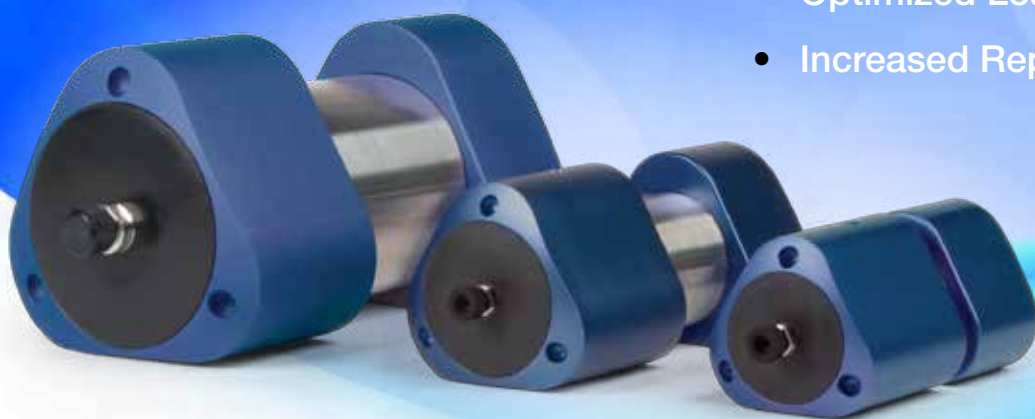




THE
ULTIMATE
PRE-PACKED PREPARATIVE
COLUMN
FOR HPLC AND SFC
GUARANTEED!

Axia PREP LC columns offer:

- Increased Performance
- Groundbreaking Lifetimes
- Optimized Loadability
- Increased Reproducibility



**NEW
PHASES!**

 **phenomenex**[®]
...breaking with traditionSM

The Axia™ Advantage

Available in over 40 unique achiral and chiral selectivities, Axia advanced preparative column packings and column hardware designs offer several advantages. Unlike traditional column packing methods, the Axia packing method offers increased sorbent bed density for increased performance and eliminates media bed collapse as a source of premature column failure in preparative HPLC/SFC columns.



guarantee

If Axia packed columns do not provide at least an equivalent separation as compared to a competing preparative column of the same particle size, same phase, and dimensions, return the product with comparative data within 45 days for a FULL REFUND. Only applies to 21.2 mm ID columns.

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Axia™ Technology pp. 4-7

Award winning column packing technology

Media Selection Chart pp. 8-9

Quickly find the media for your purification needs

Media Selectivity Details pp. 10-27

Achiral Chemistries

Core-Shell Media

NEW Kinetex® pp. 10-13

Aeris® pp. 14-15

Fully Porous Media

Gemini® pp. 16-17

Synergi™ pp. 18-19

Luna® pp. 20-21

NEW Luna® Omega pp. 22-23

Jupiter® p. 24

Clarity® p. 25

Chiral Chemistries

NEW Lux® pp. 26-29

PhenoLogix pp. 30-31

Screening, Optimization and Scale-up Services

SecurityGuard™ PREP pp. 32-33

PREP HPLC/SFC Column Protection

Ordering Information pp. 33-35



I find Axia columns to be very robust and durable. I often use the prep column for much longer than predicted with reproducible peaks. This saves us a significant amount of money.

David Wisnoski
GlaxoSmithKline, USA



Axia™ Technology vs. Traditional "OBD™" Prep Column Packing

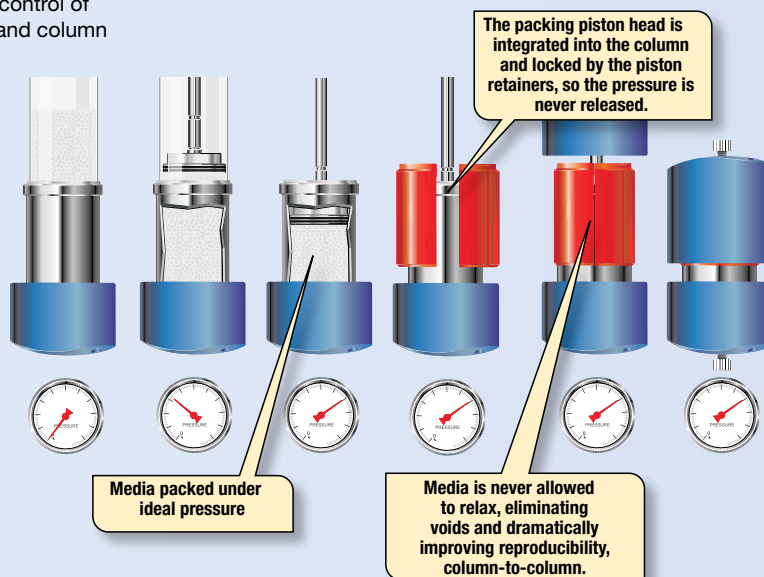
Axia Packing Technology

Axia packed preparative columns involve a single axial compression step unlike conventional packed preparative columns. The ideal column bed density is custom calculated and automated for each specific media and column size. Computer control of the entire process ensures both proper bed density and column uniformity every time.

During the Axia packing process, the packing piston is locked in place, eliminating any decompression and then recompression of the media sorbent, thus maintaining media and column bed integrity. This solves common lifetime and performance problems associated with conventional packing processes for preparative columns.



Axia Packing Process Involves: Compression → Final Column



U.S. Patent No. 7, 674, 383

Traditional Slurry Packing

Traditional slurry packing processes, like the Waters® OBD (Optimum Bed Density) column packing approach, involve the column being removed from the column packing station once it is packed.

Several potential problems with this packing method are:

- Variability in column performance due to increased number of manual operations required for assembly
- Potential silica media damage during recompression
- Level of process control is based on traditional slurry packing technology



Conventional Packing Process Involves: Compression → Decompression → Recompression → Final Column

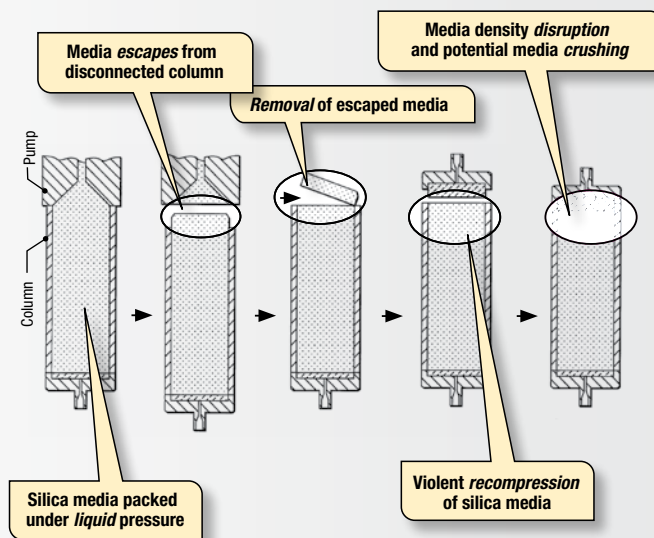


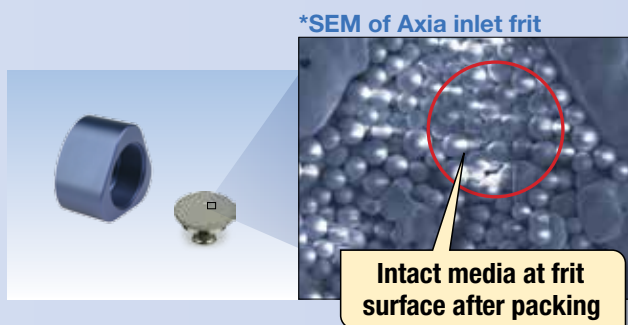
Diagram from Waters Corporation U.S. Patent No. 7,399,410

Comparative separations may not be representative of all applications.

Axia™ packed columns produce uniform media bed with intact particles

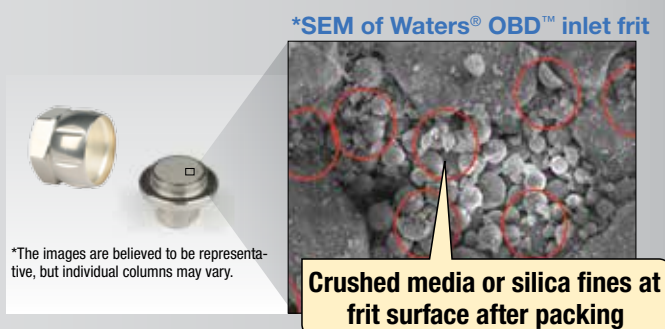
The highly tuned patented process and hardware eliminates potential decompression ensuring bed stability and optimal packing density.

The media found on the inlet frit of the Axia packed column shows no signs of damage unlike the media found on inlet frit of traditionally packed prep columns.



Traditional packed preparative columns produce non-uniform media beds with sheared and crushed particles

Decompression and then recompression during packing can damage the media and lead to increased column-to-column variability, flow disturbances, and decreased column lifetimes.



“

We are using chromatography media from Phenomenex for GPL/GMP purposes, therefore we audited Phenomenex USA as a manufacturer. From the beginning, we were impressed with Phenomenex and the attitude of their employees. Phenomenex is a unique company in many aspects. Their degree of dedication to customer service, to the organization of the QMS system and last but not least the positive atmosphere in the company is impressive. The outcome of the audit was to our fullest satisfaction.

”

Major Generic Pharma Company, Europe



Axia™ Technology Outperforms Traditional Packing Processes!

Because of the constant pressure placed on the integrated packing piston, Axia packed columns possess the dynamic capability of maintaining a consistent, homogeneous media bed. This results in superior column performance no matter which media selectivity you choose.

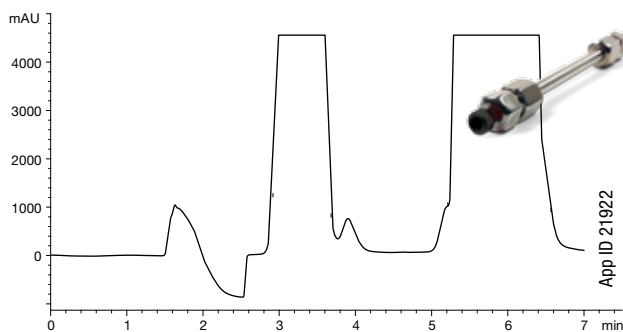
To better understand how much Axia technology improves column performance over traditionally slurry packed preparative columns we scaled-up a 5 µm Lux® Cellulose-1 chiral media analytical column and packed the same media into two different

150 x 21.2 mm I.D. columns. One column was packed using Axia technology and the other prep column was packed using the traditional slurry packing process.

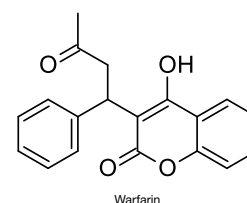
The Axia packing technology had a substantial increase in column efficiency resulting in increased resolution over traditionally packed preparative columns. With increased resolution you are able to increase your sample load enabling you to purify more target compound(s) per purification run. This equates to better throughput and economics.

Warfarin Chiral Purification in Normal Phase Mode

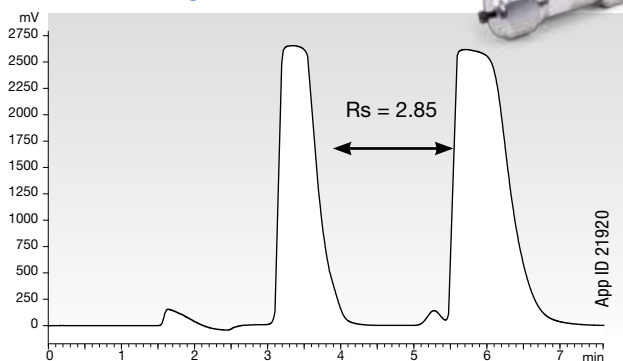
Analytical



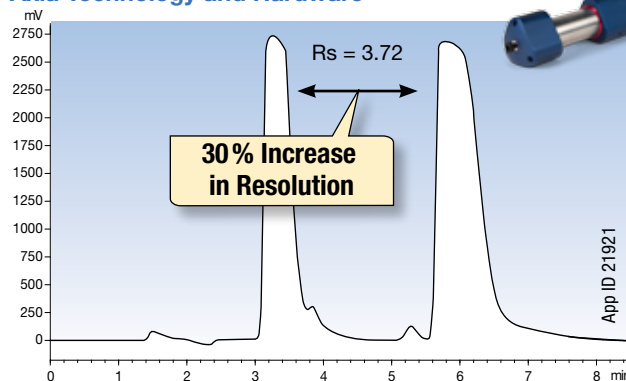
Column: Lux 5 µm Cellulose-1
Dimensions: 150 x 4.6 mm
Mobile Phase: Hexane/Ethanol (75:25)
Flow Rate: 1 mL/min
Temperature: Ambient
Inj. Volume: 100 µL



Standard Packing and Hardware



Axia Technology and Hardware



Conditions for both PREP columns:

Media: Lux 5 µm Cellulose-1
Dimensions: 150 x 21.2 mm
Mobile Phase: Hexane / Ethanol (75:25)

Flow Rate: 20 mL/min
Temperature: Ambient
Inj. Volume: 2 mL

Column (mm)	Analytical 150 x 4.6	Standard 150 x 21.2	Axia 150 x 21.2
Mass Loaded (mg)	2	40	40
Resolution*	1.5	2.85	3.72
Plates (N)	117	535	760

42% Increase in Efficiency

* Resolution calculated with peak width at baseline and center retention time due to the overloaded peaks being off-scale

Tip:

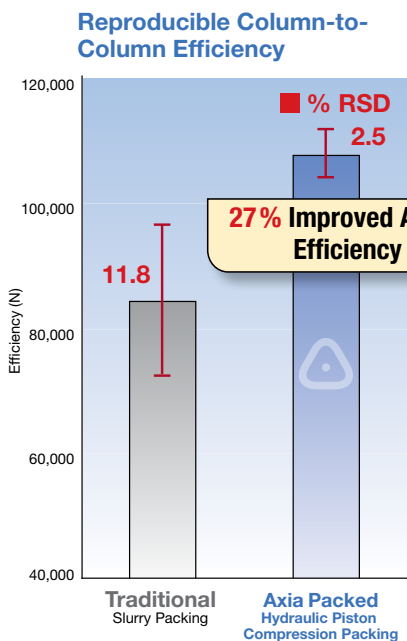
For more detailed information on this warfarin application, view application at:

www.phenomenex.com/tn9002

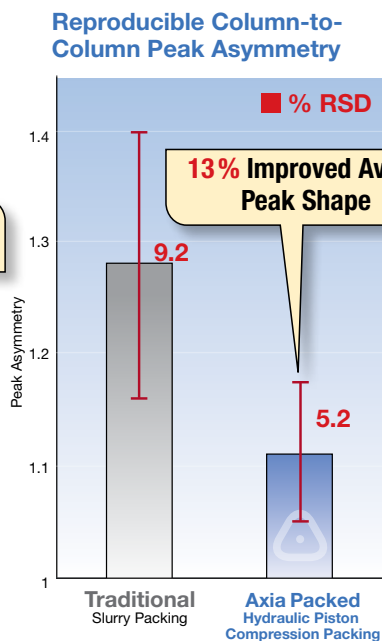
Unmatched Column Reproducibility

The completely automated Axia™ packing system provides feedback control and infinite tuning of packing density for specific media characteristics such as mechanical strength and porosity. An optimum higher bed density can be consistently reproduced column-to-column.

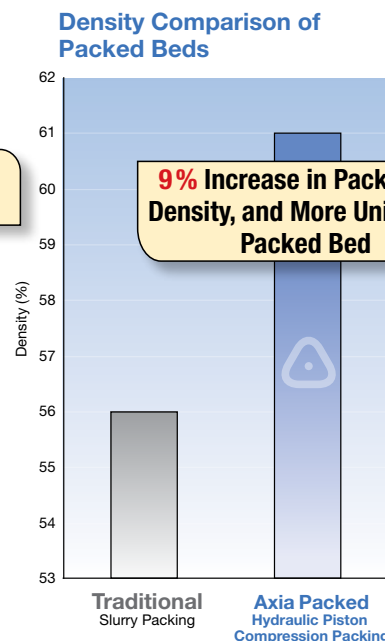
This directly translates into consistent efficiency and peak asymmetry measurements and decreases the column variability seen in traditionally packed preparative columns.



Average Efficiency (N) with Synergi™
4µm Hydro-RP 100 x 21.2mm



Average Peak Asymmetry with Gemini®
5µm C18 50 x 21.2mm



Axia columns provide me with first rate quality and engineering. Reliability, reproducibility, and durability are provided with all Axia columns that I use. I can literally purify 2500 samples per column. The time and cost savings are tremendous.

Derrick Miyao
—Large Biotech Manufacturer, USA



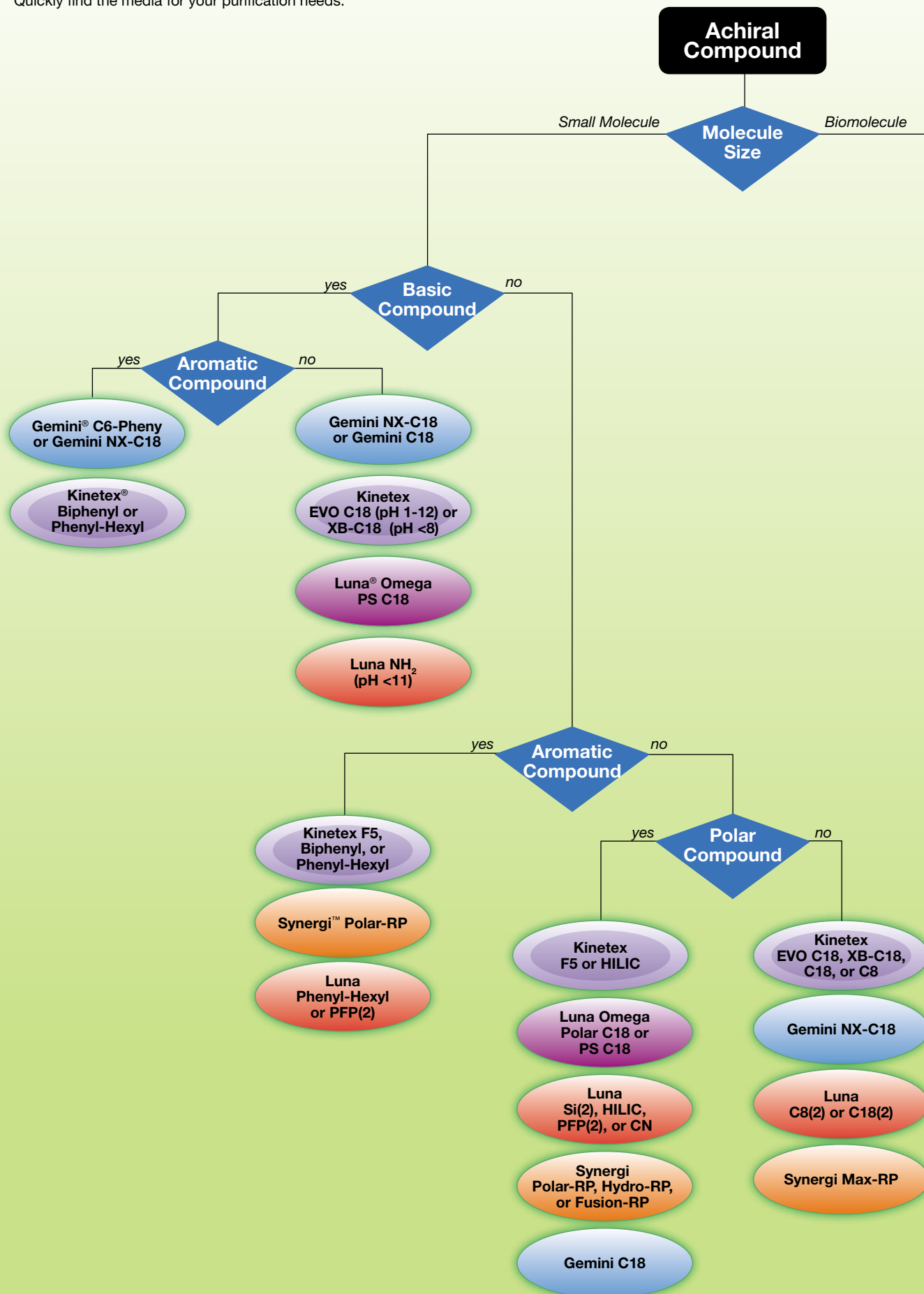
We have used Phenomenex Axia prep-HPLC columns for several years and they consistently provide excellent separation and reproducibility for a variety of different compounds.

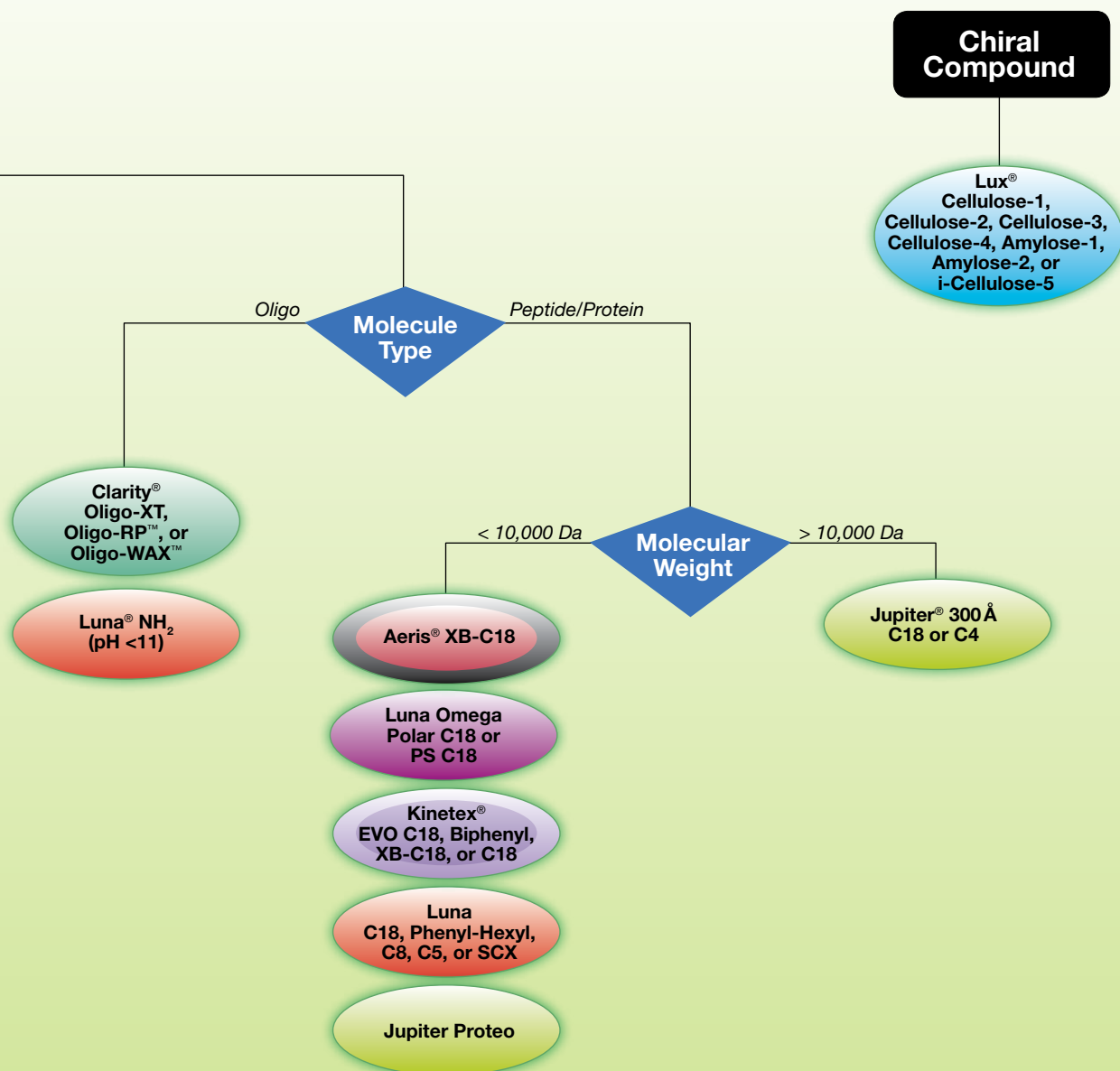
Jeremy R. Wolf
ABC Laboratories, USA



Phase Selection Chart

Quickly find the media for your purification needs.





Kinetex

1st Core-Shell Preparative Column Ever!
Pages 10-13



SynergiTM

Unique Chemistries for Complex Mixtures
Pages 18-19



Luna

Proven Purification Performance
Pages 20-21



Jupiter

Increase Loadability for Biomolecule Separations
Page 24



Luna Omega

High Efficiency Polar and Non-Polar Purifications
Pages 22-23



Clarity

Purification of Synthetic Oligonucleotides
Page 25



Aeris

Core-Shell Peptide Media
Pages 14-15



Lux

Polysaccharide Supports with Excellent Enantioselectivity
Pages 26-29



Gemini[®]

High pH Separations
Pages 16-17

First Core-Shell Preparative HPLC/SFC Column Ever!

Kinetex® Core-Shell Technology produces increased efficiencies over traditional, fully porous columns, yielding remarkable chromatographic resolution, higher peak capacities, and greater sensitivity, so labs can get even more out of their HPLC analyses!

The benefits of Kinetex Core-Shell Technology include:

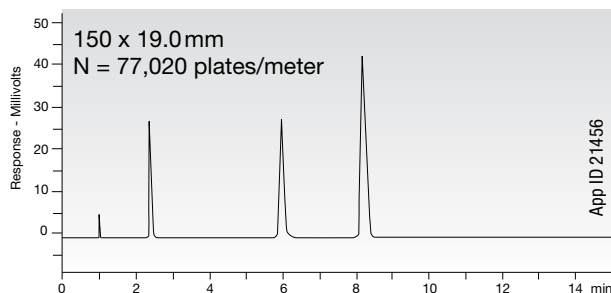
- Increased efficiencies over traditional fully porous columns
- Seamless scalability from HPLC/UHPLC to Preparative LC
- Kinetex 5 µm provides better performance than traditional fully porous 5 and 3 µm materials



High Column Efficiency

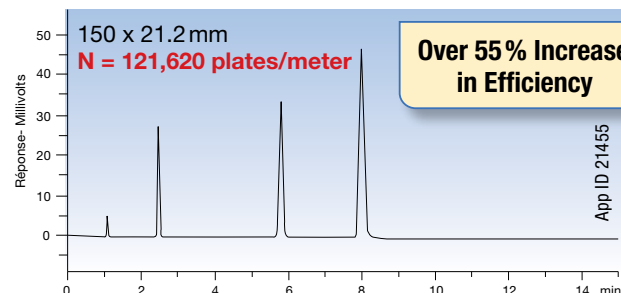
Combining 5 µm Kinetex core-shell and Axia™ technologies can provide the highest separation efficiency of any pre-packed preparative HPLC column.

Waters® XBridge® 5 µm C18 Prep OBD™



Conditions for both columns:
Columns: Kinetex 5 µm XB-C18 Axia Packed
 Waters XBridge 5 µm C18 Prep OBD
Dimensions: 150 x 21.2 mm (Kinetex)
 150 x 19 mm (XBridge)
Mobile Phase: Water/Acetonitrile (50:50)
Injection Volume: 10 µL
Flow Rate: 25 mL/min

Kinetex 5 µm XB-C18 Axia Packed



Temperature: Ambient
Detection: UV @ 254 nm
Sample: 1. Uracil
 2. Acetophenone
 3. Toluene
 4. Naphthalene

Key: ● Best Suited ○ Very Good

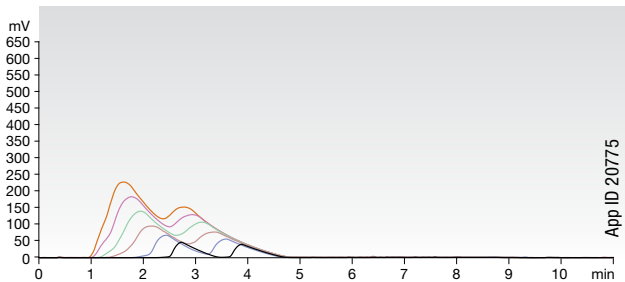
Packing Material	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Applications				Type of Compounds				Loading	
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic	Bases	Available Surface Area
Kinetex C18	1.3, 1.7, 2.6, 5	100	200	12	1.5-8.5*	●	●				○	●	●	○	○
Kinetex XB-C18	1.7, 2.6, 3.5, 5	100	200	10	1.5-8.5*	●	●				○	●	●	○	○
Kinetex EVO C18	1.7, 2.6, 5	100	200	11	1-12	●	●				○	○	●	●	○
Kinetex C8	1.7, 2.6, 5	100	200	8	1.5-8.5*	●	●				○	●	●	○	○
Kinetex Phenyl-Hexyl	1.7, 2.6, 5	100	200	11	1.5-8.5*	●	●				○	●	○	●	○
Kinetex Biphenyl	1.7, 2.6, 5	100	200	11	1.5-8.5*	●	●				○	●	○	●	○
Kinetex HILIC	1.7, 2.6, 5	100	200	0	2.0-7.5	●	○				○	●		○	○
Kinetex F5	1.7, 2.6, 5	100	200	9%	1.5-8.5	●	●				●	●	○	○	○

*pH stability under gradient conditions. pH stability is 1.5-10.0 under isocratic conditions. Comparative separations may not be representative of all applications.

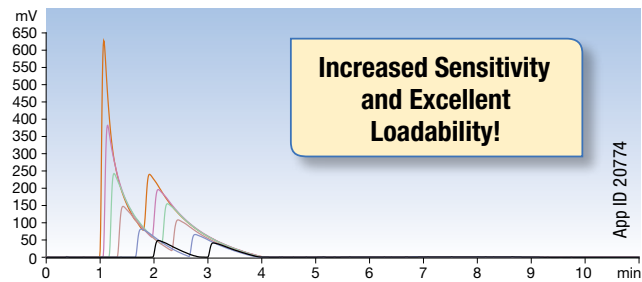
Excellent Loadability!

With narrower peak widths than fully porous columns across every sample load, Axia™ packed Kinetex 5 μm columns give you the capability of increased sample load and higher throughput for vastly improved purification performance and economics.

Waters® XBridge® 5 μm C18 Prep OBD™



Kinetex 5 μm C18 Axia Packed



Conditions for both columns:

Columns: Kinetex 5 μm C18 Axia Packed
 XBridge 5 μm C18 Prep OBD
Dimensions: 50 x 21.2 mm (Kinetex)
 50 x 19 mm (XBridge)
Mobile Phase: A: Water with 0.5% Formic acid
 B: Acetonitrile with 0.5% Formic acid
Gradient:

Time (min)	% B
0	20
8	50
11	50

Flow Rate: 30 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: 200 mg/mL in DMSO
 1. Doxepin (From 1 - 500 mg on-column)
 2. Amitriptyline (From 1 - 500 mg on-column)



Kinetex Axia Preparative columns are fantastic! I currently use two Kinetex 5 μm C18 150 x 21.2mm columns in parallel for high throughput purifications (<100mg scale), and Kinetex core-shell media delivers significantly improved peak shape and lower back pressure compared to many of the industry. I can also analyze quickly my purified fractions with the same core-shell phase on my analytical UPLC® system.



Chris DeVore
 Neurocrine Biosciences, USA

Tip:

If you would like to see a loading study performed with the combination of Axia Packing, view application at: www.phenomenex.com/tn1058

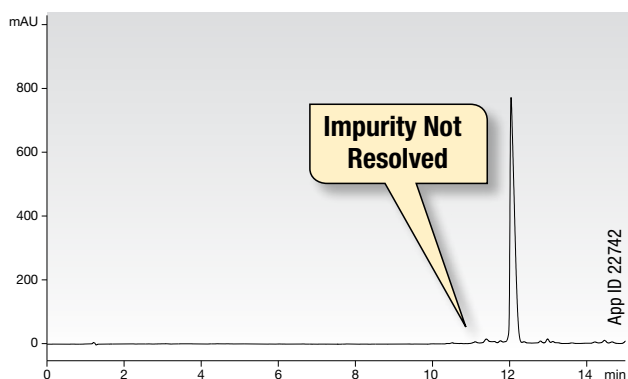
Comparative separations may not be representative of all applications.

Seamless Scalability from HPLC/UHPLC to PREP

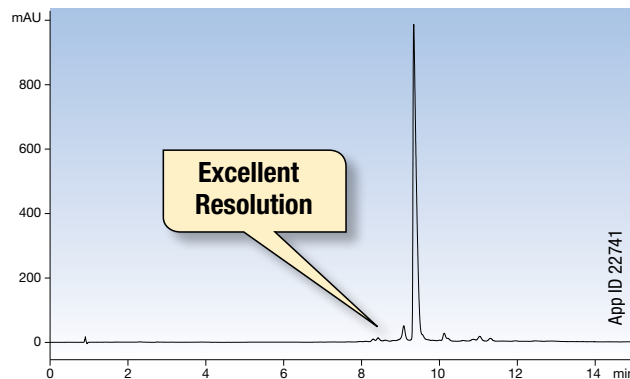
Kinetex® packed with Axia™ technology makes it the first core-shell sorbent commercially available for small-scale preparative applications. Combine this with the fact that the entire Kinetex

core-shell line is fully scalable from 1.3 µm to 5 µm, this means that transferring high performance HPLC/UHPLC methods to preparative HPLC and SFC formats is fast and simple.

Waters® XBridge® 5 µm C18 150 x 4.6 mm

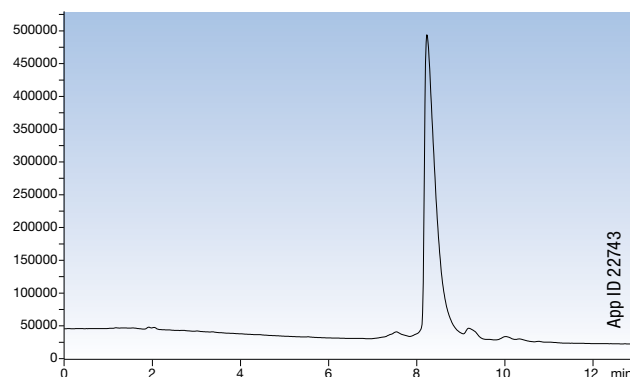


Kinetex 5 µm EVO C18 150 x 4.6 mm



Analytical to PREP Scalability

Kinetex 5 µm EVO C18 150 x 21.2 mm AXIA



Conditions for all columns:

Columns: Kinetex 5 µm EVO C18
XBridge 5 µm C18
Dimensions: 150 x 4.6 mm
150 x 21.2 mm (Kinetex AXIA Packed)
Mobile Phase: A: 0.1 % TFA in Water
B: 0.1 % TFA in Acetonitrile
Gradient: 20 % to 70 % B over 10 minutes
Flow Rate: 1.5 mL/min
30 mL/min (Kinetex AXIA)
Temperature: Ambient
Detection: UV @ 254 nm
Sample: Proprietary Pharmaceutical Sample

“

My Axia packed column has a great efficiency for the separation of several classes of natural compounds. Due to its low back pressure and therefore high flow work conditions, time for conditioning the columns is sped up greatly!

Sylvian Cretton
-Europe

”

Comparative separations may not be representative of all applications.

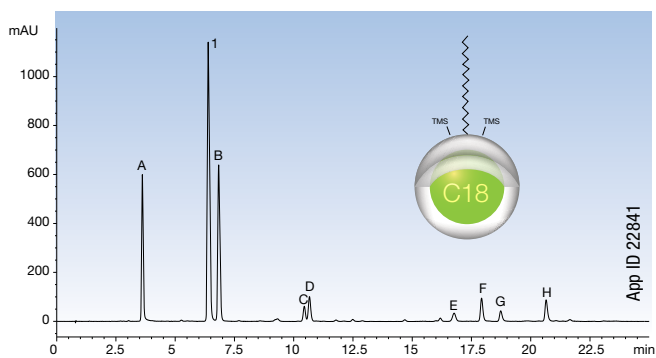
Tip:

For more information on the power of Kinetex core-shell scalability, view application at: www.phenomenex.com/tn1135

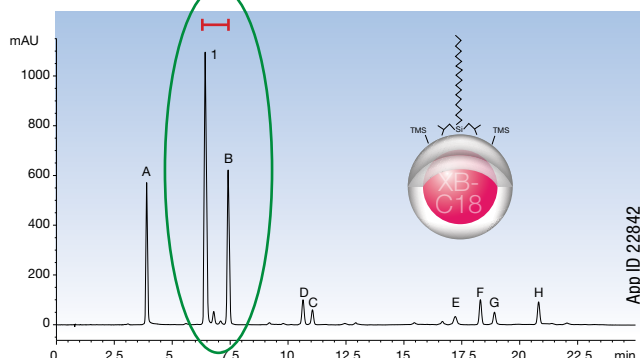
A Broad Spectrum of Column Selectivities

Kinetex® core-shell columns are available in a wide range of stationary phases, allowing you to optimize your separation for maximum resolution and loadability across HPLC, UHPLC, and preparative HPLC and SFC applications.

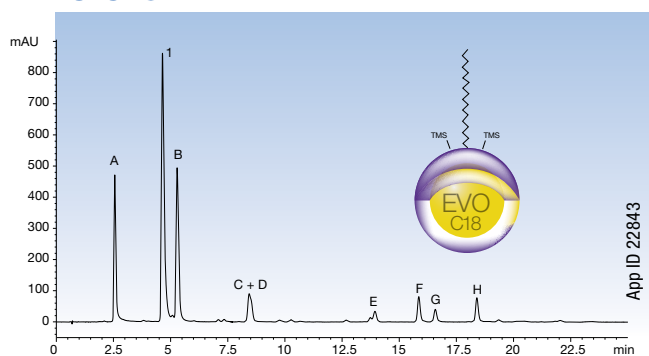
C18



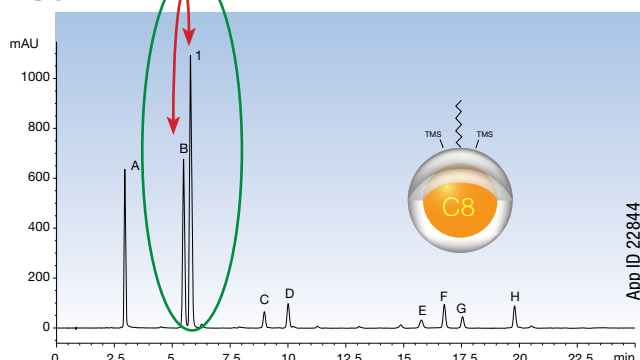
XB-C18



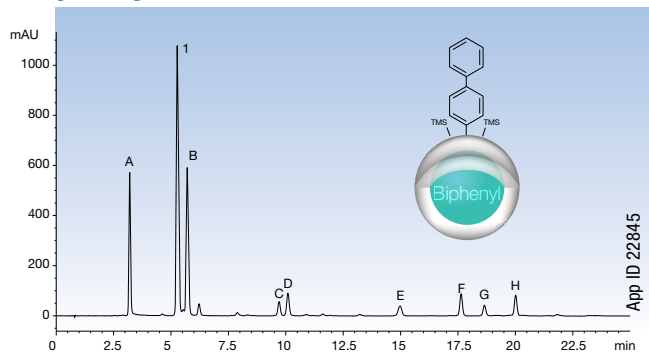
EVO C18



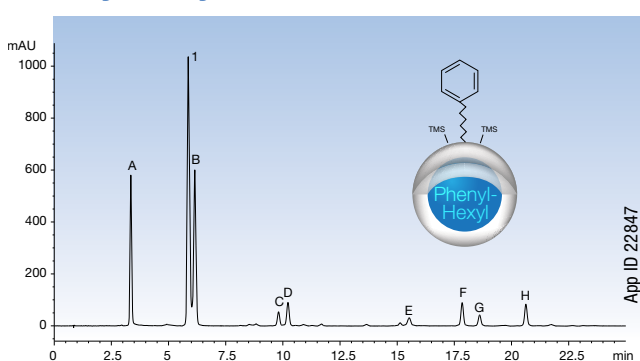
C8



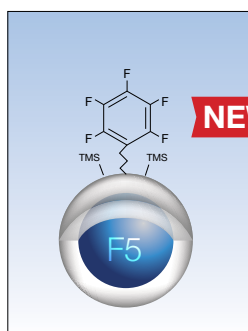
Biphenyl



Phenyl-Hexyl



Kinetex 5 µm F5



Conditions for all columns:

Columns:	Kinetex 5 µm C18	Gradient:	Time (min)	% B
	Kinetex 5 µm XB-C18		0	5
	Kinetex 5 µm EVO C18		20	20
	Kinetex 5 µm C8		22	20
	Kinetex 5 µm Biphenyl		22.5	5
	Kinetex 5 µm Phenyl-Hexyl		25	5
Dimensions:	100 x 4.6 mm	Flow Rate:	1.5 mL/min	
Mobile Phase:	A: 0.1% TFA in Water	Temperature:	22 °C	
	B: 0.1% TFA in Acetonitrile	Detection:	UV @ 330 nm	
		Sample:	1. Chlorogenic Acid	
			Others: Antioxidants from green coffee	

Tip:

For more information on Chlorogenic Acids from Green Coffee by HPLC, view application at: www.phenomenex.com/tn1134

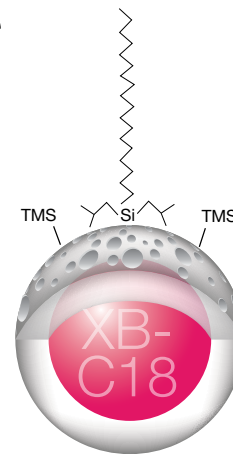


Ordering information on page 34

Increased Performance for Peptide Purifications

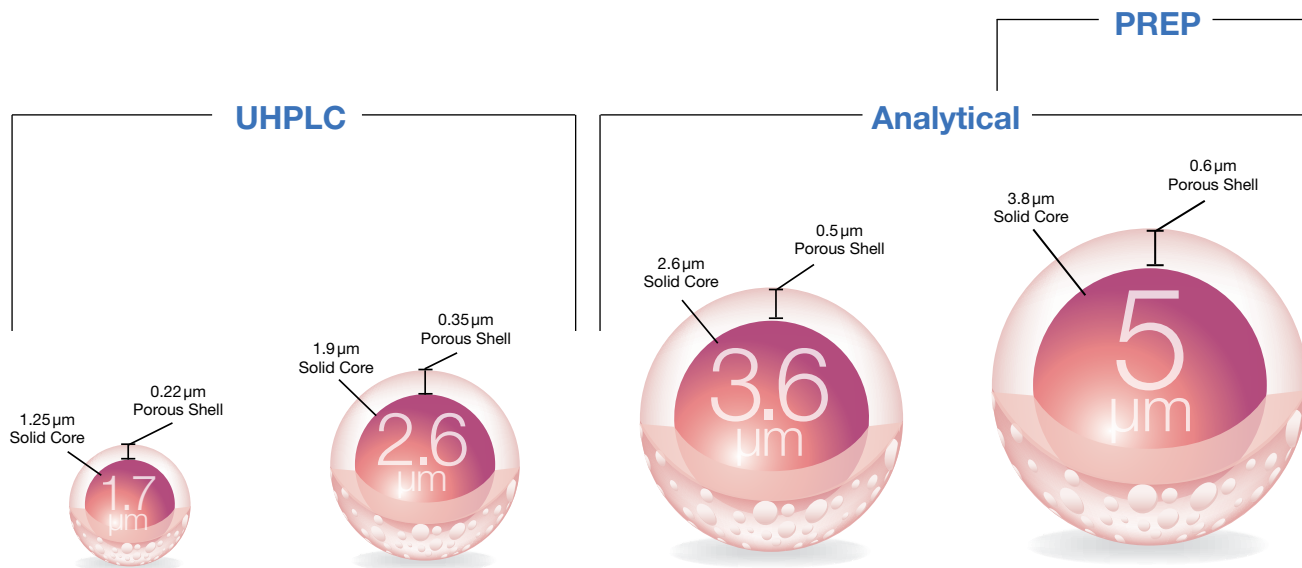
Based on core-shell particle technology, Aeris® PEPTIDE media is designed with small pores (100 Å), an inert XB-C18 surface chemistry, and multiple particle sizes to meet the selectivity, resolution and loading demands of chemists working with synthetic peptides. The benefits of Aeris PEPTIDE columns include:

- Optimized media for peptide purifications
- Multiple particle size options for method development flexibility and peptide impurity analysis
- Seamless scalability from HPLC/UHPLC to preparative HPLC



XB-C18 chemistry best suited for resolving peptides

Multiple Particle Sizes For Added Versatility



Packing Material	Particle Size (μm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Applications				Type of Compounds				Loading	
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic	Bases	Available Surface Area
Aeris PEPTIDE	1.7, 2.6, 3.6, 5	100	200	12	1.5-9.0	●	●					◐	●	◐	◐

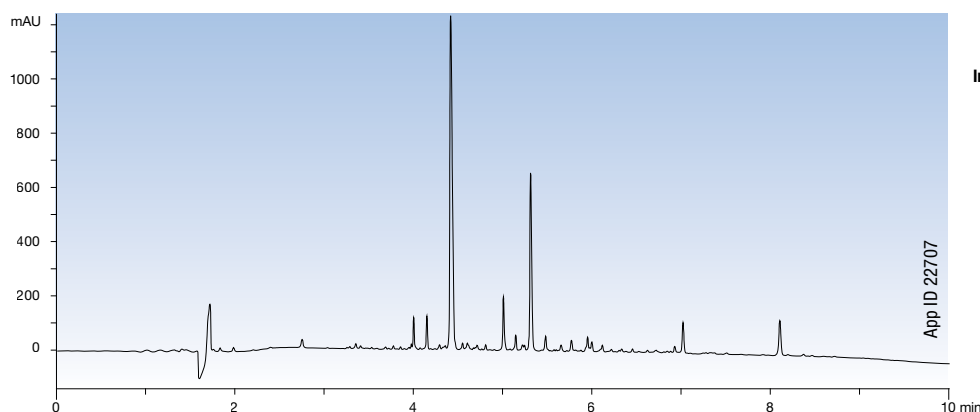
Develop, Purify, and Analyze Peptide Fractions with One Media



Aeris PEPTIDE is fully scalable in retention and selectivity with its 4 unique particle sizes (1.7 μm , 2.6 μm , 3.6 μm , and 5 μm) for easy transfer from HPLC and UHPLC methods to preparative applications.

Aeris PEPTIDE 2.6 μm XB-C18

Analytical method

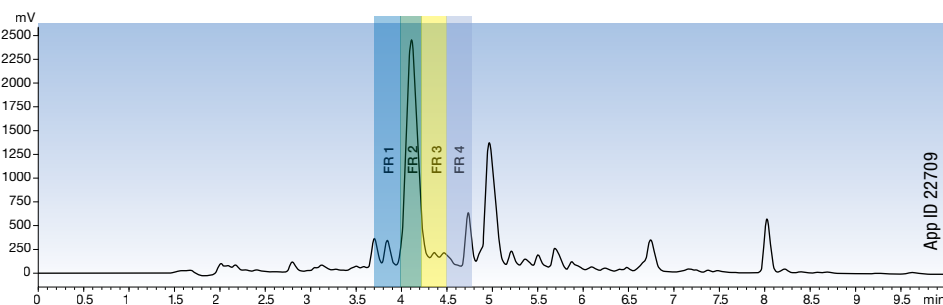


Column: Aeris PEPTIDE 2.6 μm XB-C18
Dimensions: 150 x 4.6 mm
Part No.: 00F-4505-E0
Injection Volume: 10 μL
Flow Rate: 1 mL/min
Sample: Crude peptide mix



Aeris PEPTIDE 5 μm XB-C18

Preparative scale-up and fraction collection

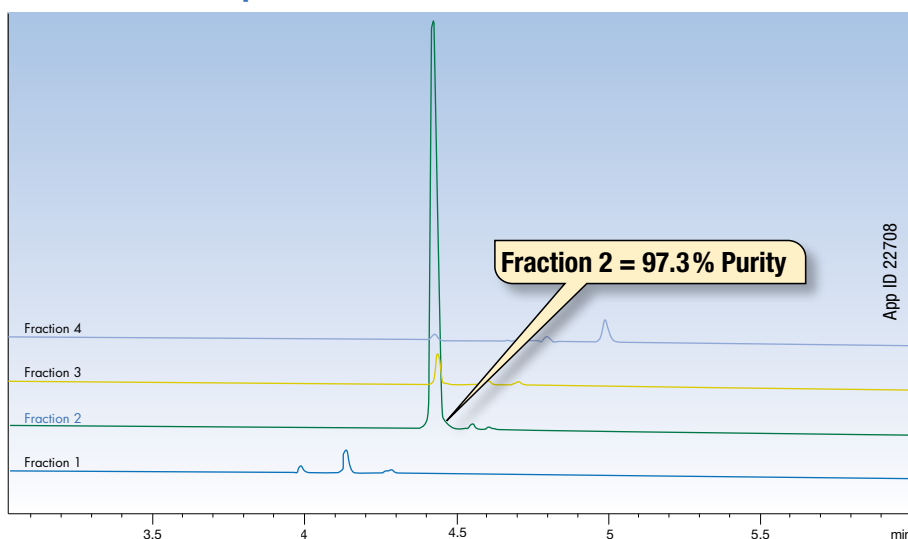


Column: Aeris PEPTIDE 5 μm XB-C18
 Axia Packed
Dimensions: 150 x 21.2 mm
Part No.: 00F-4632-P0-AX
Injection Volume: 1 mL
Flow Rate: 20 mL/min
Sample: Crude peptide mix



Aeris PEPTIDE 2.6 μm XB-C18

Analytical fraction analysis



Column: Aeris PEPTIDE 2.6 μm XB-C18
Dimensions: 150 x 4.6 mm
Part No.: 00F-4505-E0
Injection Volume: 10 μL
Flow Rate: 1 mL/min
Sample: Purified Fractions



Conditions for all separations (except as noted):
Mobile Phase: A: 0.1 % TFA in Water
 B: 0.1 % TFA in Acetonitrile
Gradient: Linear 85:15 (A/B) to 5:95 (A/B) over 10 minutes
Temperature: Ambient
Detection: UV @ 210 nm



Ordering information on page 34

Setting the Standard for pH Method Development



Gemini features a pH stability from 1-12, making it optimal for high alkaline washes and high pH purifications of basic drugs.

Optimized parameters include:

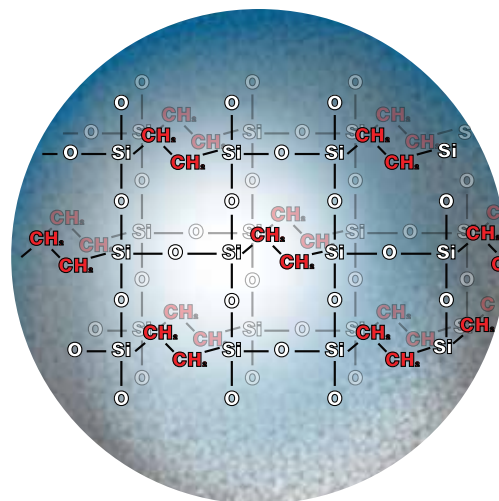
- Innovative surface layer for increased pH stability
- High-surface area for increased loading
- Silica smoothness for stable packing beds
- Bonding density for excellent reproducibility

Second-Generation TWIN-NX™ Technology

Gemini NX-C18

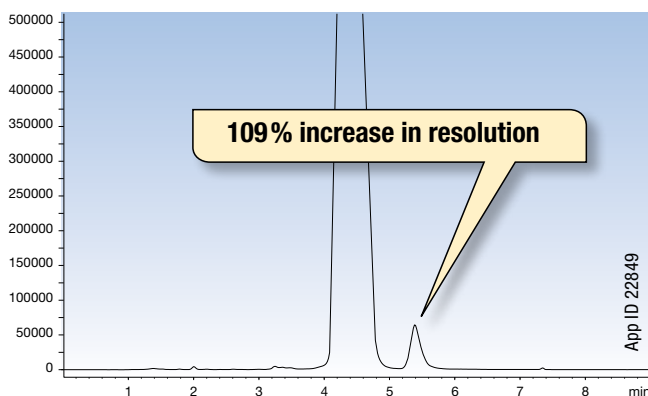
TWIN-NX technology uses an improved, patented organo-silica grafting process which incorporates highly stabilizing ethane cross-linking. These organic groups are evenly incorporated into the grafted layers on the silica surface while maintaining a pure silica core. This not only provides resistance to high pH attack, but also maintains the high efficiency and mechanical strength of a silica particle.

*This bonding technology is also available in Core-Shell media. See Kinetex® EVO on page 12.

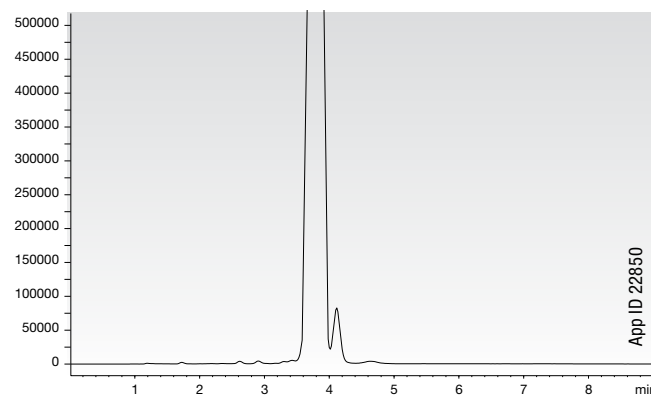


Dramatically improve sample resolution, productivity and performance of any preparative column media with Axia™ column hardware and packing technology. Axia packed prep columns offer the opportunity for longer lifetime, higher loading and increased throughput.

Gemini 5 µm NX-C18 Axia Packed



Waters® XBridge® 5 µm C18 Prep OBD™



Conditions for both columns:

Column: Gemini 5 µm NX-C18
Waters 5 µm XBridge
Dimensions: 150 x 21.2 mm (Gemini)
150 x 19 mm (XBridge)
Mobile Phase: A: 20 mM Ammonium bicarbonate pH 10.0
B: Acetonitrile

Gradient: Time (min) % B
0.1 50
5.1 95
6 95
6.5 50
8.9 50

Flow Rate: 25 mL/min
Temperature: 22 °C
Detection: UV @ 268 nm
Sample: 1. Reserpine
2. Unknown

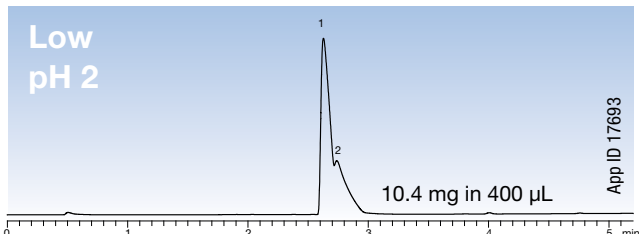
Packing Material	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Applications					Type of Compounds				Loading	
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic	Bases	Available Surface Area	
Gemini C18	3, 5, 10	110	375	14	1-12	●	●				●	◐	●	●	●	●
Gemini C6-Phenyl	3, 5	110	375	12	1-12	●	●				◐		●	◐	●	●
Gemini NX-C18	3, 5, 10	110	375	14	1-12	●	●				●		●	●	●	●

Comparative separations may not be representative of all applications.

Flexibility in pH Adjustments Allows for Increased Purification Performance

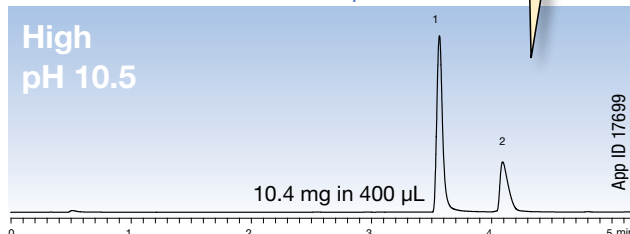
Separating basic compounds at higher pH levels produces dramatic changes when compared to low pH conditions. At pH 10.5, the basic compounds become neutralized and are more hydrophobic. The retention for the uncharged basic compounds increases providing an increase in separation along with superior peak shapes.

Gemini® NX-C18 with 0.5% TFA



Column: Gemini NX-C18 5 µm
Dimensions: 50 x 21.2 mm
Mobile Phase: A: 0.5% TFA in Water
 B: Acetonitrile
Gradient: 5% B to 95% B in 5 min
Flow Rate: 30 mL/min
Detection: UV @ 254 nm
Sample: 1. Diphenhydramine
 2. Propranolol

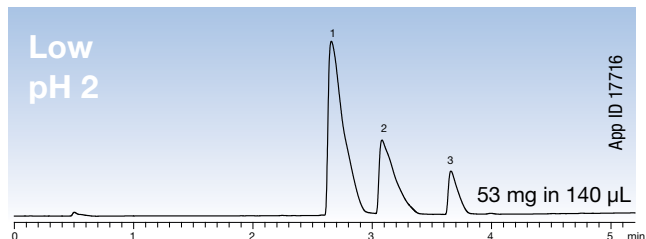
Gemini NX-C18 with 0.2% NH₄OH



Column: Gemini NX-C18 5 µm
Dimensions: 50 x 21.2 mm
Mobile Phase: A: 0.2% NH₄OH in Water
 B: Acetonitrile
Gradient: 5% B to 95% B in 5 min
Flow Rate: 30 mL/min
Detection: UV @ 254 nm
Sample: 1. Diphenhydramine
 2. Propranolol

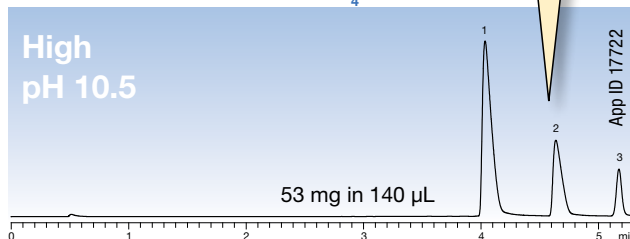
Excellent resolution at high pH

Gemini NX-C18 with 0.5% TFA



Column: Gemini NX-C18 5 µm
Dimensions: 50 x 21.2 mm
Mobile Phase: A: 0.5% TFA in Water
 B: Acetonitrile
Gradient: 5% B to 95% B in 5 min
Flow Rate: 30 mL/min
Detection: UV @ 254 nm
Sample: 1. Diphenhydramine
 2. Oxybutynin
 3. Terfenadine

Gemini NX-C18 with 0.2% NH₄OH



Column: Gemini NX-C18 5 µm
Dimensions: 50 x 21.2 mm
Mobile Phase: A: 0.2% NH₄OH in Water
 B: Acetonitrile
Gradient: 5% B to 95% B in 5 min
Flow Rate: 30 mL/min
Detection: UV @ 254 nm
Sample: 1. Diphenhydramine
 2. Oxybutynin
 3. Terfenadine

Separation shape improvement provides opportunity for increased loading



Our Phenomenex Gemini and Luna® Axia™ packed columns are the work-horses in our lab. These columns exhibit outstanding performance for challenging separations while also handling a high workload for standard separations. Longevity has also been excellent with some columns lasting 2 years or more. Dependability is so important in my line of work and these columns never disappoint!!



-Major Pharmaceutical Company, USA



Ordering information on page 34

Tip:

If you want longer Gemini NX-C18 Axia packed column lifetimes, view a lifetime study application at: www.phenomenex.com/tn1138

Increased Loading with Unique Selectivities

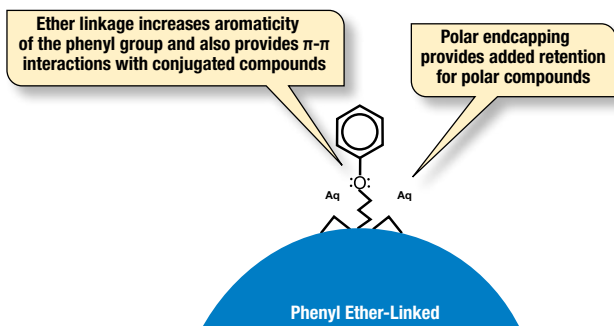
Synergi is available in four unique phases, each offering dramatic differences in:

- Selectivity
- Retention time
- Resolution

The unique selectivity profiles found within the Synergi product line offer complementary selectivity to the standard C18, C8, or silica phases traditionally employed in preparative HPLC.

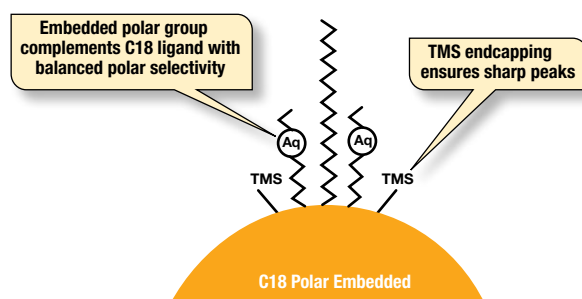
Synergi Polar-RP

For Polar and Aromatic Mixtures
(100% Aqueous Stable)



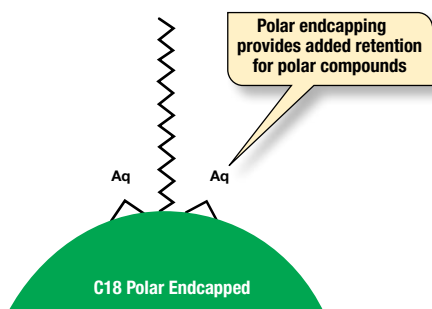
Synergi Fusion-RP

Balanced Non-polar and Polar Performance
(100% Aqueous Stable)



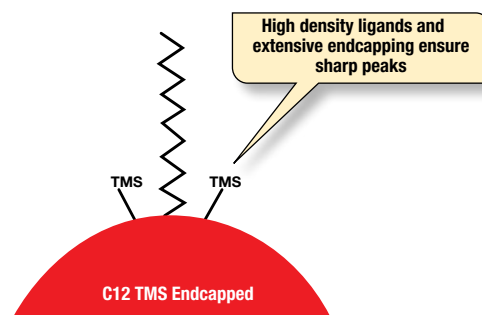
Synergi Hydro-RP

Strong Non-polar and Polar Retention
(100% Aqueous Stable)



Synergi Max-RP

Excellent for Basic Compounds at Neutral pH



Key: ● Best Suited ◐ Very Good

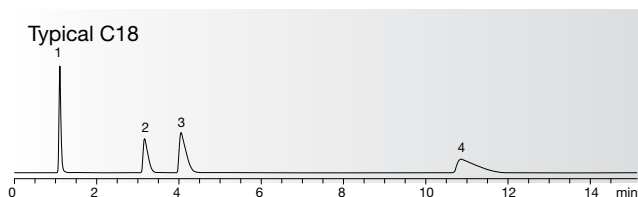
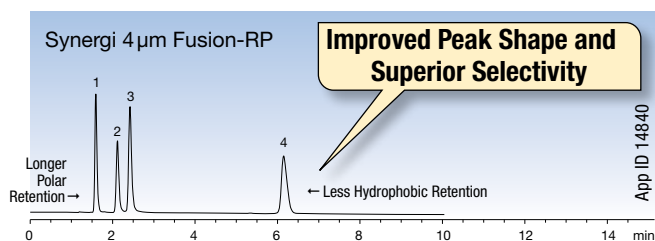
Packing Material	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Applications					Type of Compounds				Loading Available Surface Area
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic	Bases	
Synergi Fusion-RP	4, 10	80	475	12	1.5-9.0*	●	●				◐	●	●	◐	●
Synergi Max-RP	4, 10	80	475	17	1.5-9.0*	●	●				◐		●	◐	●
Synergi Hydro-RP	4, 10	80	475	19	1.5-7.5	●	●				◐	●	●	◐	●
Synergi Polar-RP	4, 10	80	475	11	1.5-7	●	●				◐	●		◐	●

*pH stability under gradient conditions. pH stability is 1.5-10.0 under isocratic conditions.

Selectivity Like No Other

Offering a balanced combination of hydrophobic and polar selectivity, Synergi™ Fusion-RP separates compounds exhibiting moderately polar and hydrophobic characteristics.

Hydrophobic basic compounds

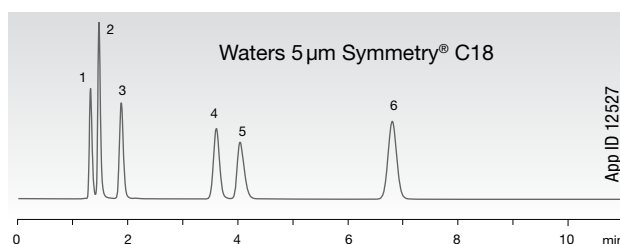
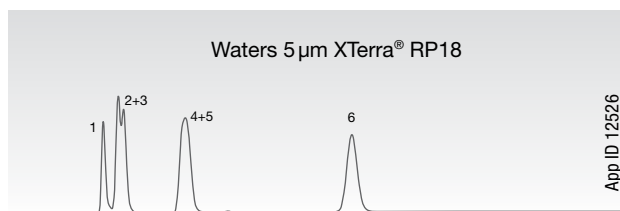
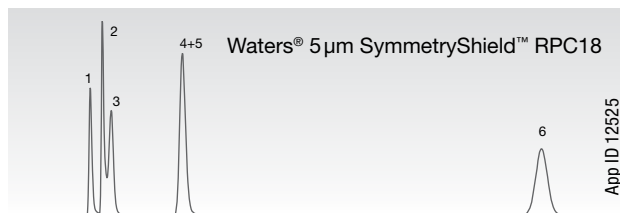
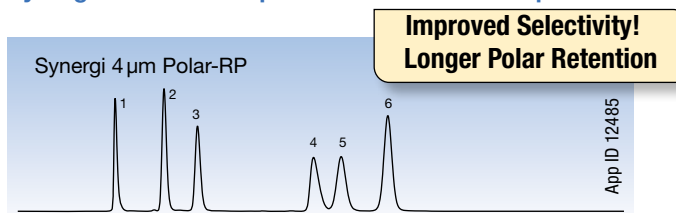


Conditions for all columns:

- Columns:** Synergi 4 µm Fusion-RP
Typical C18
- Dimensions:** 150 x 4.6 mm
- Mobile Phase:** 20 mM Potassium Phosphate, pH 2.5 / Acetonitrile (75:25)
- Flow Rate:** 1.0 mL/min
- Detection:** UV @ 210 nm
- Sample:** 1. Maleic acid
2. Chlorpheniramine
3. Triprolidine
4. Diphenhydramine

The slightest variations in compound polarity and aromaticity are exploited by Synergi Polar-RP to achieve the greatest separation between polar and/or aromatic compounds.

Increased resolution of polar compounds with Synergi Polar-RP compared to traditional C18 phases



Conditions for all columns:

- Columns:** Synergi 4 µm Polar-RP
Waters 5 µm SymmetryShield™ RPC18
Waters 5 µm Symmetry® C18
Waters 5 µm XTerra® RP18
- Dimensions:** 150 x 4.6 mm
- Mobile Phase:** 20 mM Potassium phosphate pH 3 / Methanol (50:50)
- Flow Rate:** 1.0 mL/min
- Detection:** UV @ 230 nm
- Temperature:** Ambient
- Injection:** 2 µL
- Sample:** 1. Metaproterenol (0.4 µg) 4. Alprenolol (0.3 µg)
2. Pindolol (0.6 µg) 5. Propranolol (0.04 µg)
3. Metoprolol (0.15 µg) 6. Ethylparaben (0.4 µg)

“ We regularly use RP stationary phases from Phenomenex for our separation problems. Especially Synergi Polar-RP which was found to often show the desired selectivity, distinguishing this phase from other RP phases. ”

CARBOGEN AMCIS, Switzerland

Comparative separations may not be representative of all applications.



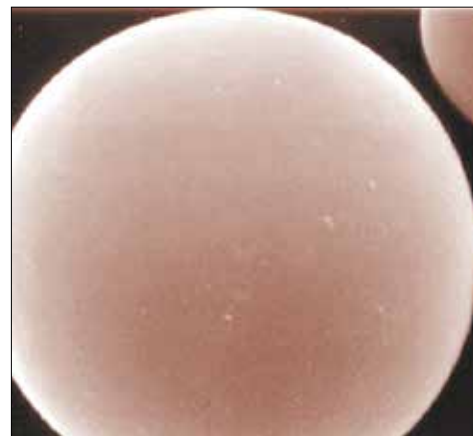
Ordering information on page 35

Media for One of the World's Leading PREP HPLC Columns

Luna® high surface area (400 m²/g) silica packing materials provide optimized parameters specifically designed for the purification of small molecules and peptides. This media allows high loading with excellent lifetimes.

Optimized loading parameters include:

- Silica smoothness for stable packed beds
- Optimum pore size/distribution provide outstanding performance
- High pore volume offers increased surface area
- Fine tuned bonding density for excellent reproducibility
- Greater loading capacity with an extended pH range of 1.5 to 10.0*



We routinely use Axia™ packed columns from Phenomenex for peptide purifications. Among various preparative HPLC columns we have used, the Axia packed Luna columns (5 μm) stand out. We have been very satisfied with the increased loading capacity and excellent performance.



Guangcheng Jiang
Ferring Research Institute, Inc., USA

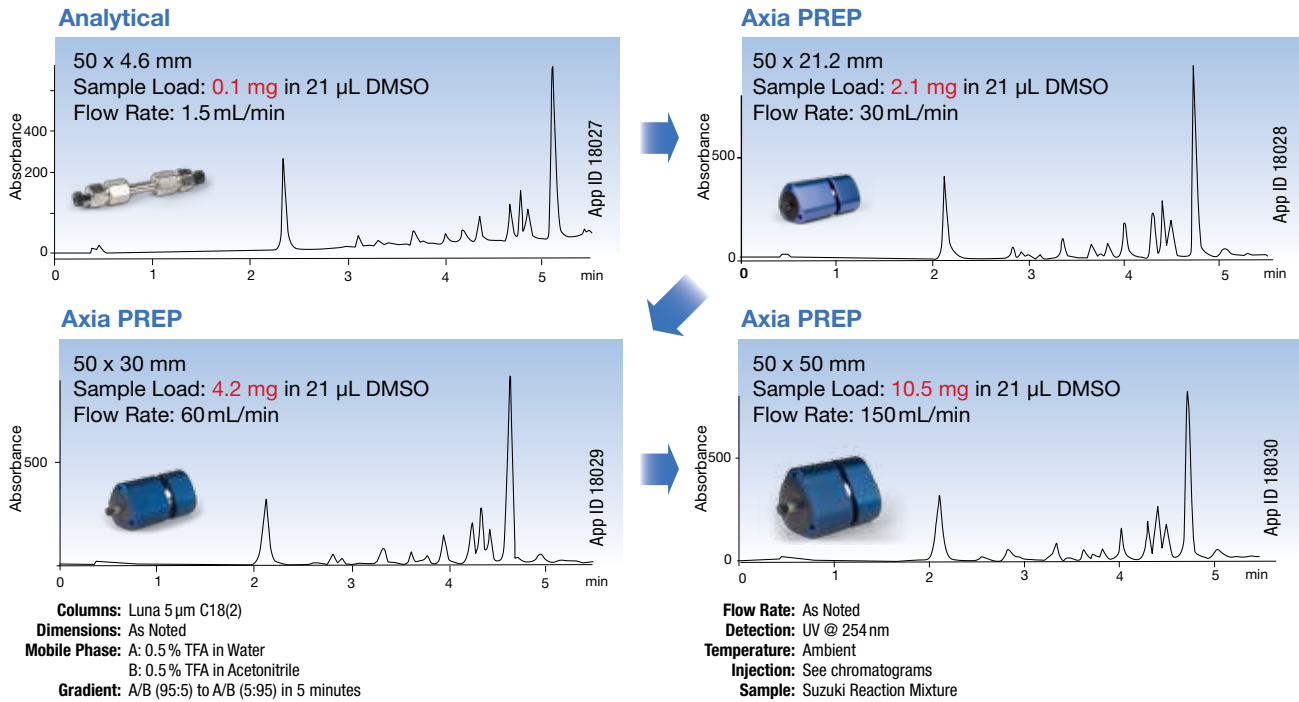
Packing Material	Particle Size (μm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Applications					Type of Compounds				Loading
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic	Bases	
Luna C18(2)	3, 5, 10, 10-PREP, 15	100	400	17.5	1.5-9.0*	●	●				●		●	●	●
Luna C8(2)	3, 5, 10, 10-PREP, 15	100	400	13.5	1.5-9.0*	●	●				●		●	●	●
Luna C5	5, 10	100	440	12.5	1.5-9.0*	●	●				●		●	●	●
Luna Phenyl-Hexyl	3, 5, 10, 10-PREP, 15	100	400	17.5	1.5-9.0*	●	●				●	●	●	●	●
Luna Silica(2)	3, 5, 10, 10-PREP, 15	100	400	-	-	●					●	●	●	●	●
Luna CN	3, 5, 10	100	400	7	1.5-7.0	●					●	●	●	●	●
Luna NH ₂	3, 5, 10	100	400	9.5	1.5-11.0	●					●	●	●	●	●
Luna SCX	5, 10	100	400		2-7	●					●		●	●	●
Luna HILIC	3, 5	200	200	5.7	1.5-8.0	●	●				●	●	●	●	●
Luna PFP(2)	5, 10	100	400	11.5	1.5-8.0	●					●		●	●	●

*pH stability under gradient conditions. pH stability is 1.5-10.0 under isocratic conditions.

Simple Scale-Up

Axia™ column technology provides the same high efficiency chromatographic performance for preparative scale columns (21.2, 30, and 50 mm ID) as obtained in 4.6 mm ID analytical columns. This improvement in preparative column performance across

all lengths and internal diameters makes it easier to select the appropriate column size to achieve the desired purity and yield without having to compromise on performance.



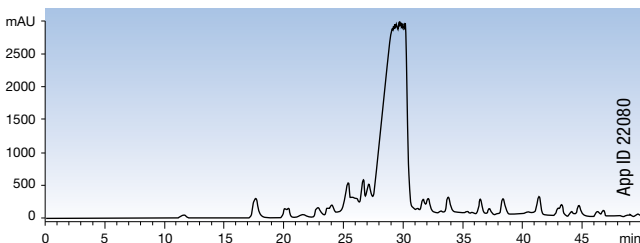
Proven Media for Peptide Purifications

An optimal compromise between throughput, recovery, and yield. Perform high loading (0.74 g on column) and achieve high purity (>98 %) in a single purification run.

Preparative Purification of Bivalirudin

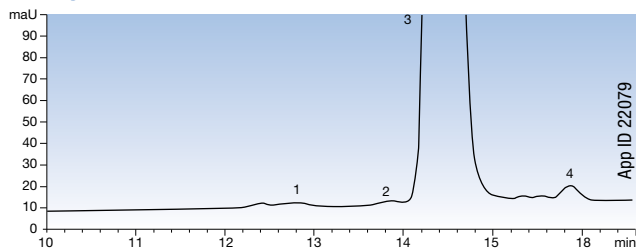
(20 amino acid peptide also known as Angiomax®)

Purification Elution Profile at 1.5 % Specific Load



Column: Luna 10 µm-PREP C8(2)
Dimensions: 250 x 21.2 mm
Part No.: 00G-4323-PO-AX
Mobile Phase: A: 100 mM Ammonium acetate pH 4.7 in Water
B: Acetonitrile
Gradient: 10 to 50 % B in 40 min; hold at 80 % B for 5 min; re-equilibration at 10 % B for 10 min
Flow Rate: 21 mL/min
Temperature: Ambient
Detection: UV @ 280 nm
Injection Volume: 105 mL
Sample Concentration: 7 mg/mL in water
Sample: Crude Bivalirudin in Water

Purity Confirmation of Combined Fractions



**11 Combined fractions 27.8 – 29.8 min;
Recovery 80.5 % with purity ≥ 98.5 %**

Peak No.	Time (min)	Area	Area %
1	12.74	73.7	0.35
2	13.83	40.6	0.19
3	14.37	21118.7	98.53
4	15.858	200.5	0.93

Column: Luna 5 µm C8(2)
Dimensions: 250 x 4.6 mm
Part No.: 00G-4249-E0
Mobile Phase: A: 0.1 % TFA in Water
B: 0.1 % TFA in Acetonitrile
Gradient: 20 % to 50 % B in 30 min

Flow Rate: 1 mL/min
Temperature: 25 °C
Detection: UV @ 220 nm
Injection Volume: 2 µL
Sample: Combined Fractions



Ordering information on page 35

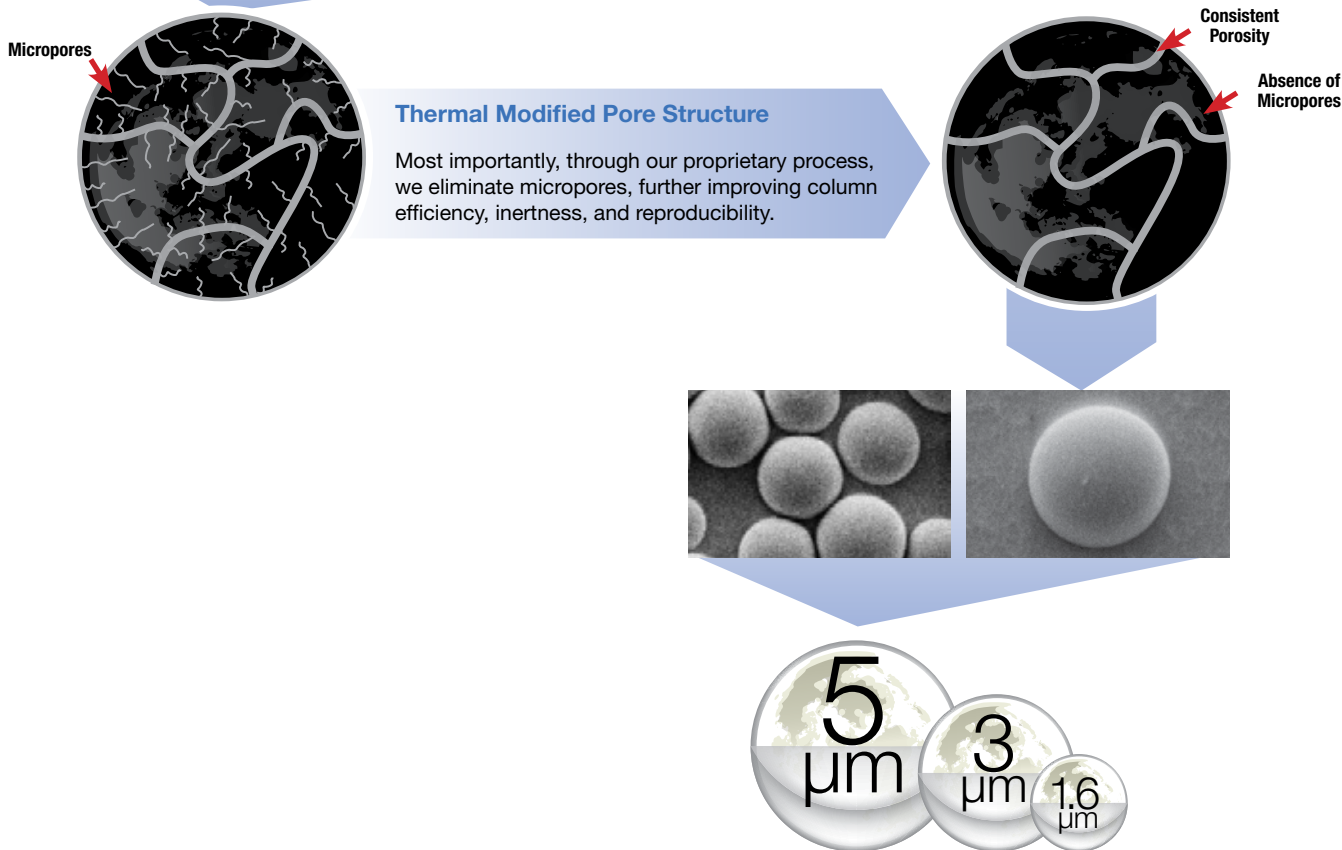
Luna[®] Omega **NEW**

Cutting Edge Fully Porous Silica Particle

Luna is one of the most recognized HPLC brands on the market, delivering high efficiency, ruggedness, reproducibility, and dependability for a wide range of analyses. The new Luna Omega builds upon this legacy with an innovative yet rugged silica particle architecture, designed and manufactured by Phenomenex based on more than 20 years of applied knowledge, invention, and customer experience.

Novel Design and Manufacturing Process

Within the novel manufacturing process of Luna Omega silica, we implement a proprietary processing technique to gain greater particle inertness, a stronger particle morphology, and more consistent porosity.



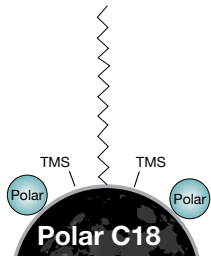
Packing Material	Particle Size (μm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Applications					Type of Compounds				Loading
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic	Bases	
NEW Luna Omega Polar C18	1.6, 3, 5	100	260	9%	1.5-8.5*	●	●				●	●	●	●	●
NEW Luna Omega PS C18	1.6, 3, 5	100	260	9%	1.5-8.5*	●	●				●	●	●	●	●

*pH stability under gradient conditions. pH stability is 1.5-10 under isocratic conditions.

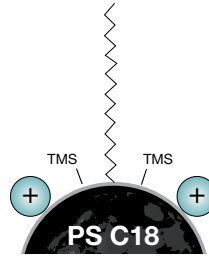
UHPLC to HPLC to PREP Scalability

With direct selectivity scalability from Luna Omega 1.6 µm to 5 µm you can fluidly transfer methods from UHPLC platforms to HPLC and preparative instrumentation. Additionally, you can easily go in reverse and use a Luna Omega 1.6 µm to analyze fractions taken from a Luna Omega 5 µm preparative column.

Luna Omega Phase Selection

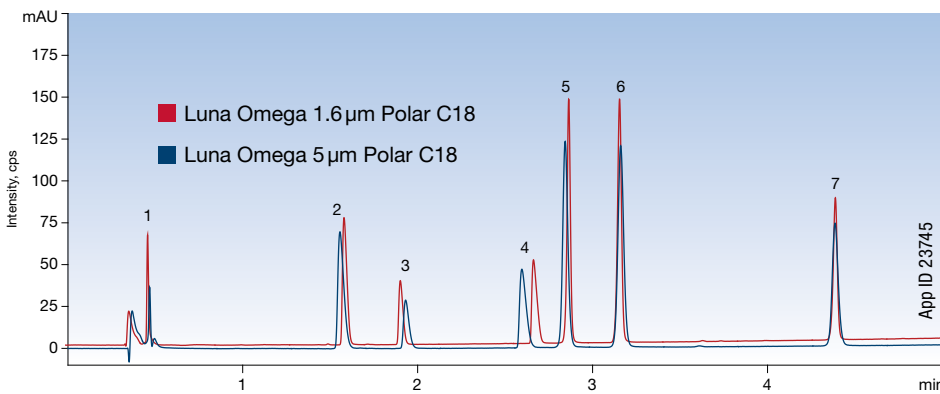


100 % aqueous stability and enhanced selectivity/retention for polar analytes without diminishing useful non-polar retention. The C18 ligand provides general hydrophobic interactions while a polar modified particle surface provides enhanced polar compound retention.



Unique, 100 % aqueous stable mixed-mode phase that provides both polar and non-polar retention. The surface contains a positive charged ligand which aids in the retention of acidic compounds through ionic interactions, while the C18 ligand promotes general reversed phase retention. The positively charged surface also improves basic compound peaks shape through ionic repulsion.

Direct Scalability 1.6 µm to 5 µm



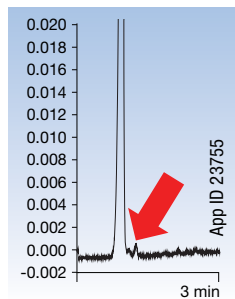
Conditions for all columns:

- Columns:** Luna Omega 1.6 µm Polar C18
Luna Omega 5 µm Polar C18
- Dimension:** 50 x 2.1 mm
- Mobile Phase:** A: Water with 0.1 % Formic Acid
B: Acetonitrile with 0.1 % Formic Acid
- Gradient:**

Time (min)	% B
0	5
5	95
- Flow Rate:** 0.4 mL/min
- Temperature:** 30 °C
- Detection:** UV @ 254 nm
- Sample:**
 1. Uracil
 2. Pindolol
 3. Chlorpheniramine
 4. Nortriptyline
 5. 3-Methyl-4-nitrobenzoic acid
 6. 5-Methyl salicylaldehyde
 7. Hexanophenone

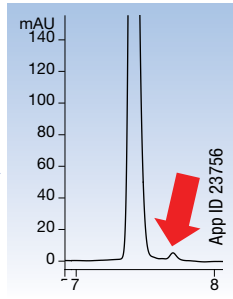
UHPLC to HPLC to PREP

UHPLC Scout



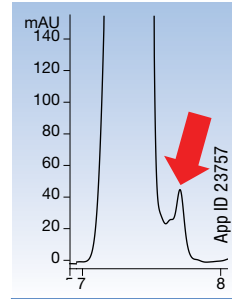
Dimension: 50 x 2.1 mm
Flow Rate: 0.2 mL/min

Optimized HPLC



Dimension: 150 x 4.6 mm
Flow Rate: 1.5 mL/min

Preparative Purification



Dimension: 150 x 21.2 mm
Flow Rate: 30 mL/min

Conditions for all columns (as noted):

- Columns:** Luna Omega 5 µm PS C18
- Mobile Phase:** A: Water with 0.1 % TFA
B: Acetonitrile with 0.1 % TFA
- Gradient:**

Time (min)	% B
0	10
15	90
- Temperature:** 22 °C
- Detection:** UV @ 254 nm
- Sample:**
 1. Impurity
 2. Proprietary API
 3. Impurity

Analyze Prep Fractions
via UHPLC



Ordering information on page 35

Media for Biomolecules



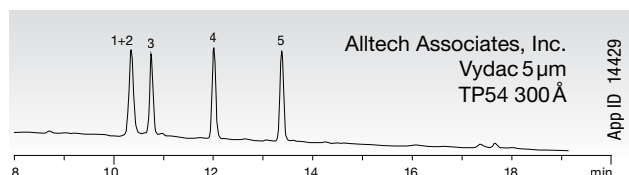
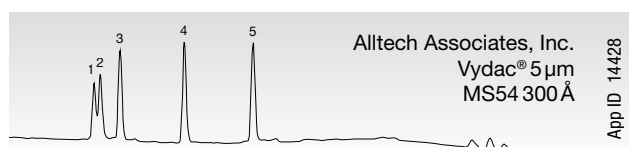
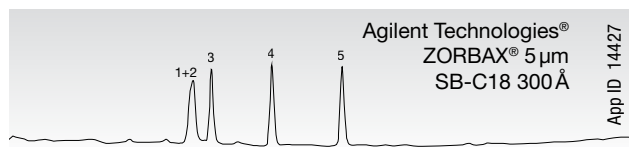
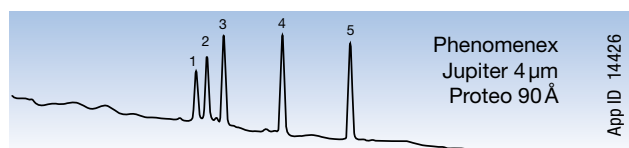
The Jupiter HPLC column portfolio, including Jupiter 300 and Jupiter Proteo, offers optimized reversed phase solutions for peptide and protein purification. Identify, purify, and analyze almost any protein with Jupiter columns.

Jupiter Proteo 90 Å

- For separation of proteins and peptides < 10,000 MW
- C12 bonded onto an ultra-high surface area (475 m²/g) silica for increased peak capacity and resolution of peptide separations
- Direct scale-up from analytical to preparative and bulk materials

Resolve Peptides with Similar Hydrophobicity

Jupiter Proteo is able to fully resolve peptides that differ in hydrophobicity by one methyl group.



Columns: Phenomenex Jupiter 4 µm Proteo 90 Å
 Agilent Technologies ZORBAX 5 µm SB-C18 300 Å
 Alltech Associates, Inc. Vydac 5 µm MS54 300 Å
 Alltech Associates, Inc. Vydac 5 µm TP54 300 Å

Dimensions: 250 x 4.6 mm

Mobile Phase: A: 0.1% TFA in Water
 B: 0.085% TFA in Acetonitrile

Gradient: A/B (95:5) to A/B (55:45) in 20 minutes

Flow Rate: 1 mL/min

Temperature: 22 °C

Detection: UV @ 214 nm

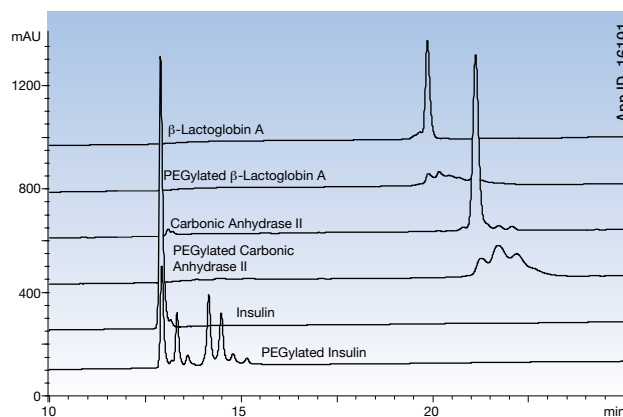
Sample: 1. NH₂-Arg-Gly-Gly-Ala-Gly-Gly-Leu-Gly-Leu-Gly-Lys-Amide
 2. Ac-Arg-Gly-Gly-Gly-Gly-Gly-Leu-Gly-Leu-Gly-Lys-Amide
 3. Ac-Arg-Gly-Ala-Gly-Gly-Gly-Leu-Gly-Leu-Gly-Lys-Amide
 4. Ac-Arg-Gly-Val-Gly-Gly-Gly-Leu-Gly-Leu-Gly-Lys-Amide
 5. Ac-Arg-Gly-Val-Val-Gly-Gly-Gly-Leu-Gly-Leu-Gly-Lys-Amide

Jupiter 300 Å

- For separation of proteins > 10,000 MW
- Available with C18 and C4 bonded phases
- 1.5 – 10 pH stability for method ruggedness and easy protein removal
- Direct scale up to preparative and bulk materials

Compare PEGylated vs. Native Forms of Proteins

Reversed phase separation of PEGylated and native proteins on a Jupiter 300 C4 column. Note the good resolution of multiple PEGylated forms for all proteins tested.



Columns: Jupiter 300 5 µm C4 300 A
Dimensions: 150 x 4.6 mm
Part No.: 00F-4167-E0
Mobile Phase: A: 2% Acetonitrile / 0.1% TFA in Water
 B: 70% Acetonitrile / 20% IPA / 0.08% TFA in Water
Gradient: A/B (85:15) to A/B (30:70) in 25 min
Flow Rate: 1 mL/min
Temperature: 45 °C
Detection: UV @ 214 nm
Sample: PEGylated and Native Proteins

“ We purchased the Jupiter 300 C18 300 Å column a few months ago and have been quite impressed with its performance. The Jupiter 300 column provides better separation of the proteins. As for reproducibility, the control profiles have not changed since day one of its use. ”

Major Biotech Company, Europe

Packing Material	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Applications				Type of Compounds				Loading	
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic		Bases
Jupiter C18	5, 10, 15	300	170	13.3	1.5-10.0	●	●	●	●	●	●	●	●	●	●
Jupiter C4	5, 10, 15	300	170	5	1.5-10.0	●	●	●	●	●	●	●	●	●	●
Jupiter Proteo	4, 10	90	475	15	1.5-10.0	●	●	●	●	●	●	●	●	●	●

Comparative separations may not be representative of all applications.

Purification of Synthetic Oligonucleotides



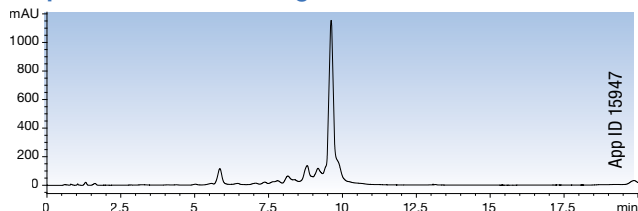
Clarity Oligo-RP™

Unique media specifically designed for reversed phase purification of oligonucleotides with balanced hydrophobicity and polar selectivity. The media is based on composite particle TWIN™ technology that provides improved selectivity and efficiency for oligonucleotides when compared to competing hybrid, polymer, and silica media.

RP-HPLC Preparative Purification

- Easily separate N-1 failure sequences from target oligo with >90 % purities
- Purify oligos up to 60 nt in length
- Trityl-off purification of DNA, RNA, thioates, and modified/ labeled oligonucleotides
- 3 µm, 5 µm, 10 µm particles for seamless scaling

Preparative 20nt DNA Oligo-RP Purification



Column: Clarity 3 µm Oligo-RP C18
Dimensions: 50 x 10 mm
Part No.: 00B-4441-NO
Mobile Phase: A: 50 mM TEAA pH 7.5/ 5 % Acetonitrile
 B: Methanol
Gradient: 10 % to 60 % B in 20 minutes
Flow Rate: 5 mL /min
Detection: UV @ 260 nm
Sample: 20nt DNA

Clarity Oligo-XT **NEW**

Clarity Oligo-XT, C18 columns have been designed to provide rugged high performance for the LC/MS characterization of synthetic DNA and RNA samples, alongside purification of these targeted oligos. With high efficiency levels from the novel core-shell particle design, this new media provides the necessary separation power to accurately resolve closely related oligo sequences.

- Novel core-shell particle technology with rugged pH stability from 1-12
- 5 µm particles provide extremely low pressure HPLC and Preparative purification solutions
- Seamless scalability between all three particle sizes (1.7 µm, 2.6 µm and 5 µm)

Clarity Oligo-WAX™

Clarity Oligo-WAX is a crosslinked weak anion-exchange media designed for successful ion-exchange purification of synthetic DNA/RNA. Oligo-WAX is an advantageous combination of purity, capacity, mechanical strength, cost, and efficiency.

- Excellent efficiency column results in > 90 % purities due to good fractionation of closely eluting compounds
- High loading capacity due to very high density ligand
- Increase productivity by running at higher flow rates and pressures



We have used the Axia™ prep columns and have not had problems with them. I have never had to adjust for retention gaps. This speaks directly to the quality of Phenomenex's phases and the quality of their PREP columns.



-Major Biotech Company, USA

Packing Material	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Applications				Type of Compounds				Loading	
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic		Bases
Oligo-RP	3, 5, 10	110	375	14	1-12	●	●	●	●	●	●	●	●	●	●
Oligo-Wax	10	360	150	-	1-11	●	●	●	●	●	●	●	●	●	●
NEW Oligo-XT	1.7, 2.6, 5	100	200	11	1-12	●	●	●	●	●	●	●	●	●	●

Key: ● Best Suited ○ Very Good

Complete Chiral Solutions

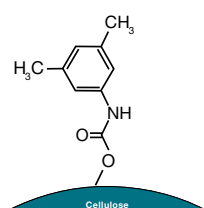
Achieving optimal chiral separation is easier than ever with seven unique Lux polysaccharide stationary phases to screen. Choose a phase, then transfer the method to lab scale, process, pilot, and commercial scale.

Lux chiral preparative columns simplify the separation process:

- Unique and traditional phases that increase the success rate of the chiral screen
- Consistent particle size distribution so performance is maintained
- Mechanically strong media for increased stability
- Available in multiple particle sizes for direct scale up (3 µm and 5 µm packed columns for screening and small scale purifications; 10 µm and 20 µm bulk media for process scale purifications)

Resolve Your Enantiomers with Seven Unique Phases

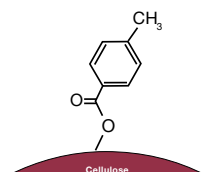
The Lux family of bulk cellulose and amylose chiral selectors provides a variety of complementary selectivities.



Lux Cellulose-1

Cellulose tris(3,5-dimethylphenylcarbamate)

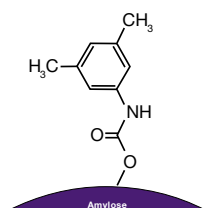
Guaranteed Alternative to CHIRALCEL® OD®, OD-H®, OD-3, OD-RH®, and OD-3R



Lux Cellulose-3

Cellulose tris(4-methylbenzoate)

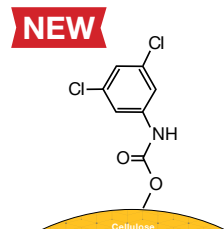
Guaranteed Alternative to CHIRALCEL OJ®, OJ-H®, OJ-3, OJ-RH®, and OJ-3R



Lux Amylose-1

Amylose tris(3,5-dimethylphenylcarbamate)

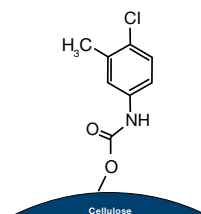
Guaranteed Alternative to CHIRALPAK AD®, AD-H®, AD-3, AD-RH®, and AD-3R



Lux i-Cellulose-5

Cellulose tris(3,5-dichlorophenylcarbamate)

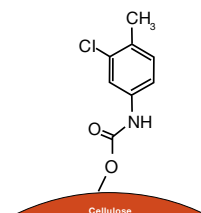
Guaranteed Alternative to CHIRALPAK® IC and IC-3



Lux Cellulose-2

Cellulose tris(3-chloro-4-methylphenylcarbamate)

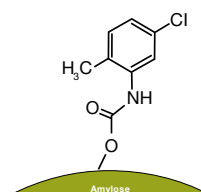
Guaranteed Alternative to CHIRALCEL OZ®, OZ-H®, OZ-3, OZ-RH®, and OZ-3R



Lux Cellulose-4

Cellulose tris(4-chloro-3-methylphenylcarbamate)

Guaranteed Alternative to CHIRALCEL OX-H®, OX-3®, OX-RH®, and OX-3R



Lux Amylose-2

Amylose tris(5-chloro-2-methylphenylcarbamate)

Guaranteed Alternative to CHIRALPAK AY®, AY-H®, AY-3®, AY-RH®, and AY-3R

Key: ● Best Suited ○ Very Good

Packing Material	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range	Chiral Applications				Type of Chiral Compounds				Loading		
						Small Molecules	Peptides	Proteins	Chiral	Oligonucleotides	Acids	Polar	Hydrophobic	Bases	Available Surface Area	
NEW Lux i-Cellulose-5	3, 5	1,000	-	-	2-9	●					○	○	○	○	○	●
Lux Cellulose-1	3, 5, 10, 20	1,000	-	-	2-9	●					○	○	○	○	○	●
Lux Cellulose-2	3, 5, 10, 20	1,000	-	-	2-9	●					○	○	○	○	○	●
Lux Cellulose-3	3, 5, 10, 20	1,000	-	-	2-9	●					○	○	○	○	○	●
Lux Cellulose-4	3, 5, 10, 20	1,000	-	-	2-9	●					○	○	○	○	○	●
Lux Amylose-1	3, 5	1,000	-	-	2-9	●					○	○	○	○	○	●
Lux Amylose-2	3, 5	1,000	-	-	2-9	●					○	○	○	○	○	●

Column Screening for Optimal Chiral Resolution

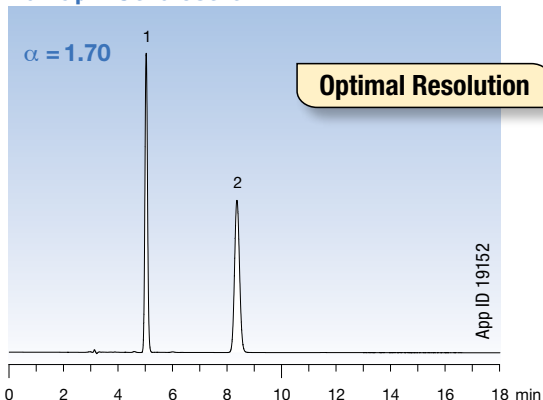
Being able to utilize differences in selectivity in each of the seven Lux® columns can help develop methods more efficiently by offering broad and complementary chiral recognition abilities.

In the example below, a simple screen determined which column gave the best separation.

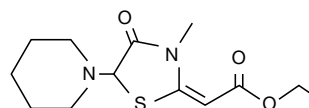
Etozolin

Based on a five phase screen under reversed phase conditions, the optimal chiral stationary phase for resolving Etozolin is Lux Cellulose-3.

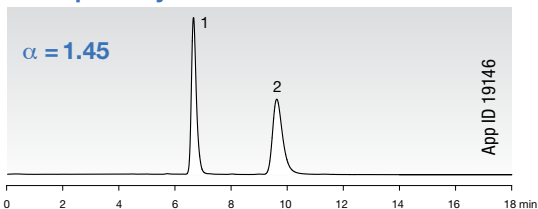
Lux 5µm Cellulose-3



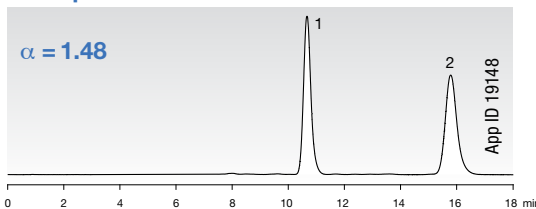
Conditions for all columns:
Column: As noted
Dimension: 250 x 4.6 mm
Mobile Phase: Acetonitrile / 20 mM Ammonium bicarbonate with 0.1 % Diethylamine (60:40)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 220 nm



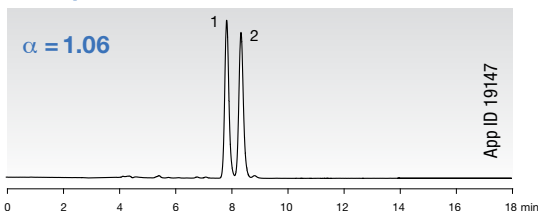
Lux 5µm Amylose-2



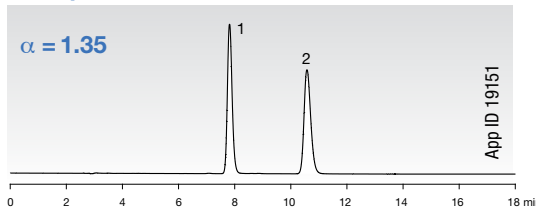
Lux 5µm Cellulose-2



Lux 5µm Cellulose-1

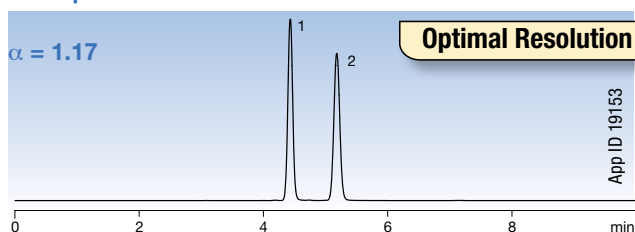


Lux 3µm Cellulose-4

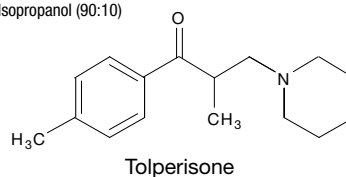


Innovative chiral selector will succeed where others fail

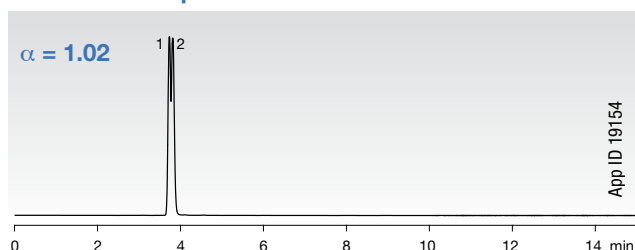
Lux 5µm Cellulose-4



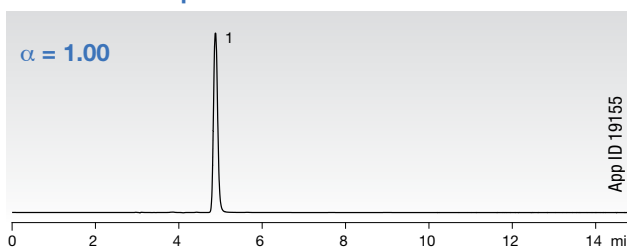
Conditions for all columns:
Dimensions: 250 x 4.6 mm
Mobile Phase: 0.1 % Diethylamine in Hexane / 0.1 % Diethylamine in Isopropanol (90:10)
Flow Rate: 1 mL/min
Detection: UV @ 220 nm
Temperature: Ambient



CHIRALCEL® 5µm OD-H®



CHIRALPAK® 5µm AD®-H

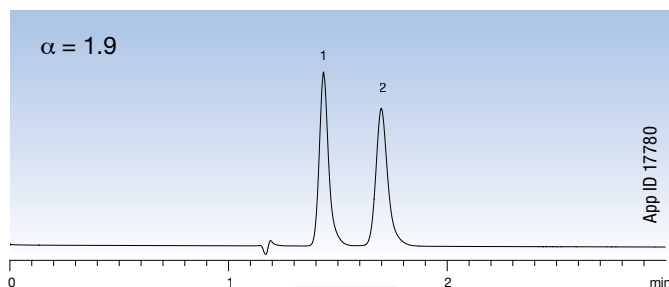


Columns used for comparison were manufactured by DAICEL Corporation. Phenomenex is in no way affiliated with DAICEL Corporation. Comparative separations may not be representative of all applications.

Load More with an Increase in Column Length

Axia™ column technology allows separations to scale up directly based on column length. With the 100mm length column a 32 mg/load separation was achieved and an increased sample

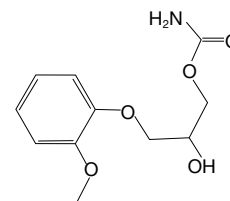
load of 80 mg/load was achieved on the longer 250 mm length column. As expected when increasing the load, the peak width and tailing increased but there was no loss of resolution.



Conditions for all columns:

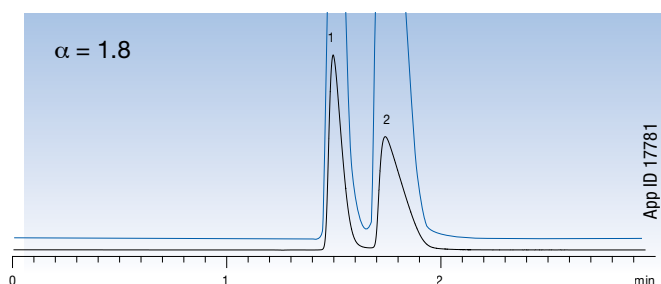
Columns: Lux® 5 µm Cellulose-1
Dimensions: as noted
Mobile Phase: Methanol / Isopropanol (90:10)
Flow Rate: as noted
Detection: as noted
Sample: Dissolved in mobile phase as noted

Dimensions: 100 x 4.6 mm
Flow Rate: 1 mL/min
Detection: UV @ 220 nm
Sample: 5 µg in 2 µL



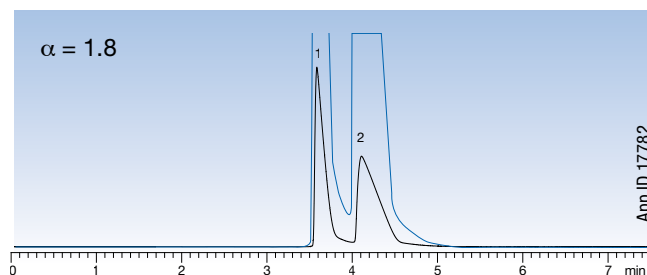
Methocarbamol

No resolution loss with increased sample load



Dimensions: 100 x 21.2 mm
Flow Rate: 20 mL/min
Detection: UV @ 220 nm and 254 nm
Sample: 32 mg in 640 µL

2.5x Load Increase



Dimensions: 250 x 21.2 mm
Flow Rate: 20 mL/min
Detection: UV @ 220 nm and 254 nm
Sample: 80 mg in 1600 µL

“

Lux Axia preparative columns are wonderful! I regularly use Lux chiral stationary phases Cellulose-2 and Cellulose-4 and less frequently, the Lux Amylose-2. In our community of chiral analysis/purification scientists, there are some who use the CC4 column instead of the *equivalent* Lux Cellulose-4. On several occasions we've seen separation and good peak shape on the Lux Cellulose-4 that was completely missing from the CC4. Customer support and delivery times are always within a few days.

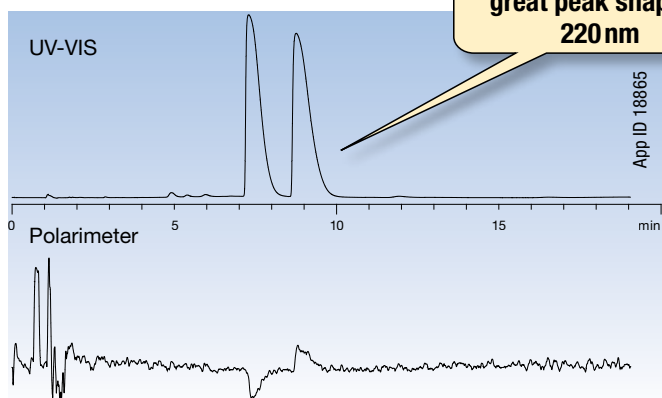
Julia G. Christie
 GlaxoSmithKline, USA

”

Easy SFC Scale-up

SFC Purification of Terfenadine

Baseline Separation of Enantiomers

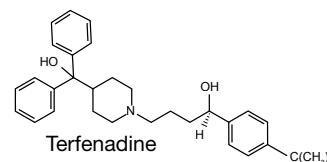


Lux® Cellulose-1 offers great peak shape at 220 nm

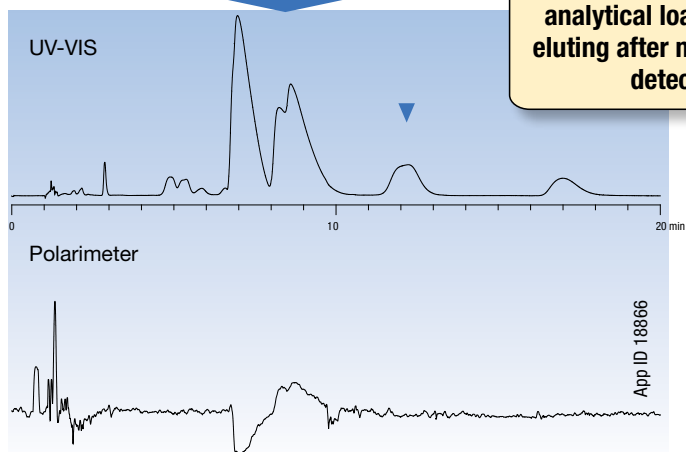
Dimensions: 250 x 4.6 mm
Flow Rate: 2.5 mL/min
Detection: UV @ 220 nm
Load: 300 µg in 10 µL



Analytical and Axia™ packed columns have been extensively tested on various SFC systems and all column ID's and lengths are SFC compatible.



5x Load Increase



Overloading study with increased analytical load showing impurities eluting after major enantiomers only detected at 254 nm

Dimensions: 250 x 4.6 mm
Flow Rate: 2.5 mL/min
Detection: UV @ 254 nm
Load: 1.5 mg in 50 µL

Conditions for all columns:

Columns: Lux 5 µm Cellulose-1

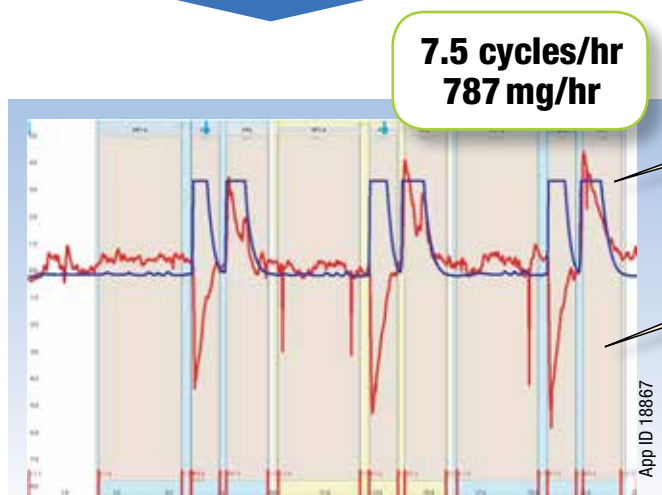
Mobile Phase: Methanol with 0.1 % DEA/
Carbon Dioxide (25:75)

Column Temperature: 35 °C

Polarimeter: ALP-PDR-Chiral

Sample: Terfenadine with ethanol
dissolution solvent

70x Load Increase



7.5 cycles/hr
787 mg/hr

High loading capacity media along with stacking injections allow for increased yields and productivity

Closer stacked injections can not be used due to the impurities eluting after the major enantiomers

Dimensions: 250 x 21.2 mm
Flow Rate: 50 mL/min
Detection: UV @ 220 nm
Load: 105 mg in 3.5 mL

Tip:

For SFC column screening, use Lux 150 x 3.0 mm ID columns.



Ordering information on page 35

A New Era of Technical Support Services

Let Us Do the Work for You

PhenoLogix, our in-house application support lab, saves you time and money by screening multiple scout columns and solvent strategies for new purification methods or revalidating your current methods. We work together to make you successful by minimizing your process purification development time and optimizing your purification method.

Chiral Screening

- Normal Phase
- Reversed Phase
- Polar Organic
- SFC

Method Optimization Services

- Fast Turnaround
- Easy Method Transfer
- Continued Support

Preparative and Process Scale-Up

- Media Screening
- Small Scale Purification
- DAC Packing Assistance



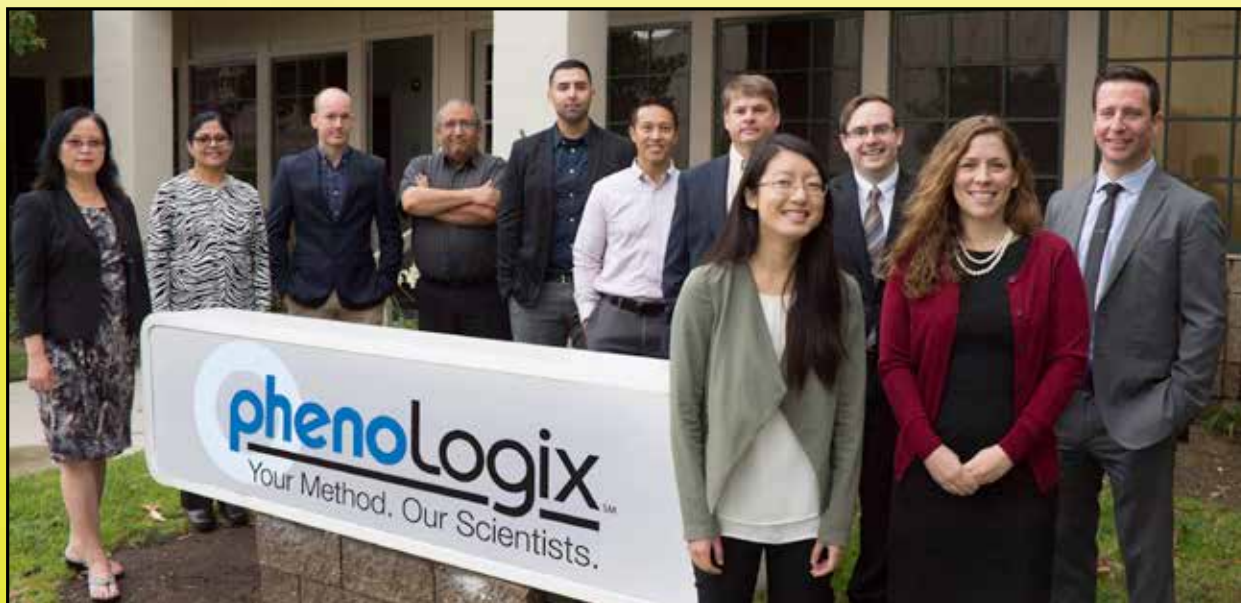
Your Method, Our Scientists

Quality Products, Advanced Performance, Complete Support

For more information or to begin a project today, please contact your local Phenomenex representative or email us at phenologix@phenomenex.com

You can also visit us online:

www.phenomenex.com/phenologix



“

Our scientists at American Peptide have taken advantage of Phenomenex's column packing services, application development, and project-specific consultation services for some of our most challenging separations.

”

American Peptide Company, USA



PREP HPLC/SFC Column Protection

SecurityGuard™ PREP

- Extends preparative column lifetime by as much as 5 times
- Protects columns from samples that precipitate out of solution
- Protects columns from contaminants
- Stable and leak-free up to 60 mL/min within specified pressure ratings

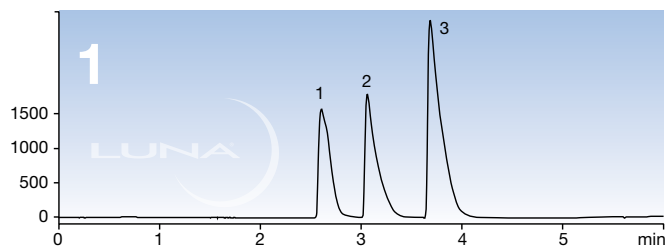
The SecurityGuard PREP system was designed to effectively and inexpensively protect your valuable prep columns from the damaging effects of mobile phase and sample chemical contaminants and particulates, without altering your chromatographic results.

Lower Your Cost Per Injection!

SecurityGuard isn't only about column protection, it's about lowering your cost per injection! When you increase the number of injections from a single preparative column you're lowering your overall cost per injection. With SecurityGuard PREP, the inexpensive cartridge was ruined while the integrity of the prep column was maintained and its performance restored.

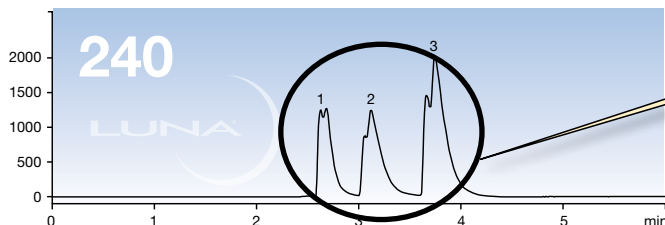
Forced Degradation Study

Injection 1: Axia™ Packed column with SecurityGuard PREP cartridge



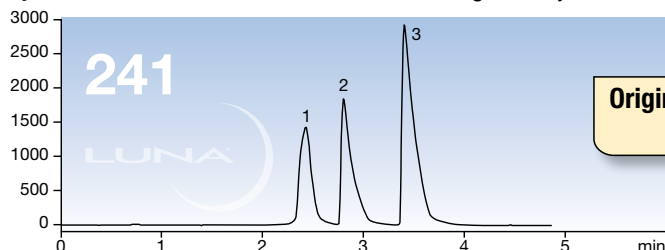
Column: Luna® 10µm C18(2) Axia Packed
Dimension: 50 x 21.2 mm
Part No.: 00B-4253-P0-AX
Mobile Phase: A: 0.1 % TFA in Water
 B: 0.1 % TFA in Water / Acetonitrile (25:75)
Gradient: Linear 93:7 (A/B) to 100% B over 5 minutes
Injection Volume: 420 µL
Flow Rate: 60 mL/min
Temperature: Ambient
Detection: UV @ 270 nm
Sample: 1. Nadolol
 2. Metoprolol
 3. Propranolol

Injection 240: Axia Packed column with SecurityGuard PREP cartridge



Time to change the SecurityGuard PREP cartridge

Injection 241: Axia Packed column after removing SecurityGuard column protection system



Original column performance maintained by using SecurityGuard PREP

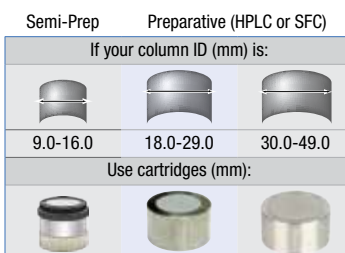


Ordering Information



SecurityGuard PREP

SecurityGuard PREP



Material	Description	pH Stability	10.0 x 10.0	15.0 x 21.2	15.0 x 30.0
Cartridges for General Purpose/Pharmaceutical			\$ 530 / 3 pk	\$ 390 / ea	\$ 410 / ea
C18	(ODS, Octadecyl)	1.5 - 10	AJO-7221	AJO-7839	AJO-8301
C12	(Dodecyl)	1.5 - 10	AJO-7275	AJO-7842	AJO-8304
C8	(MOS, Octyl)	1.5 - 10	AJO-7222	AJO-7840	AJO-8302
C5	(Pentyl)	1.5 - 10	AJO-7372	—	—
Silica	—	—	AJO-7223	AJO-7229	AJO-8312
HILIC	(HILIC)	1.5 - 8	AJO-8902	—	—
NH₂	(Amino, Aminopropyl)	1.5 - 11	AJO-7364	AJO-8162	AJO-8309
CN	(Cyano, Cyanopropyl)	2 - 7.5	AJO-7313	AJO-8220	AJO-8311
Phenyl	(Phenylhexyl)	1.5 - 10	AJO-7314	AJO-7841	AJO-8303
PFP(2)	(Pentafluorophenyl)	1.5 - 8	AJO-8376	AJO-8377	AJO-8378
SCX	(SA, Strong Cation Exchanger)	2.5 - 7.5	—	AJO-8595	AJO-8596
SAX	(SB, Strong Anion Exchanger)	2.5 - 7.5	AJO-7370	—	—
RP-1	(Reversed Phase - Polymer)	0 - 14	AJO-7368	AJO-8358	—
Polar-RP	(Ether-linked Phenyl)	1.5 - 7	AJO-7276	AJO-7845	AJO-8307
Fusion-RP	(C18 Polar Embedded)	1.5 - 10	AJO-7558	AJO-7844	AJO-8306
AQ C18	(Polar Endcapped C18)	1.5 - 7.5	AJO-7512	AJO-7843	AJO-8305
Gemini® NX-C18	(C18 TWIN-NX™ Technology)	1 - 12	AJO-8369	AJO-8370	AJO-8371
Gemini C18	(C18 TWIN™ Technology)	1 - 12	AJO-7598	AJO-7846	AJO-8308
Gemini C6-Phenyl	(C6-Phenyl TWIN Technology)	1 - 12	AJO-9156	AJO-9157	AJO-9158
Luna® Omega Polar C18	(Polar Function C18)	1.5 - 10	—	AJO-7603	AJO-7604
Luna Omega PS C18	(Mixed Mode C18)	1.5 - 10	—	AJO-7608	AJO-7609
Cartridges for Core-Shell PREP Columns			\$ 530 / 3 pk	\$ 390 / ea	\$ 410 / ea
For core-shell media columns, such as Kinetex® and Aeris™ (Phenomenex).					
EVO C18	(ODS, Octadecyl)	1 - 12	AJO-9306	AJO-9304	AJO-9305
C18	(ODS, Octadecyl)	1.5 - 8.5	AJO-9278	AJO-9145	AJO-9204
C8	(MOS, Octyl)	1.5 - 8.5	—	AJO-9205	AJO-9217
PFP	(Pentafluorophenyl)	1.5 - 9	—	AJO-9146	AJO-9299
Phenyl-Hexyl	(Phenylhexyl)	1.5 - 8.5	—	AJO-9147	AJO-9216
Biphenyl	(Biphenyl)	1.5 - 8.5	AJO-9280	AJO-9272	AJO-9273
HILIC	(HILIC)	2 - 7.5	—	AJO-9277	—
C18-Peptide	(ODS, Octadecyl)	1.5 - 9	AJO-9317	AJO-9318	AJO-9319
F5	(Pentafluorophenyl)	1.5 - 8.5	AJO-9323	AJO-9324	AJO-9325
Cartridges for Protein and Polypeptide Reversed Phase			\$ 530 / 3 pk	\$ 390 / ea	\$ 410 / ea
For use with silica columns for separation of proteins and peptides, such as Jupiter® (Phenomenex); Vydac® 218TP, 214TP (Alltech Associates, Inc.); SynChropak® 300 C18, C4 (Eprogen, Inc.); Nucleosil® 300Å C18, C4 (Macherey-Nagel); Hypersil® 300Å (Thermo Hypersil-Keystone), and other widepore or 300Å brands.					
Widepore C18	(ODS, Octadecyl)	1.5 - 10	AJO-7224	AJO-7230	AJO-8313
Widepore C5	(Pentyl)	1.5 - 10	AJO-7371	—	—
Widepore C4	(Butyl)	1.5 - 10	AJO-7225	AJO-7231	AJO-8314
Cartridges for Synthetic DNA / RNA Analysis			\$ 530 / 3 pk	\$ 390 / ea	\$ 410 / ea
For use with columns like Clarity® (Phenomenex)					
Oligo-RP™	(C18 TWIN Technology)	1 - 12	AJO-8136	AJO-8210	—
Oligo-WAX™	(WA, Weak Anion Exchanger)	1.5 - 11	AJO-8325	AJO-8639	—
Oligo-XT	(ODS, Octadecyl)	1 - 12	AJO-9516	AJO-9517	AJO-9518
Cartridges for Silica GFC			—	\$ 390 / ea	—
(Aqueous SEC) For use with silica GFC columns, such as Yarra™ and BioSep™ (Phenomenex); ZORBAX® GF-Series (Agilent Technologies); Bio-Sil® (Bio-Rad®).					
GFC-2000	—	2 - 7.5	—	AJO-8588	—
GFC-3000	—	2 - 7.5	—	AJO-8589	—
GFC-4000	—	2 - 7.5	—	AJO-8590	—
Cartridges for Chiral			\$ 530 / 3 pk	\$ 390 / ea	\$ 410 / ea
For use with chiral columns, such as Lux® Cellulose-1, -2, -3, -4, i-Cellulose-5, and Amylose-1,-2 (Phenomenex); CHIRALCEL® and CHIRALPAK® (DAICEL Corporation) as noted on page 26.					
Lux i-Cellulose-5	Cellulose tris(3,5-dichlorophenylcarbamate)	2 - 9	—	AJO-8634	AJO-8635
Lux Cellulose-1	Cellulose tris(3,5-dimethylphenylcarbamate)	2 - 9	AJO-8404	AJO-8405	AJO-8406
Lux Cellulose-2	Cellulose tris(3-chloro-4-methylphenylcarbamate)	2 - 9	AJO-8399	AJO-8400	AJO-8401
Lux Cellulose-3	Cellulose tris(4-methylbenzoate)	2 - 9	AJO-8623	AJO-8624	AJO-8625
Lux Cellulose-4	Cellulose tris(4-chloro-3-methylphenylcarbamate)	2 - 9	AJO-8628	AJO-8629	AJO-8630
Lux Amylose-1	Amylose tris(3,5-dimethylphenylcarbamate)	2 - 9	AJO-9344	AJO-9338	AJO-9339
Lux Amylose-2	Amylose tris(5-chloro-2-methylphenylcarbamate)	2 - 9	AJO-8472	AJO-8473	AJO-8474
HPLC Guard Cartridge Holders*			\$ 270 / holder	\$ 365 / kit	\$ 405 / kit
Reusable Holder			AJO-9281	AJO-8223	AJO-8277
SFC Guard Cartridge Holders*			\$ 270 / holder	\$ 480 / kit	\$ 510 / kit
Reusable Holder			AJO-9281	AJO-8617	AJO-8618

*Includes column coupler



If SecurityGuard PREP cartridge protection system does not perform as well or better than your current guard cartridge system of similar phase and dimensions, return the product with the comparative data within 45 days for a FULL REFUND.

Ordering Information

Achiral Phases

Aeris®

Phase	Length	ID	Part No.	Price
5 µm				
PEPTIDE XB-C18	150	21.2	00F-4632-P0-AX	\$ 2,999
	250	21.2	00G-4632-P0-AX	3,560

Kinetex®

Phase	Length	ID	Part No.	Price
5 µm				
XB-C18	50	21.2	00B-4605-P0-AX	\$ 1,789
	50	30	00B-4605-U0-AX	3,355
	100	21.2	00D-4605-P0-AX	2,589
	100	30	00D-4605-U0-AX	Inquire
	150	21.2	00F-4605-P0-AX	2,979
	150	30	00F-4605-U0-AX	Inquire
	250	21.2	00G-4605-P0-AX	3,529
	250	30	00G-4605-U0-AX	Inquire
EVO C18	50	21.2	00B-4633-P0-AX	1,869
	50	30	00B-4633-U0-AX	3,605
	100	21.2	00D-4633-P0-AX	2,805
	100	30	00D-4633-U0-AX	Inquire
	150	21.2	00F-4633-P0-AX	3,205
	150	30	00F-4633-U0-AX	Inquire
	250	21.2	00G-4633-P0-AX	3,805
	250	30	00G-4633-U0-AX	Inquire
Biphenyl	100	21.2	00D-4627-P0-AX	2,589
	100	50	00D-4627-V0-AX	Inquire
	150	21.2	00F-4627-P0-AX	2,979
	150	30	00F-4627-U0-AX	Inquire
	250	21.2	00G-4627-P0-AX	3,529
HILIC	100	21.2	00D-4606-P0-AX	2,589
	150	21.2	00F-4606-P0-AX	2,979
	250	21.2	00G-4606-P0-AX	3,529
C18	50	21.2	00B-4601-P0-AX	1,789
	50	30	00B-4601-U0-AX	3,355
	100	21.2	00D-4601-P0-AX	2,589
	100	30	00D-4601-U0-AX	Inquire
	150	21.2	00F-4601-P0-AX	2,979
	150	30	00F-4601-U0-AX	Inquire
	250	21.2	00G-4601-P0-AX	3,529
	250	30	00G-4601-U0-AX	Inquire
C8	50	21.2	00B-4608-P0-AX	1,789
	50	30	00B-4608-U0-AX	3,355
	100	21.2	00D-4608-P0-AX	2,589
	100	30	00D-4608-U0-AX	Inquire
	150	21.2	00F-4608-P0-AX	2,979
	150	30	00F-4608-U0-AX	Inquire
	250	21.2	00G-4608-P0-AX	3,529
	250	30	00G-4608-U0-AX	Inquire
Phenyl-Hexyl	50	21.2	00B-4603-P0-AX	1,789
	50	30	00B-4603-U0-AX	3,355
	100	21.2	00D-4603-P0-AX	2,589
	100	30	00D-4603-U0-AX	Inquire
	150	21.2	00F-4603-P0-AX	2,979
	150	30	00F-4603-U0-AX	Inquire
	250	21.2	00G-4603-P0-AX	3,529
	250	30	00G-4603-U0-AX	Inquire
F5	50	30	00B-4724-U0-AX	3,355
	100	30	00D-4724-U0-AX	4,749
	150	21.2	00F-4724-P0-AX	2,979
	150	30	00F-4724-U0-AX	Inquire
	250	21.2	00G-4724-P0-AX	3,529
	150	30	00F-4603-U0-AX	Inquire

NEW

Gemini®

Phase	Length	ID	Part No.	Price
5 µm				
NX-C18	50	21.2	00B-4454-P0-AX	\$ 1,889
	50	30	00B-4454-U0-AX	3,625
	75	30	00C-4454-U0-AX	Inquire
	100	21.2	00D-4454-P0-AX	2,825
	100	30	00D-4454-U0-AX	Inquire
	150	21.2	00F-4454-P0-AX	3,225
	150	30	00F-4454-U0-AX	Inquire
	250	21.2	00G-4454-P0-AX	3,825
	250	30	00G-4454-U0-AX	Inquire
C18	50	21.2	00B-4435-P0-AX	1,805
	50	30	00B-4435-U0-AX	3,375
	100	21.2	00D-4435-P0-AX	2,609
	100	30	00D-4435-U0-AX	Inquire
	150	21.2	00F-4435-P0-AX	2,999
	150	30	00F-4435-U0-AX	Inquire
	250	21.2	00G-4435-P0-AX	3,549
		250	30	00G-4435-U0-AX
C6-Phenyl	100	21.2	00D-4444-P0-AX	2,609
	150	21.2	00F-4444-P0-AX	2,999
	250	21.2	00G-4444-P0-AX	3,549
10 µm				
NX-C18	50	21.2	00B-4455-P0-AX	\$ 1,819
	100	21.2	00D-4455-P0-AX	2,709
	100	30	00D-4455-U0-AX	4,859
	100	50	00D-4455-V0-AX	Inquire
	150	21.2	00F-4455-P0-AX	3,059
	150	30	00F-4455-U0-AX	Inquire
	150	50	00F-4455-V0-AX	Inquire
	250	21.2	00G-4455-P0-AX	3,599
	250	30	00G-4455-U0-AX	Inquire
	250	50	00G-4455-V0-AX	Inquire
C18	100	21.2	00D-4436-P0-AX	2,489
	100	30	00D-4436-U0-AX	Inquire
	150	21.2	00F-4436-P0-AX	2,925
	150	30	00F-4436-U0-AX	Inquire
	150	50	00F-4436-V0-AX	Inquire
	250	21.2	00G-4436-P0-AX	3,449
	250	30	00G-4436-U0-AX	Inquire
	250	50	00G-4436-V0-AX	12,825

Jupiter®

Phase	Length	ID	Part No.	Price
4 µm				
Proteo	250	30	00G-4396-U0-AX	Inquire
10 µm				
Proteo	100	21.2	00D-4397-P0-AX	\$ 2,409
	250	21.2	00G-4397-P0-AX	3,170
	250	30	00G-4397-U0-AX	Inquire
C18 300 Å	250	30	00G-4055-U0-AX	Inquire
C4 300 Å	250	21.2	00G-4168-P0-AX	3,170

For additional sizes not displayed, please contact your Phenomenex technical consultant or local distributor.

guarantee

If Axia™ packed columns do not provide at least an equivalent separation as compared to a competing preparative column of the same particle size, same phase, and dimensions, return the product with comparative data within 45 days for a FULL REFUND. Only applies to 21.2 mm ID columns.

Luna®

Phase	Length	ID	Part No.	Price
5 µm				
C18(2)	50	21.2	00B-4252-P0-AX	\$ 1,805
	50	30	00B-4252-U0-AX	3,375
	75	21.2	00C-4252-P0-AX	2,149
	75	30	00C-4252-U0-AX	Inquire
	100	21.2	00D-4252-P0-AX	2,609
	100	30	00D-4252-U0-AX	Inquire
	150	21.2	00F-4252-P0-AX	2,999
	150	30	00F-4252-U0-AX	Inquire
	250	21.2	00G-4252-P0-AX	3,549
	250	30	00G-4252-U0-AX	Inquire
C8(2)	75	30	00C-4249-U0-AX	Inquire
	100	30	00D-4249-U0-AX	Inquire
	150	21.2	00F-4249-P0-AX	2,979
	250	21.2	00G-4249-P0-AX	3,529
CN	250	21.2	00G-4255-P0-AX	3,529
Phenyl-Hexyl	150	21.2	00F-4257-P0-AX	2,979
NH₂	150	21.2	00F-4378-P0-AX	2,979
	250	21.2	00G-4378-P0-AX	3,529
HILIC	100	21.2	00D-4450-P0-AX	2,589
	150	21.2	00F-4450-P0-AX	2,979
	250	21.2	00G-4450-P0-AX	3,529
	250	30	00G-4450-U0-AX	Inquire
PFP(2)	100	21.2	00D-4448-P0-AX	2,589
	100	30	00D-4448-U0-AX	Inquire
	150	21.2	00F-4448-P0-AX	2,979
	250	21.2	00G-4448-P0-AX	3,529
	250	30	00G-4448-U0-AX	Inquire
Silica (2)	100	21.2	00D-4274-P0-AX	2,589
	150	21.2	00F-4274-P0-AX	2,979
	250	21.2	00G-4274-P0-AX	3,529
	250	30	00G-4274-U0-AX	Inquire
10 µm				
C18(2)	50	21.2	00B-4253-P0-AX	\$ 1,705
	100	21.2	00D-4253-P0-AX	2,489
	150	21.2	00F-4253-P0-AX	2,925
	150	30	00F-4253-U0-AX	Inquire
	250	21.2	00G-4253-P0-AX	3,449
	250	30	00G-4253-U0-AX	Inquire
	250	50	00G-4253-V0-AX	Inquire
C8(2)	250	21.2	00G-4250-P0-AX	3,429
	250	50	00G-4250-V0-AX	Inquire
Silica (2)	250	21.2	00G-4091-P0-AX	3,429
15 µm				
C18(2)	250	50	00G-4273-V0-AX	Inquire
C8(2)	250	50	00G-4272-V0-AX	Inquire

Luna Omega

Phase	Length	ID	Part No.	Price
5 µm				
Polar C18	100	21.2	00D-4754-P0-AX	\$ 2,609
	100	30	00D-4754-U0-AX	4,769
	150	21.2	00F-4754-P0-AX	2,999
	150	30	00F-4754-U0-AX	Inquire
	250	21.2	00G-4754-P0-AX	Inquire
	250	30	00G-4754-U0-AX	Inquire
	250	50	00G-4754-V0-AX	Inquire
PS C18	50	21.2	00B-4753-P0-AX	1,805
	50	30	00B-4753-U0-AX	3,375
	100	21.2	00D-4753-P0-AX	2,609
	100	30	00D-4753-U0-AX	Inquire
	150	21.2	00F-4753-P0-AX	Inquire
	150	30	00F-4753-U0-AX	Inquire
	250	21.2	00G-4753-P0-AX	Inquire
	250	30	00G-4753-U0-AX	Inquire
	250	50	00G-4753-V0-AX	Inquire

Tip:

Protect your Axia™ Prep Columns with SecurityGuard™. See page 33 for ordering information

Synergi™

Phase	Length	ID	Part No.	Price
4 µm				
Fusion-RP	100	21.2	00D-4424-P0-AX	\$ 2,569
	150	21.2	00F-4424-P0-AX	2,935
	250	21.2	00G-4424-P0-AX	3,469
Hydro-RP	50	21.2	00B-4375-P0-AX	1,769
	150	21.2	00F-4375-P0-AX	2,935
	250	21.2	00G-4375-P0-AX	3,469
Max-RP	150	21.2	00F-4337-P0-AX	2,935
	250	21.2	00G-4337-P0-AX	3,469
Polar-RP	50	21.2	00B-4336-P0-AX	1,769
	100	21.2	00D-4336-P0-AX	2,569
	100	30	00D-4336-U0-AX	Inquire
	150	21.2	00F-4336-P0-AX	2,935
	150	30	00F-4336-U0-AX	Inquire
	250	21.2	00G-4336-P0-AX	3,469
10 µm				
Fusion-RP	150	21.2	00F-4425-P0-AX	\$ 2,915
	250	21.2	00G-4425-P0-AX	3,165
Hydro-RP	150	21.2	00F-4376-P0-AX	2,915
	250	21.2	00G-4376-P0-AX	3,165
Polar-RP	250	21.2	00G-4351-P0-AX	3,165

Clarity®

Phase	Length	ID	Part No.	Price
5 µm				
Oligo-RP™	100	21.2	00D-4442-P0-AX	\$ 2,635
	100	30	00D-4442-U0-AX	4,755
	250	21.2	00G-4442-P0-AX	3,605
Oligo-XT	100	21.2	00D-4745-P0-AX	\$ 2,775
	150	21.2	00F-4745-P0-AX	3,175
	150	30	00F-4745-U0-AX	7,545
	250	21.2	00G-4745-P0-AX	Inquire
10 µm				
Oligo-RP	150	21.2	00F-4445-P0-AX	\$ 2,660
	150	30	00F-4445-U0-AX	Inquire
	250	21.2	00G-4445-P0-AX	3,179
Oligo-WAX™	250	21.2	00G-4451-P0-AX	3,605

Chiral Phases

Lux®

Phase	Length	ID	Part No.	Price
5 µm				
Amylose-1	150	21.2	00F-4732-P0-AX	Inquire
	250	21.2	00G-4732-P0-AX	Inquire
	250	30	00G-4732-U0-AX	Inquire
	250	50	00G-4732-V0-AX	Inquire
Amylose-2	150	21.2	00F-4472-P0-AX	Inquire
	250	21.2	00G-4472-P0-AX	Inquire
	250	30	00G-4472-U0-AX	Inquire
Cellulose-1	150	21.2	00F-4459-P0-AX	Inquire
	250	21.2	00G-4459-P0-AX	Inquire
	250	30	00G-4459-U0-AX	Inquire
	250	50	00G-4459-V0-AX	Inquire
Cellulose-2	150	21.2	00F-4457-P0-AX	Inquire
	250	21.2	00G-4457-P0-AX	Inquire
	250	30	00G-4457-U0-AX	Inquire
	250	50	00G-4457-V0-AX	Inquire
Cellulose-3	150	21.2	00F-4493-P0-AX	Inquire
	250	21.2	00G-4493-P0-AX	Inquire
	250	30	00G-4493-U0-AX	Inquire
	250	50	00G-4493-V0-AX	Inquire
Cellulose-4	150	21.2	00F-4491-P0-AX	Inquire
	250	21.2	00G-4491-P0-AX	Inquire
	250	30	00G-4491-U0-AX	Inquire
	250	50	00G-4491-V0-AX	Inquire
	250	50	00G-4491-V0-AX	Inquire
i-Cellulose-5	150	21.2	00F-4756-P0-AX	Inquire
	250	21.2	00G-4756-P0-AX	Inquire
	250	30	00G-4756-U0-AX	Inquire
	250	50	00G-4756-V0-AX	Inquire
	250	50	00G-4756-V0-AX	Inquire

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Axia column and packing technology is patented by Phenomenex. U.S. Patent No. 7, 674, 383

Gemini and Kinetex EVO are patented by Phenomenex. U.S. Patent Nos. 7,563,367 and 8,658,038 and foreign counterparts.

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