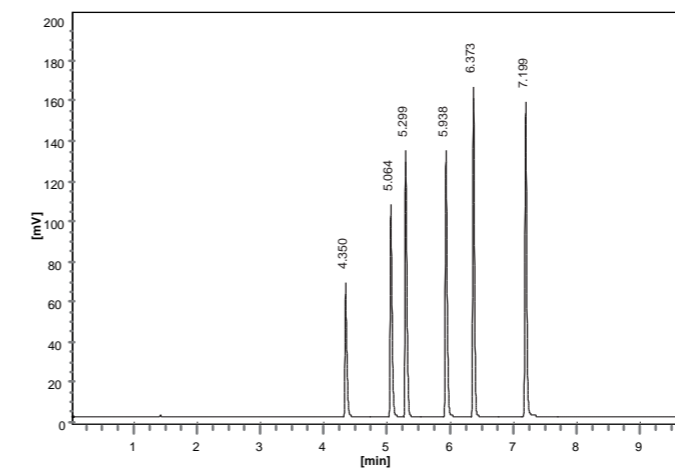
|               |   |        |                                   |        |
|---------------|---|--------|-----------------------------------|--------|
| Column:       | NanoChrom BP-FFAP                                     | Peaks: | 1. Pentane                        | 4.420  |
| Dimension:    | 60mx0.32mmx0.50µm                                     |        | 2. Hexane                         | 4.685  |
| Carrier:      | Hydrogen, 1.3 mL/min (Constant Flow)                  |        | 3. Tert-butyl methyl ether (MTBE) | 4.755  |
| Inlet:        | Split, 240 °C, Split flow 50 mL/min                   |        | 4. Acetone                        | 5.427  |
| Oven:         | 45 °C (hold 5 min) to 120 °C (hold 1 min) at 5 °C/min |        | 5. Ethyl acetate                  | 7.575  |
| Inlet Volume: | 0.1 µL  |        | 6. 2-Butanone                     | 9.079  |
| Detector:     | FID 260 °C  |        | 7. Methanol                       | 9.400  |
|               |   |        | 8. Isopropanol                    | 9.991  |
|               |   |        | 9. Ethanol                        | 10.183 |
|               |   |        | 10. Benzene                       | 10.367 |
|               |   |        | 11. 1-propanol                    | 12.334 |
|               |   |        | 12. Toluene                       | 12.494 |
|               |   |        | 13. Iso-butanol                   | 13.321 |
|               |   |        | 14. 1-Butanol                     | 14.595 |

## Residual solvent (NanoChrom BP-624)



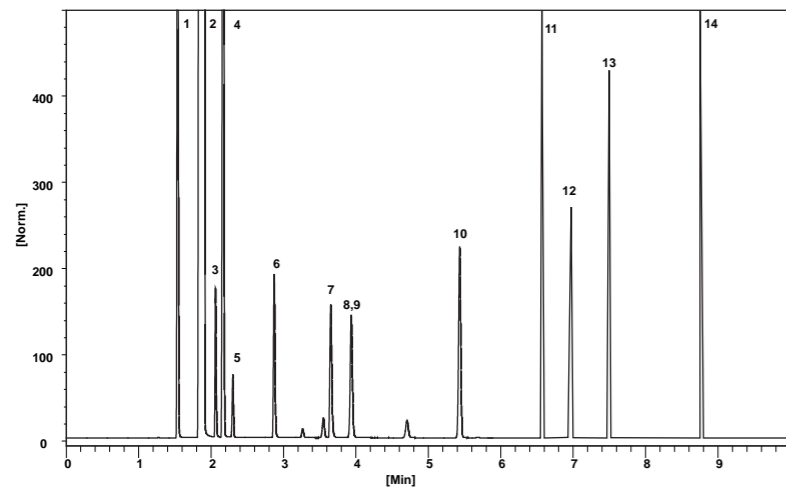
|            |  |        |                             |        |
|------------|--|--------|-----------------------------|--------|
| Column:    | NanoChrom BP-624   | Peaks: | 1. Methanol                 | 2.094  |
| Dimension: | 30mx0.32mmx1.80µm  |        | 2. Acetonitrile             | 3.825  |
| Carrier:   | Hydrogen, flow 2.3 mL/min                                |        | 3. Dichloromethane          | 3.959  |
| Inlet:     | Split, 260 °C, split flow 60 mL/min                      |        | 4. trans-1,2-Dichloroethene | 4.343  |
| Oven:      | 40 °C (hold 20 min) to 240 °C (hold 20 min) at 10 °C/min |        | 5. cis-1,2-Dichloroethene   | 6.459  |
| Sample:    | USP class 2 residual solvent mixture A                   |        | 6. Tetrahydrofuran          | 7.143  |
| Detector:  | FID 280 °C   |        | 7. Cyclohexane              | 7.678  |
|            |  |        | 8. Methylcyclohexane        | 12.235 |
|            |  |        | 9. 1,4-Dioxane              | 14.138 |
|            |  |        | 10. Toluene                 | 20.760 |
|            |  |        | 11. Chlorobenzene           | 25.932 |
|            |  |        | 12. Ethyl benzene           | 26.256 |
|            |  |        | 13. m-Xylene / p-Xylene     | 26.541 |
|            |  |        | 14. o-Xylene                | 27.371 |

## Volatile fatty acids and phenols (NanoChrom BP-FFAP)



|               |   |        |                    |
|---------------|---|--------|--------------------|
| Column:       | NanoChrom BP-FFAP   | Peaks: | 1. Acetic acid     |
| Dimension:    | 30mx0.53mmx0.5µm  |        | 2. Propionic acid  |
| Carrier:      | H <sub>2</sub> Head Pressure: 4 psi   |        | 3. Isobutyric acid |
| Inlet:        | Split, 240 °C, split flow 50 mL/min   |        | 4. Butyric acid    |
| Oven:         | 80 °C (hold 1 min) to 120 °C at 6 °C/min to 205 °C (hold 2 min) at 6 °C/min |        | 5. Isovaleric acid |
| Inlet Volume: | 1 µL  |        | 6. Valeric acid    |
| Detector:     | FID 260 °C  |        |                    |

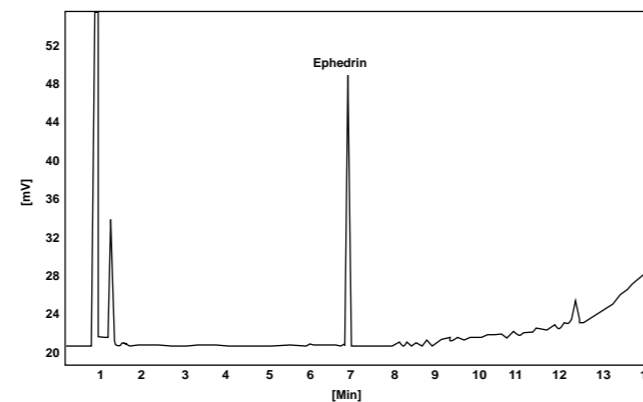
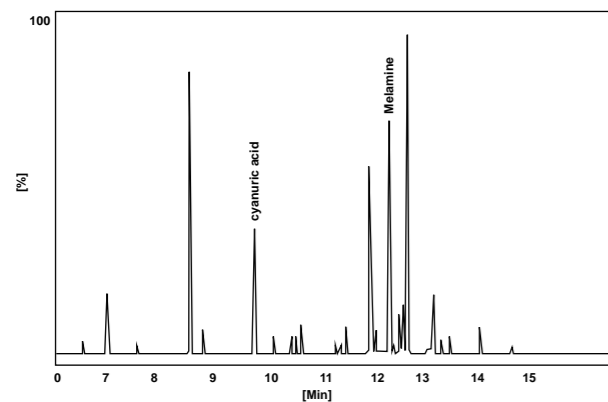
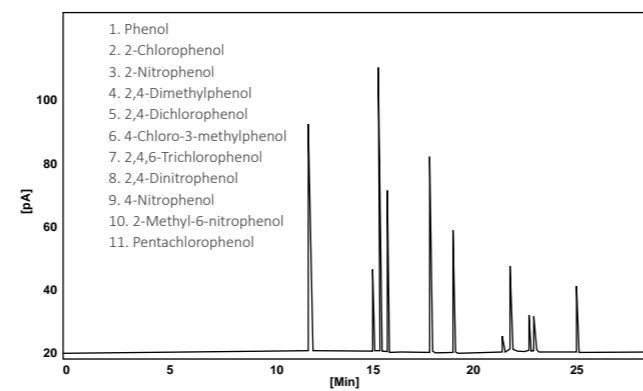
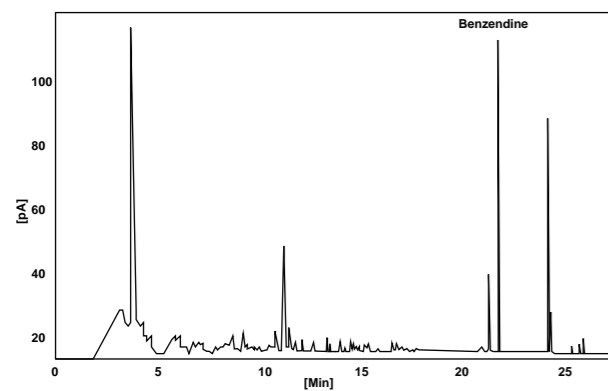
Fusel alcohol products (NanoChrom BP-BioEtOH)



Column: NanoChrom BP-BioEtOH  
 Dimension: 30m x 0.25mm x 1.00µm  
 Carrier: Hydrogen, flow 1.5 mL/min  
 Inlet: Split, 275 °C, split ratio 30:1  
 Oven: 40 °C (hold 5 min) to 300 °C (hold 1 min) at 25 °C/min  
 Inject volume: 0.1 µL  
 Detector: FID 325 °C  
 Peaks:  
 1. Methanol  
 2. Ethanol  
 3. Acetone  
 4. Isopropyl alcohol  
 5. Pentane  
 6. N-Propanol  
 7. 2-Butanol  
 8. Ethyl acetate  
 9. Hexane  
 10. Benzene  
 11. Heptane  
 12. Acetal  
 13. Toluene  
 14. Xylene

Separation of complex samples (BP-5MS)

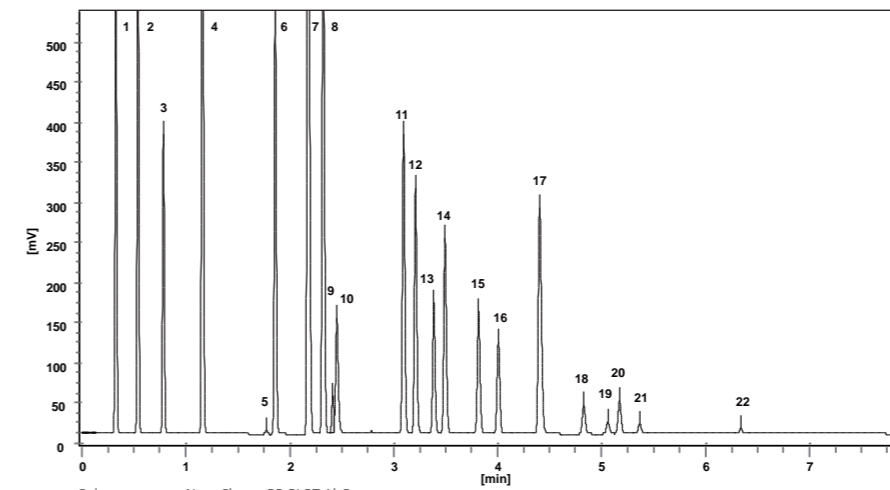
Demonstrate excellent column inertness of NanoChrom BP-5MS column both benzidine and pentachlorophenol show symmetric and sharp peak shapes even at low levels of 1 ppm sample introduction. Because of the high degree of column inertness, while other suppliers use thicker film thickness (0.5 µm), NanoChrom BP-5MS columns use 0.25 µm film thickness to achieve the same performance with faster analysis time.



Analysis of a baby formula spiked with 10 ppm Melamine on NanoChrom BP-5MS column by GC/MS.  
 Column: NanoChrom BP-5MS, 30m x 0.25mm x 0.25µm (P/N G1525-3002)  
 Oven: 75 °C (hold 1 min), 5 °C/min to 300 °C (hold 5 min).  
 Sample: 10 ppm spiking melamine in baby formula, TMS derivative

BP-5MS Column was used to detect low levels of ephedrine used by athletes.

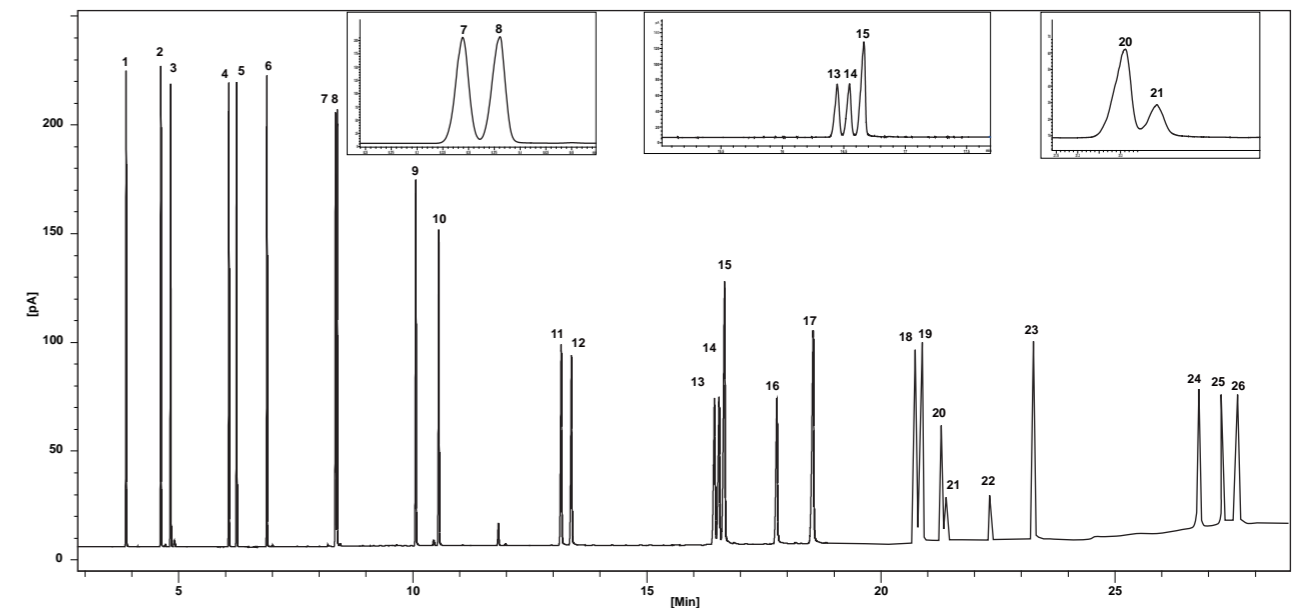
Refined gas (NanoChrom BP-PLOT Al<sub>2</sub>O<sub>3</sub>)



- Peaks:
1. Methane
  2. Ethane
  3. Ethylene
  4. Propane
  5. Cyclopropane
  6. Propylene
  7. Isobutane
  8. N-butane
  9. Propylene diene
  10. Acetylene
  11. Trans-2-butene
  12. N-butene
  13. Isobutene
  14. Cis-2-butene
  15. Isopentane
  16. N-pentane
  17. 1,3-butadiene
  18. Propargyne
  19. Trans-2-pentene
  20. N-pentene
  21. Cis-2-pentene
  22. N-hexane

Column: NanoChrom BP-PLOT Al<sub>2</sub>O<sub>3</sub>  
 Dimension: 30m x 0.53mm x 15µm  
 Carrier: Hydrogen, Head Pressure, 5 psi  
 Inlet: Split, 200 °C, Split flow 60 mL/min  
 Oven: 65 °C to 150 °C at 35 °C/min to 200 °C (hold 1 min) at 10 °C/min  
 Sample: Refined gas  
 Detector: FID 200 °C

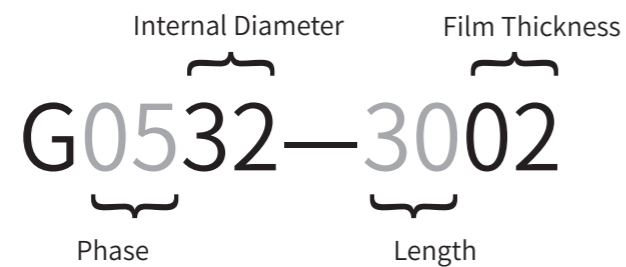
26 PAHs (NanoChrom BP-5MS-PAH)



Column: NanoChrom BP-5MS-PAH  
 Dimension: 30m x 0.25mm x 0.25µm  
 Carrier: Hydrogen, column flow 1.2 mL/min  
 Inlet: Split, 275 °C, Split flow 50 mL/min  
 Oven: 100 °C (hold 1 min) to 280 °C at 15 °C/min to 340 °C (hold 10 min) at 5 °C/min  
 Inject Volume: 1 µL  
 Detector: FID 350 °C  
 Peaks:

|                          |       |                              |       |
|--------------------------|-------|------------------------------|-------|
| 1. Naphthalene           | 3.87  | 14. Benzo[k]fluoranthene     | 16.55 |
| 2. 1-Methylnaphthalene   | 4.61  | 15. Benzo[j]fluoranthene     | 16.66 |
| 3. 2-Methylnaphthalene   | 4.82  | 16. Benzo[a]pyrene           | 17.78 |
| 4. Acenaphthylene        | 6.07  | 17. 3-Methylcholanthrene     | 18.56 |
| 5. Acenaphthene          | 6.23  | 18. Dibenzo[a,h]acridine     | 20.74 |
| 6. Fluorene              | 6.88  | 19. Dibenzo[a,j]acridine     | 20.86 |
| 7. Phenanthrene          | 8.34  | 20. Indeno[1,2,3-cd]pyrene   | 21.31 |
| 8. Anthracene            | 8.38  | 21. Dibenzo[a,h]anthracene   | 21.38 |
| 9. Fluoranthene          | 10.07 | 22. Benzo[ghi]perylene       | 22.33 |
| 10. Pyrene               | 10.56 | 23. 7H-Dibenzo[c,g]carbazole | 23.25 |
| 11. Benzo[a]anthracene   | 13.17 | 24. Dibenzo[a,e]pyrene       | 26.81 |
| 12. Chrysene             | 13.39 | 25. Dibenzo[a,i]pyrene       | 27.30 |
| 13. Benzo[b]fluoranthene | 16.45 | 26. Dibenzo[a,h]pyrene       | 27.60 |

Example: NanoChrom BP-5, 30mx0.32mmx0.25µm



| Phase  | Code | Internal Diameter | Code | Film Thickness | Code |
|--|------|-------------------|------|----------------|------|
| NanoChrom BP-1   | 01   | 0.1 mm            | 01   | 0.1 µm         | 01   |
| NanoChrom BP-1MS   | 11   |                   |      |                |      |
| NanoChrom BP-5   | 05   | 0.18 mm           | 18   | 0.15 µm        | 01   |
| NanoChrom BP-5MS   | 15   | 0.20 mm           | 20   | 0.25 µm        | 02   |
| NanoChrom BP-XLB   | 16   | 0.25 mm           | 25   | 0.33 µm        | 03   |
| NanoChrom BP-35MS  | 35   |                   |      |                |      |
| NanoChrom BP-50+MS                                       | 50   | 0.32 mm           | 32   | 0.5 µm         | 05   |
| NanoChrom BP-1301  | 60   | 0.53 mm           | 53   | 1.0 µm         | 10   |
| NanoChrom BP-1701  | 61   |                   |      |                |      |
| NanoChrom BP-624   | 62   |                   |      | 1.5 µm         | 15   |
| NanoChrom BP-502.2                                       | 63   |                   |      | 2.65 µm        | 26   |
| NanoChrom BP-VMS   | 64   |                   |      | 3.0 µm         | 30   |
| NanoChrom BP-FVOC  | 65   |                   |      | 5.0 µm         | 50   |
| NanoChrom BP-225   | 66   |                   |      |                |      |
| NanoChrom BP-FAME  | 68   |                   |      |                |      |
| NanoChrom BP-INOWAX                                      | 20   |                   |      |                |      |
| NanoChrom BP-FFAP  | 21   |                   |      |                |      |
| NanoChrom BP-Carbowax 20M                                | 22   |                   |      |                |      |
| NanoChrom BP-Inowax-MS                                   | 24   |                   |      |                |      |
| NanoChrom BP PLOT Al <sub>2</sub> O <sub>3</sub> , "KCl" | 81   |                   |      |                |      |
| NanoChrom BP PLOT Al <sub>2</sub> O <sub>3</sub> , "S"   | 82   |                   |      |                |      |
| NanoChrom BP PLOT Al <sub>2</sub> O <sub>3</sub> , "M"   | 83   |                   |      |                |      |
| NanoChrom BP PLOT Molsieve                               | 84   |                   |      |                |      |
| NanoChrom BP PLOT GasPro                                 | 85   |                   |      |                |      |
| NanoChrom BP PLOT Q                                      | 86   |                   |      |                |      |
| NanoChrom BP PLOT U                                      | 87   |                   |      |                |      |
| NanoChrom BP-Blood Alcohol                               | 88   |                   |      |                |      |

| Length | Code |
|--------|------|
| 5 m    | 05   |
| 10 m   | 10   |
| 15 m   | 15   |
| 25 m   | 25   |
| 30 m   | 30   |
| 50 m   | 50   |
| 60 m   | 60   |
| 75 m   | 75   |
| 100 m  | A0   |
| 105 m  | A5   |
| 150 m  | 5A   |



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