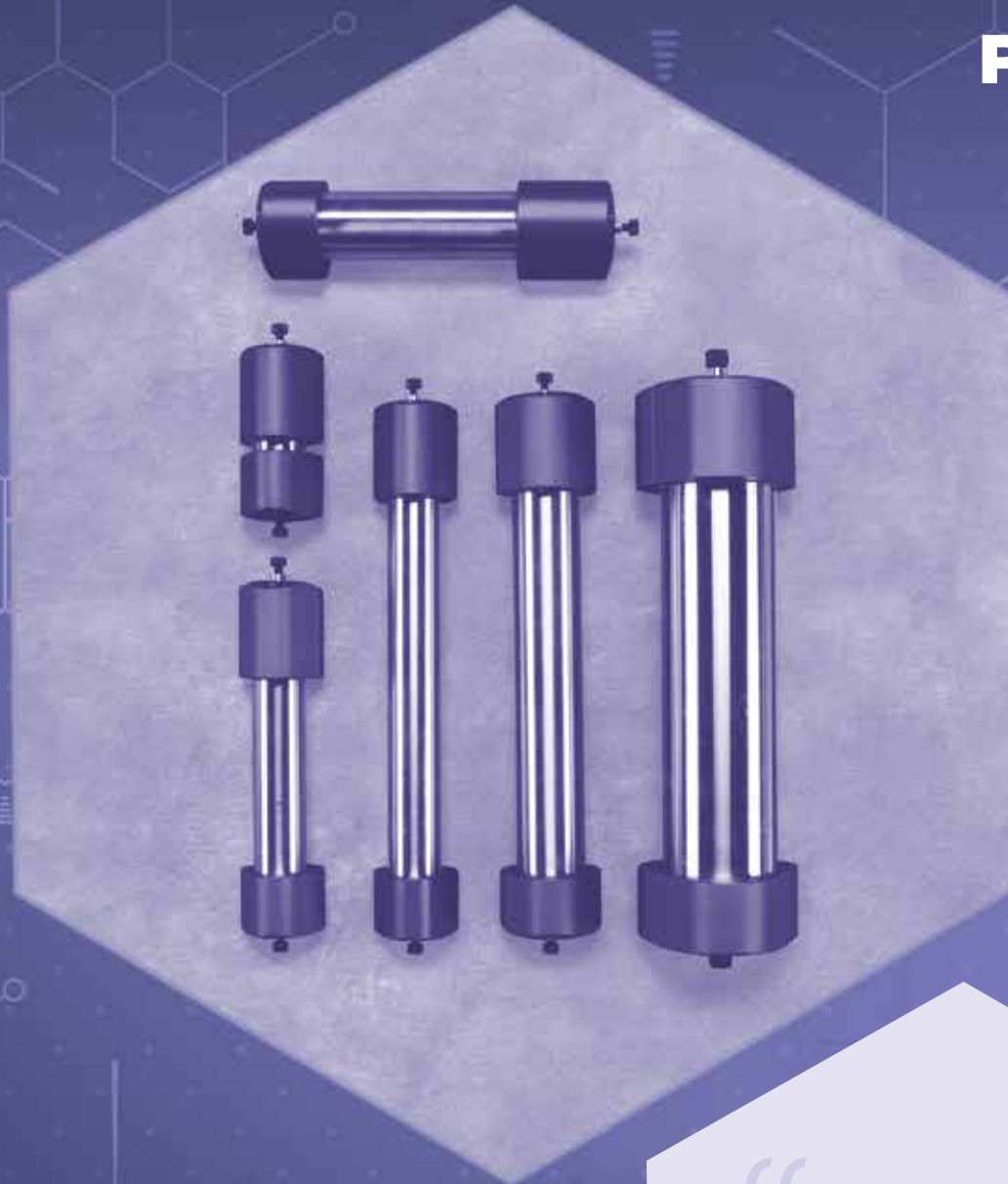


Prep Columns and Bulk Media



“ 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 μ m) stand out. We have been very satisfied with the increased loading capacity and excellent performance. ”

Guangcheng Jiang
Ferring Research Institute, Inc., USA

The opinions stated herein are solely those of the speaker and not necessarily those of any company or organization.

351 - 370

Axia Packed Preparative LC and SFC Columns	352-362
Process Chromatography	363-369
Bulk Media	363-369
Columns, Scout and Preparative	366-367
Sepra Bulk Sorbents	369

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

AXIA Preparative Chromatography Redefined

AXIA patented technology is an advanced column packing and hardware design that eliminates media bed collapse as a source of premature failure in chiral and achiral preparative columns.

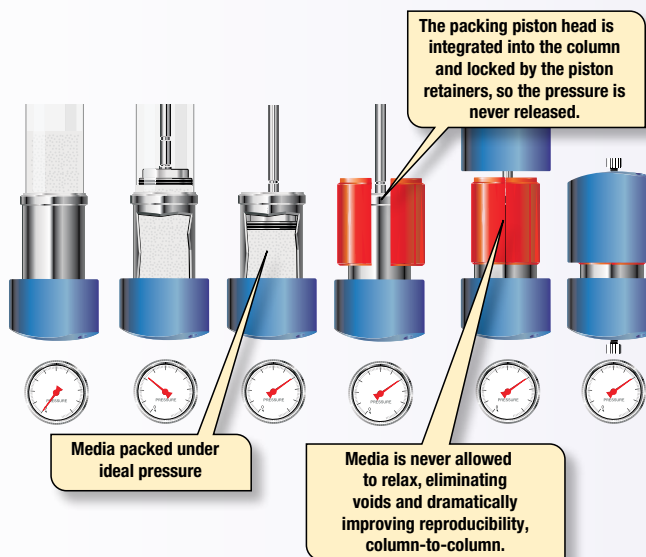
AXIA Packing Technology

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



Traditional Slurry Packing

Traditional slurry packing processes, like the Waters® OBD™ (Optimum Bed Density) column packing approach, involves 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

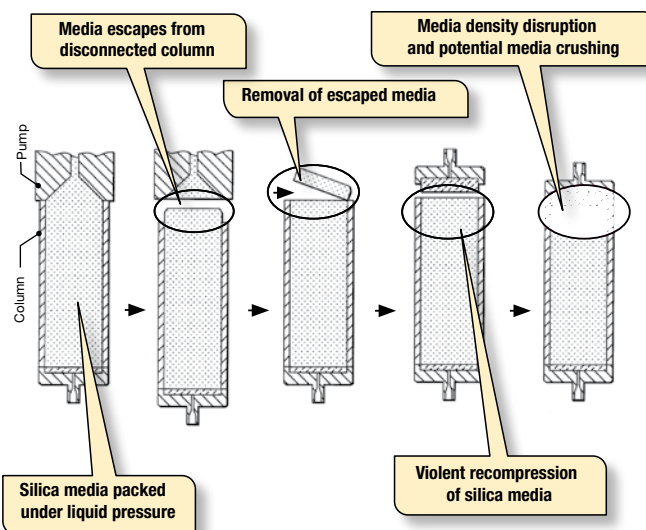


Diagram from Waters Corporation U.S. Patent No. 7,399,410



View loading comparison, see p. 355

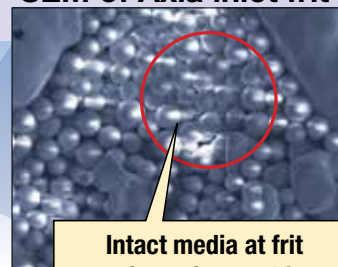
Axia packed columns produce uniform media bed with intact particles

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.



*SEM of Axia inlet frit



Intact media at frit surface after packing

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.



*SEM of Waters® OBD™



Crushed media or silica fines at frit surface after packing

*The images are believed to be representative, but individual columns may vary.

“ 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 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

View an animated packing process comparison at:
www.AxiaPrep.com



The opinions stated herein are solely those of the speaker and not necessarily those of any company or organization.

Axia™ Packed Preparative Columns

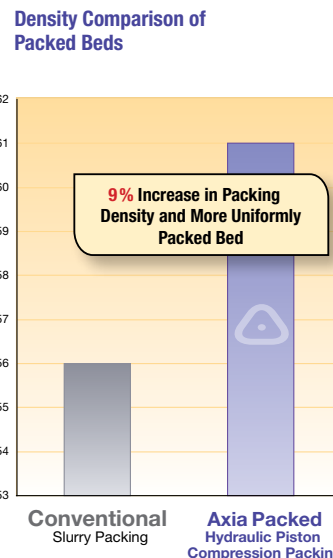
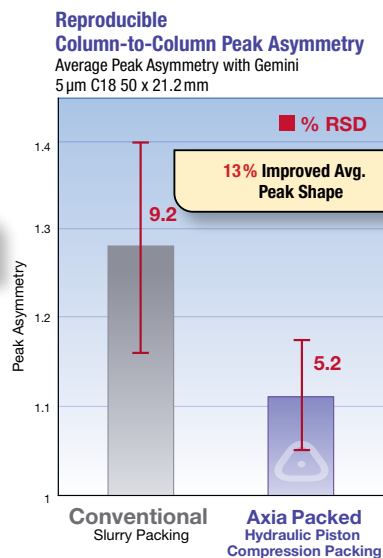
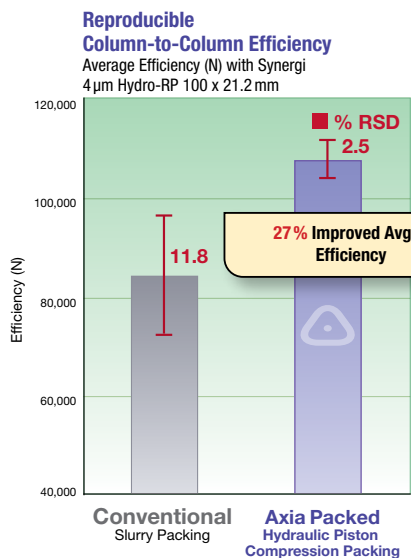
U.S. Patent No. 7, 674, 383

Expect Better Performance. Expect an Excellent Axia Column. Every Time.

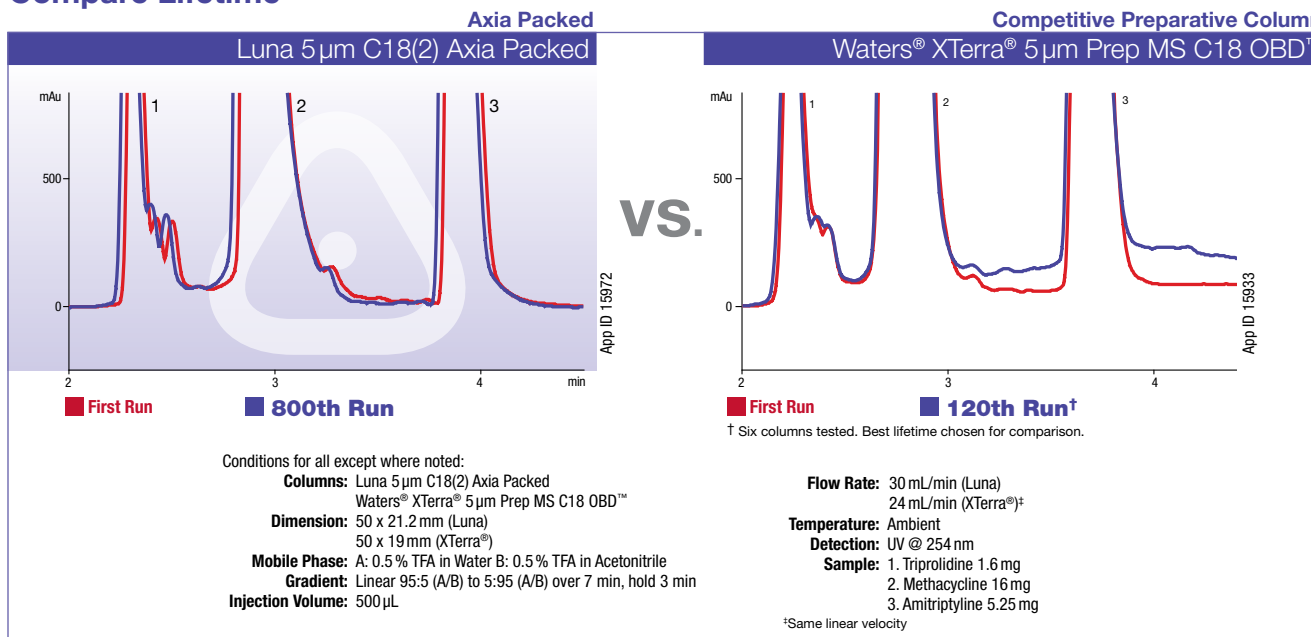
The completely automated packing system offers feedback control and infinite tuning of packing density to specific media characteristics such as mechanical strength and porosity. An optimum higher bed density can be consistently reproduced column-to-column.

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

Consistent Quality. Column-to-Column. Batch-to-Batch



Compare Lifetime



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

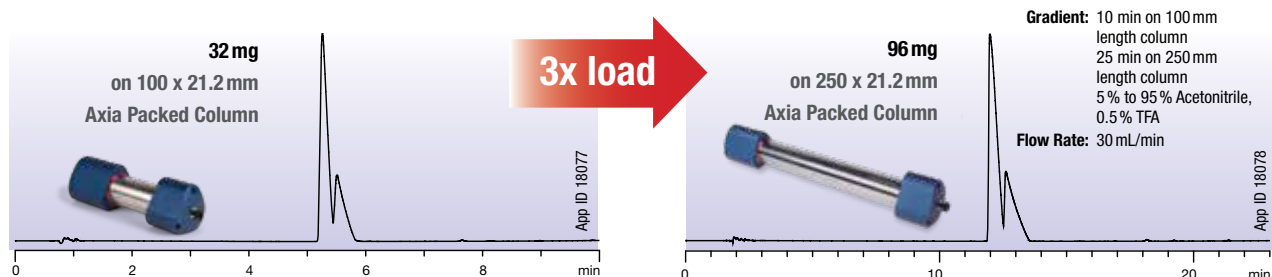
Seamless Scalability: 2 Options to Increase Sample Load

Option 1: Increase Column Length

Increase sample load without increasing your flow rate by using a longer column. With Axia technology, each preparative column is optimized for:

- Analytical-like efficiency
- Long column lifetime
- High sample load with high-surface area media such as Kinetex, Aeris, Gemini, Luna, Luna Omega, or Synergi

As a result, load generally increases as a direct proportion to column length. In this example, the sample load tripled by increasing column length.



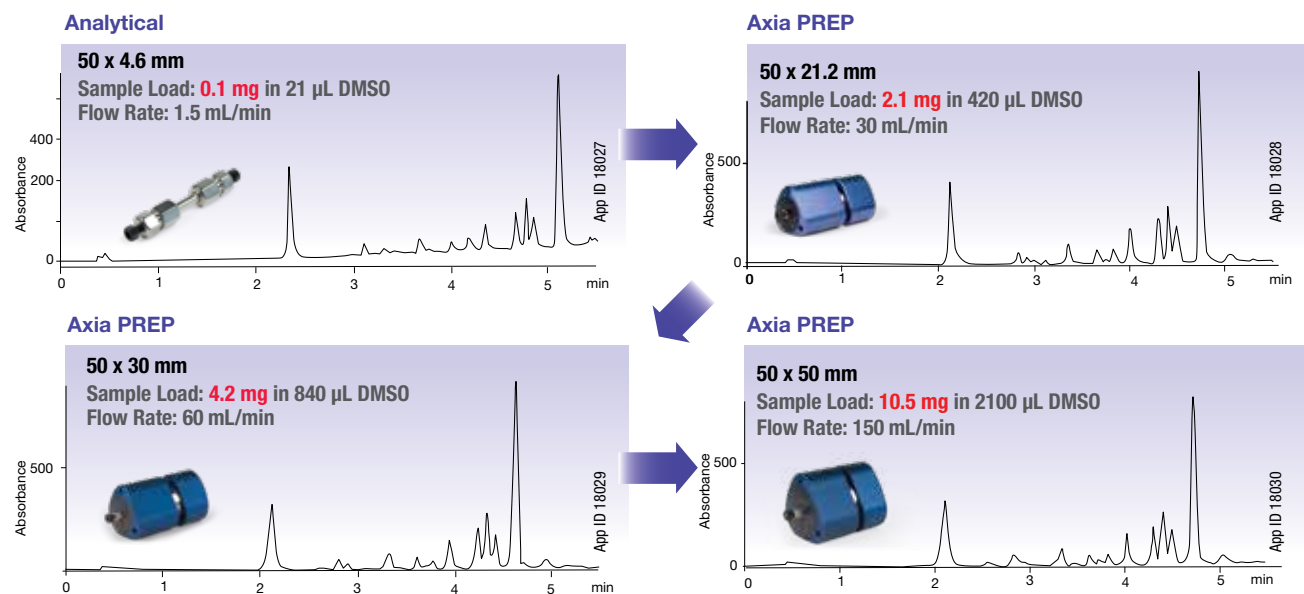
Option 2: Increase Column ID

For maximizing load without increasing the run time, consider scaling up to a larger column ID. Axia packed columns provide the three important benefits you need.

- Reproducible performance across all column diameters
- Increased throughput without sacrificing purity
- High efficiency from analytical to preparative

Conditions for all except where noted:

- **Columns:** Luna 5 µm C18(2)
- **Dimensions:** As Noted
- **Mobile Phase:** A. 0.5% TFA in Water
B. 0.5% TFA in Acetonitrile
- **Gradient:** A/B (95:5) to A/B (5:95) in 5 minutes
- **Flow Rate:** As Noted
- **Temperature:** Ambient
- **Injection:** As Noted
- **Detection:** UV @ 254 nm
- **Sample:** Suzuki reaction mixture



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

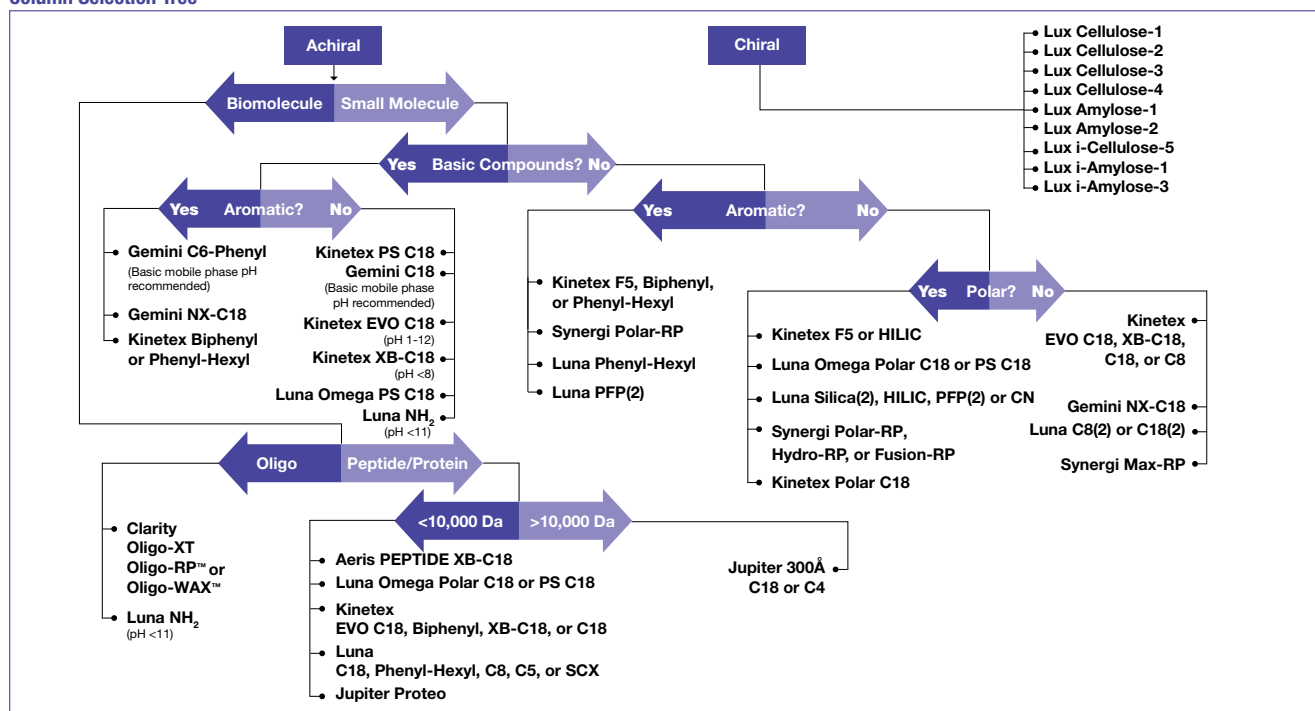
Selectivity Options

Stationary Phase Selectivity

With high surface areas, Phenomenex media—Gemini NX-C18 and Gemini (375 m²/g), Luna (400 m²/g) and Synergi (475 m²/g)—maximize loading capabilities. Use the selection tree below to select the best media for your targeted purification.

ize loading capabilities. Use the selection tree below to select the best media for your targeted purification.

Column Selection Tree

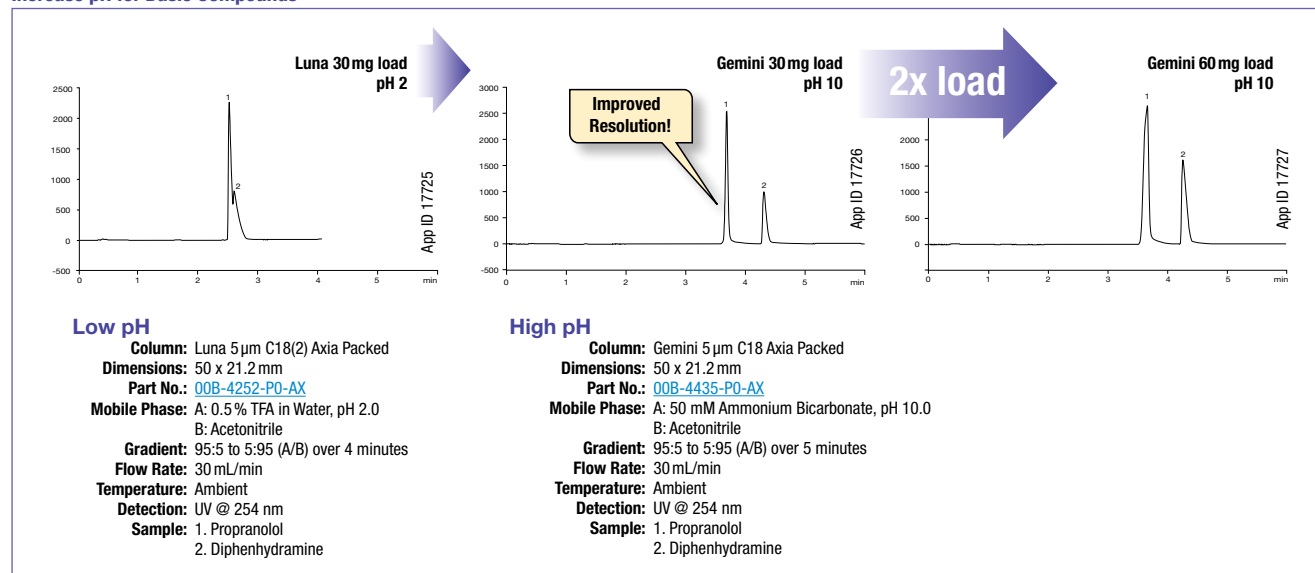


pH Selectivity

In reversed phase chromatography, compounds retain better when neutral. With the advent of pH stable (1-12) media such as Gemini NX-C18, C18, and C6-Phenyl, and Kinetex EVO C18 improving retention and resolution of basic compounds at high pH

is now possible without compromising column lifetime. Under these conditions, you can easily double or triple the loading compared to your current low pH purifications.

Increase pH for Basic Compounds



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

Chiral Media Packed in Axia Technology



Resolve 92 % of Your Enantiomers with Lux Chiral Preparative Columns*

Resolve Your Enantiomers with Nine Distinct Phases:

Lux i-Cellulose-5: Immobilized 3,5-Dichloro Phenylcarbamate Selector Cellulose tris (3, 5-dichlorophenylcarbamate)

Lux i-Amylose-1: Immobilized 3,5-Dimethyl Phenylcarbamate Selector Amylose tris (3, 5-dimethylphenylcarbamate)

Lux i-Amylose-3: Immobilized 3-Chloro, 5-Methyl Phenylcarbamate Selector Amylose tris (3-chloro-5-methylphenylcarbamate)

Lux Cellulose-1: Coated 3,5-Dimethyl Phenylcarbamate Selector Cellulose tris (3, 5-dimethylphenylcarbamate)

Lux Cellulose-2: Coated 3-Chloro, 4-Methyl Phenylcarbamate Selector Cellulose tris (3-chloro-4-methylphenylcarbamate)

Lux Cellulose-3: Coated 4-Methyl Phenylacetate Selector Cellulose tris (4-methylbenzoate)

Lux Cellulose-4: Coated 4-Chloro, 3-Methyl Phenylcarbamate Selector Cellulose tris (4-chloro-3-methylphenylcarbamate)

Lux Amylose-1: Coated 3,5-Dimethyl Phenylcarbamate Selector Amylose tris (3, 5-dimethylphenylcarbamate)

Lux Amylose-2: Coated 5-Chloro, 2-Methyl Phenylcarbamate Selector Amylose tris (5-chloro-2-methylphenylcarbamate)

* based on screening 233 compounds on five Lux phases

Availability in 3 µm and 5 µm packed columns as well as 20 µm bulk media for process scale purification
All Lux columns are pressure stable up to 300 bar and pH stable 2-9

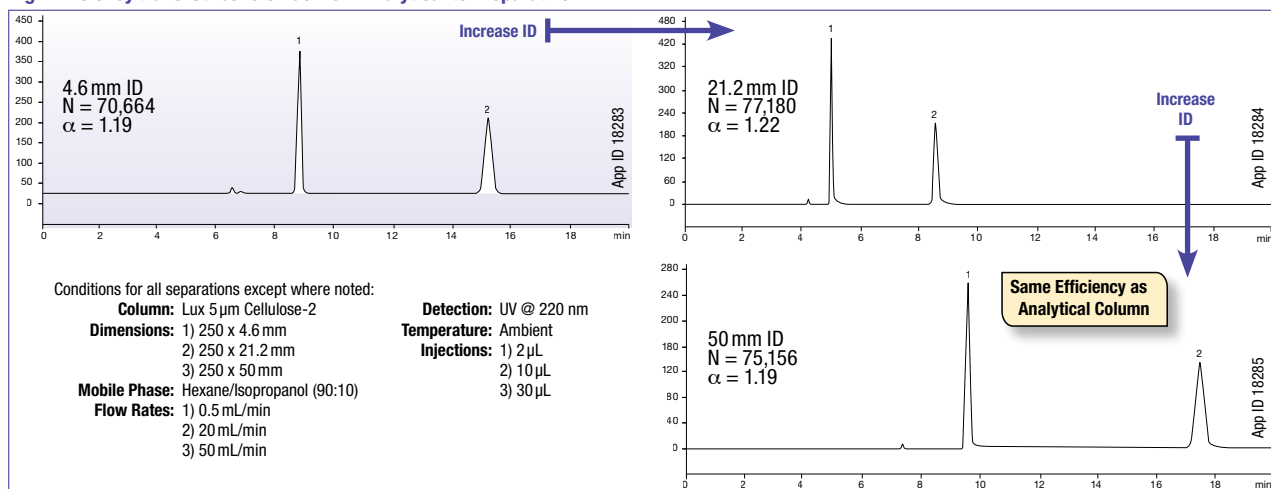


For more chiral column information, see p.282

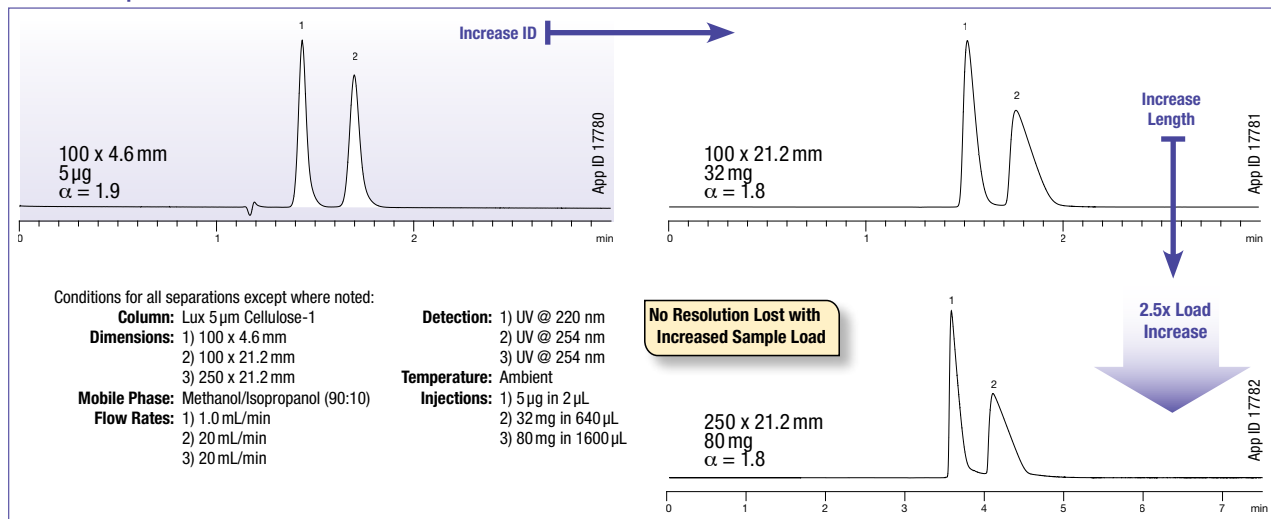
Higher Purity Preparative Separations

With award-winning Axia technology, analytical-like efficiency is achieved in a preparative column format.

High Efficiency trans-Stilbene Oxide from Analytical to Preparative



Direct Scale Up of Methocarbamol on Lux Cellulose-1



Axia™ Packed Preparative Columns

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

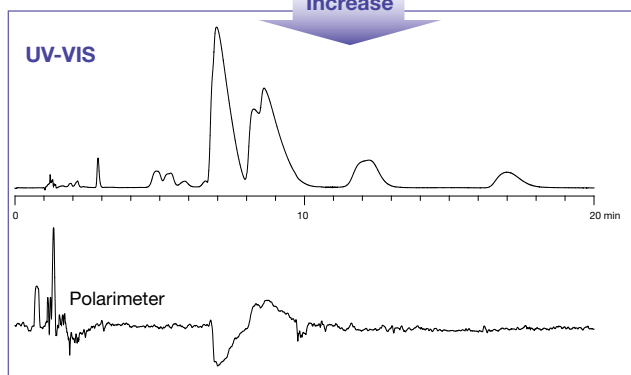
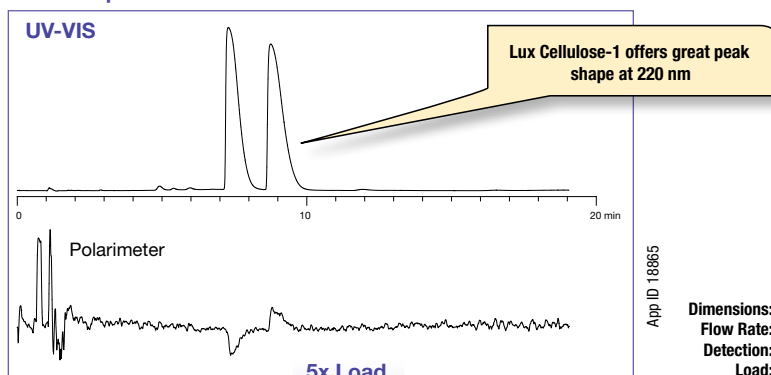
Axia: SFC Approved Complete SFC Screening

From analytical to Axia packed preparative achiral columns, Luna, Gemini, Synergi, Kinetex, and Lux chiral columns offer complementary selectivities, high efficiency, and pressure stability up to 300 bar (4300 psi) for SFC separations.

Seamless Scale Up from Laboratory, to Pilot Plant and Production.

Increase column ID for higher loading and greater purification. Axia packed 21.2 and 30mm diameter columns provide same purification capability and performance as the 4.6mm analytical screening columns.

Baseline Separation of Enantiomers



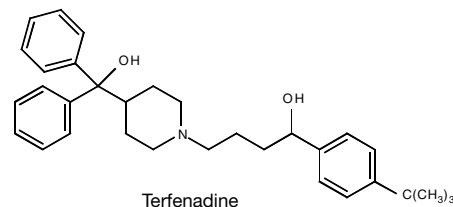
Overloading study with increased analytical load showing impurities eluting after major enantiomers only detected at 254 nm



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

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

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



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

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

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

7.5 cycles
per hr/
787 mg per hr



For additional SFC information and applications, see p.342

Axia™ Packed Preparative Columns

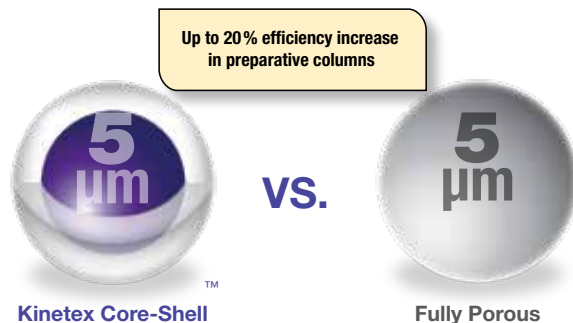
U.S. Patent No. 7, 674, 383

First and Only Core-Shell Material for Preparative Purifications

Kinetex Axia Packed Preparative HPLC Columns

- Core-shell performance in a preparative format
- Easy method scale-up from Kinetex analytical HPLC and UHPLC columns
- Reduce solvent consumption with faster purifications

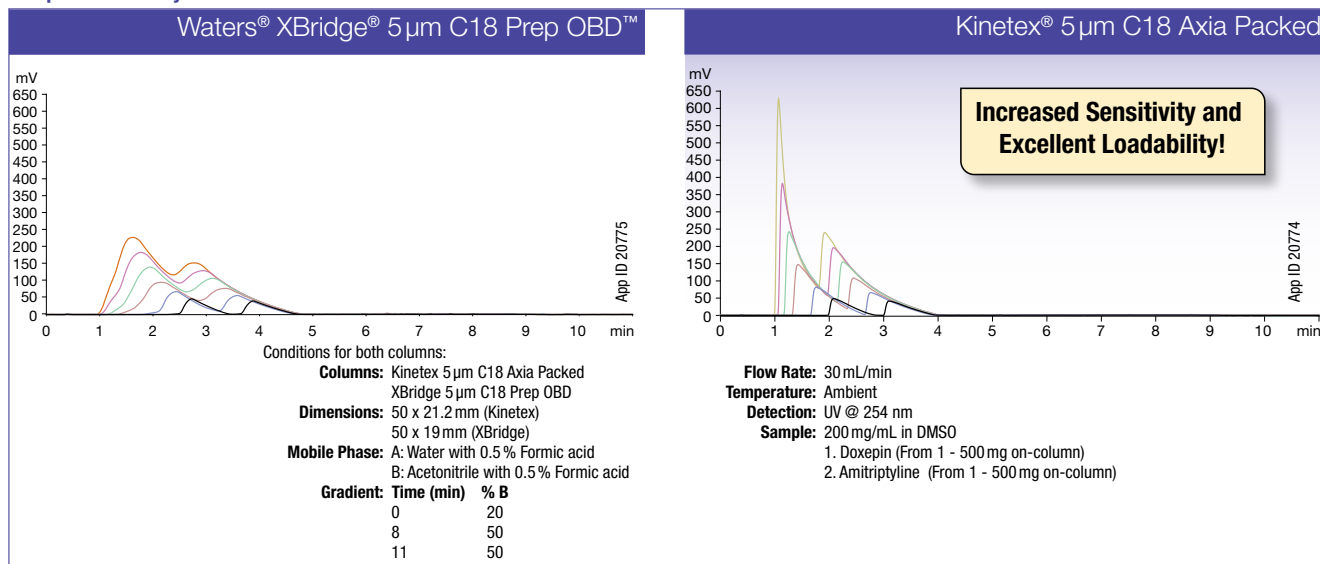
Axia columns packed with Kinetex 5 µm core-shell media provide higher efficiencies and loadability that is as good or better than columns packed with fully porous 5 µm media. Even under very challenging conditions, such as the purification of strong bases using a mobile phase containing formic acid (0.1%) as the modifier, the Axia packed Kinetex 5 µm media outperforms a fully porous Waters



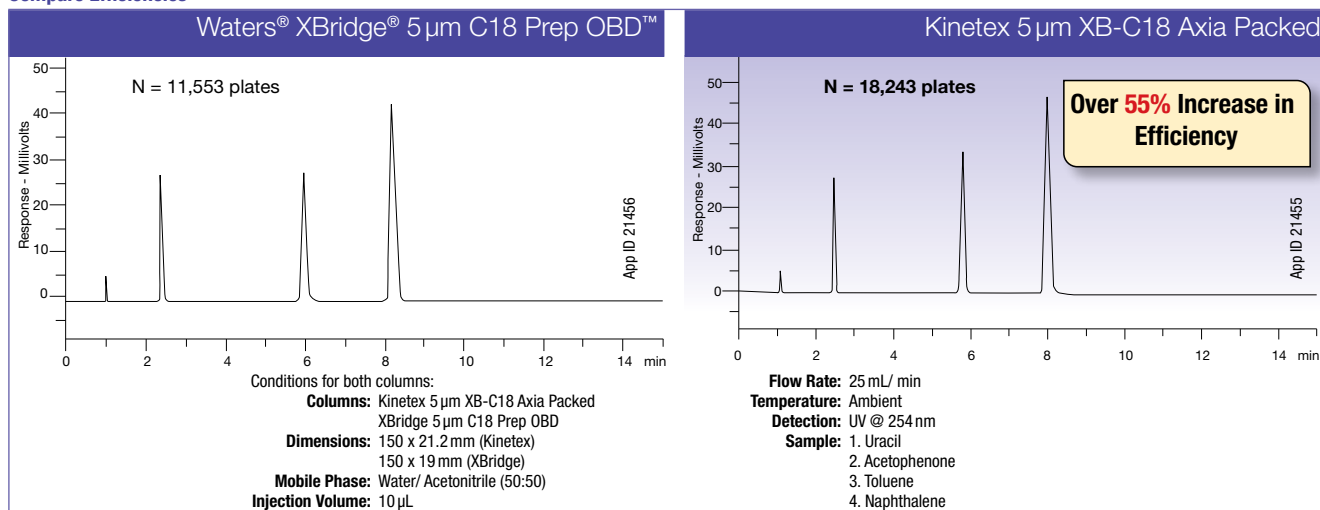
XBridge Prep column.

Combine this with the added flexibility that the entire Kinetex core-shell line (1.3µm, 1.7µm, 2.6µm, and 5µm) is fully scalable in retention and selectivity, makes transferring high performance HPLC/UHPLC methods to preparative and SFC applications, simple.

Compare Loadability



Compare Efficiencies



Comparative separations may not be representative of all applications.

Axia™ Packed Preparative Columns

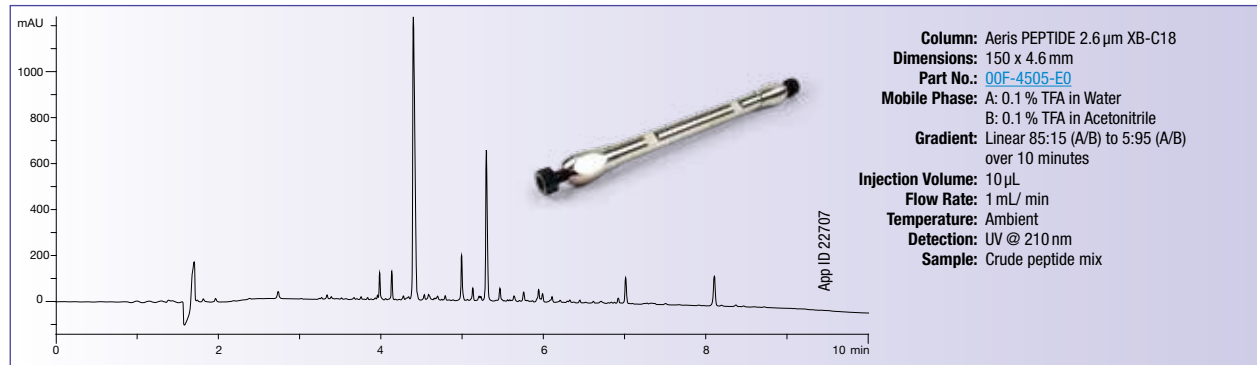
U.S. Patent No. 7, 674, 383

Develop, Purify, and Analyze Peptide Fractions with One Media

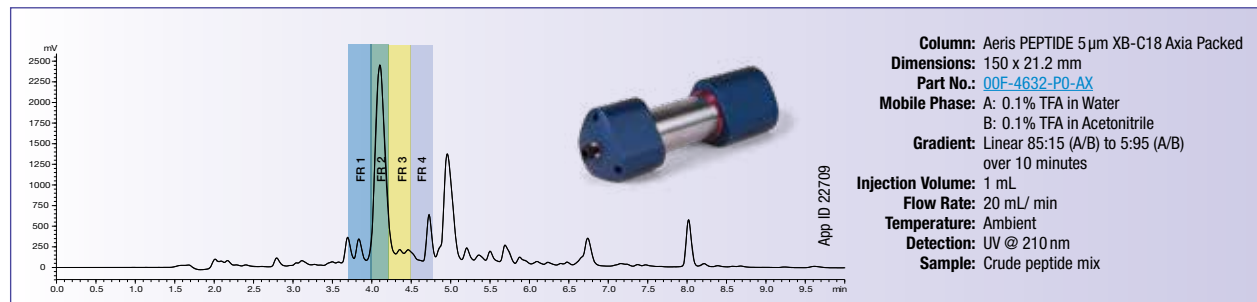
Aeris PEPTIDE is fully scalable in retention and selectivity with its 4 unique particle sizes (1.7 µm, 2.6 µm, 3.6 µm, and 5 µm) for easy transfer from HPLC and UHPLC methods to preparative applications.

Seamless Scalability from HPLC/UHPLC to PREP

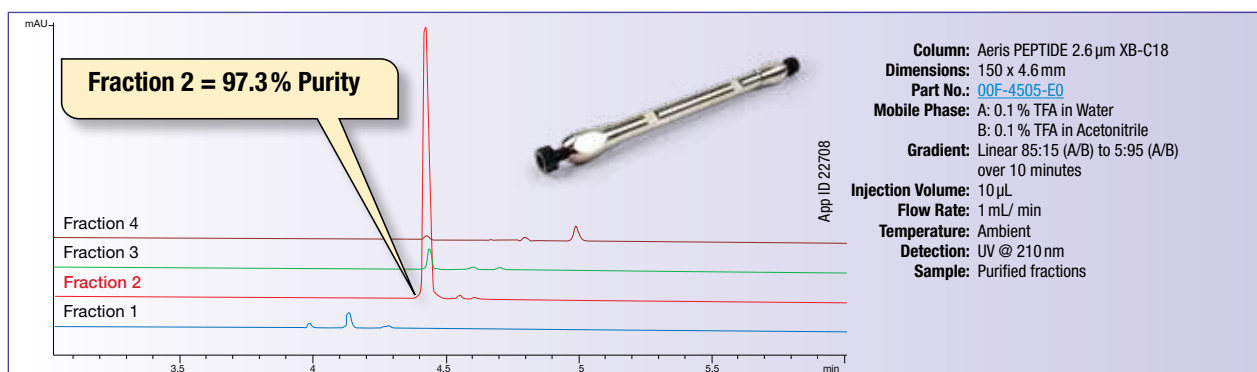
Analytical method — Aeris PEPTIDE 2.6 µm XB-C18



Preparative scale-up and fraction collection — Aeris PEPTIDE 5 µm XB-C18



Analytical fraction analysis — Aeris PEPTIDE 2.6 µm XB-C18



PREP COLUMNS & BULK MEDIA | AXIA

SecurityGuard™ PREP System

(Highly recommended for extending column lifetime)

Protect your Axia Packed column and prolong its lifetime with SecurityGuard, the advanced HPLC guard cartridge system.

- Get full protection with minimal impact on your chromatographic results.
- Contaminants are retained by an inexpensive, 15 x 21.2 or 15 x 30 mm ID disposable cartridge. See pp. 314-315. For Aeris and Kinetex Core-Shell SecurityGuard PREP cartridges, see p. 315.



For Aeris PEPTIDE 5 µm PREP, see p. 194

Ordering Information

SecurityGuard PREP System

Part No.	Description	Unit
AJ0-8223	SecurityGuard PREP HPLC Guard Cartridge Holder Kit, 21.2 mm ID, includes column coupler	ea
AJ0-8277	SecurityGuard PREP HPLC Guard Cartridge Holder Kit, 30.0 mm ID, includes column coupler	ea



Axia™ Packed Preparative Columns


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


Axia Packed Columns


Achiral Phases

Ordering Information

Aeris™			
Phase	Length	ID	Part No.
5 μm			
PEPTIDE XB-C18	150	21.2	00F-4632-PO-AX
	250	21.2	00G-4632-PO-AX
Kinetex®			
Phase	Length	ID	Part No.
5 μm			
XB-C18	50	21.2	00B-4605-PO-AX
	50	30	00B-4605-UO-AX
	100	21.2	00D-4605-PO-AX
	100	30	00D-4605-UO-AX
	150	21.2	00F-4605-PO-AX
	150	30	00F-4605-UO-AX
	250	21.2	00G-4605-PO-AX
	250	30	00G-4605-UO-AX
EVO C18	50	21.2	00B-4633-PO-AX
	50	30	00B-4633-UO-AX
	100	21.2	00D-4633-PO-AX
	100	30	00D-4633-UO-AX
	150	21.2	00F-4633-PO-AX
	150	30	00F-4633-UO-AX
	250	21.2	00G-4633-PO-AX
	250	30	00G-4633-UO-AX
Biphenyl	100	21.2	00D-4627-PO-AX
	100	30	00D-4627-UO-AX
	150	21.2	00F-4627-PO-AX
	150	30	00F-4627-UO-AX
	250	21.2	00G-4627-PO-AX
HILIC	100	21.2	00D-4606-PO-AX
	150	21.2	00F-4606-PO-AX
	250	21.2	00G-4606-PO-AX
C18	50	21.2	00B-4601-PO-AX
	50	30	00B-4601-UO-AX
	100	21.2	00D-4601-PO-AX
	100	30	00D-4601-UO-AX
	150	21.2	00F-4601-PO-AX
	150	30	00F-4601-UO-AX
	250	21.2	00G-4601-PO-AX
	250	30	00G-4601-UO-AX
C8	50	21.2	00B-4608-PO-AX
	100	21.2	00D-4608-PO-AX
	150	21.2	00F-4608-PO-AX
	150	30	00F-4608-UO-AX
	250	21.2	00G-4608-PO-AX
Phenyl-Hexyl	50	21.2	00B-4603-PO-AX
	100	21.2	00D-4603-PO-AX
	100	30	00D-4603-UO-AX
	150	21.2	00F-4603-PO-AX
	150	30	00F-4603-UO-AX
	250	21.2	00G-4603-PO-AX
	250	30	00G-4603-UO-AX
	250	30	00G-4603-UO-AX
F5	50	30	00B-4724-UO-AX
	100	30	00D-4724-UO-AX
	150	21.2	00F-4724-PO-AX
	150	30	00F-4724-UO-AX
	250	21.2	00G-4724-PO-AX

 Make your Axia columns last longer with SecurityGuard PREP Holders and Cartridges. See pp.311-315

 For additional phases and sizes not displayed, please visit the Phenomenex.com website's individual product pages or contact your Phenomenex technical consultant or local distributor.

 For Axia Reducing Adapter, see p. 393
For PREP Column In-Line Filter, see p.18
For SFC Information, see p.342

Jupiter®			
Phase	Length	ID	Part No.
4 μm			
Proteo	250	30	00G-4396-UO-AX
10 μm			
Proteo	100	21.2	00D-4397-PO-AX
	250	21.2	00G-4397-PO-AX
	250	30	00G-4397-UO-AX
C18 300 Å	250	30	00G-4055-UO-AX
C4 300 Å	250	21.2	00G-4168-PO-AX

Gemini®			
Phase	Length	ID	Part No.
5 μm			
NX-C18	50	21.2	00B-4454-PO-AX
	50	30	00B-4454-UO-AX
	75	30	00C-4454-UO-AX
	100	21.2	00D-4454-PO-AX
	100	30	00D-4454-UO-AX
	150	21.2	00F-4454-PO-AX
	150	30	00F-4454-UO-AX
	250	21.2	00G-4454-PO-AX
	250	30	00G-4454-UO-AX
	C18	50	21.2
50		30	00B-4435-UO-AX
100		21.2	00D-4435-PO-AX
100		30	00D-4435-UO-AX
150		21.2	00F-4435-PO-AX
C6-Phenyl	100	21.2	00D-4444-PO-AX
	150	21.2	00F-4444-PO-AX
	250	21.2	00G-4444-PO-AX
	250	30	00G-4444-PO-AX
	250	30	00G-4444-PO-AX

10 μm			
NX-C18	50	21.2	00B-4455-PO-AX
	100	21.2	00D-4455-PO-AX
	100	30	00D-4455-UO-AX
	100	50	00D-4455-V0-AX
	150	21.2	00F-4455-PO-AX
	150	30	00F-4455-UO-AX
	150	50	00F-4455-V0-AX
	250	21.2	00G-4455-PO-AX
	250	30	00G-4455-UO-AX
	250	50	00G-4455-V0-AX
C18	100	21.2	00D-4436-PO-AX
	100	30	00D-4436-UO-AX
	150	21.2	00F-4436-PO-AX
	150	30	00F-4436-UO-AX
	150	50	00F-4436-V0-AX
	250	21.2	00G-4436-PO-AX
	250	30	00G-4436-UO-AX
	250	50	00G-4436-V0-AX
	250	50	00G-4436-V0-AX
	250	50	00G-4436-V0-AX
C8(3)	250	21.2	00G-4763-PO-AX
	250	30	00G-4763-UO-AX
	250	50	00G-4763-V0-AX

Clarity®			
Phase	Length	ID	Part No.
5 μm			
Oligo-RP™	100	21.2	00D-4442-PO-AX
	100	30	00D-4442-UO-AX
	250	21.2	00G-4442-PO-AX
	250	21.2	00G-4442-PO-AX
Oligo-XT	100	21.2	00D-4745-PO-AX
	150	21.2	00F-4745-PO-AX
	150	30	00F-4745-UO-AX
	250	21.2	00G-4745-PO-AX
10 μm			
Oligo-RP	150	21.2	00F-4445-PO-AX
	150	30	00F-4445-UO-AX
	250	21.2	00G-4445-PO-AX
Oligo-WAX™	250	21.2	00G-4451-PO-AX

continued

Axia™ Packed Preparative Columns

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

Axia Packed Columns (cont'd)

Achiral Phases (cont'd)

Ordering Information (cont'd)

Luna®					
Phase	Length	ID	Part No.		
5 µm					
C18(2)	50	21.2	00B-4252-P0-AX		
	50	30	00B-4252-U0-AX		
	75	30	00C-4252-U0-AX		
	100	21.2	00D-4252-P0-AX		
	100	30	00D-4252-U0-AX		
	150	21.2	00F-4252-P0-AX		
	150	30	00F-4252-U0-AX		
	250	21.2	00G-4252-P0-AX		
	250	30	00G-4252-U0-AX		
	C8(2)	75	30	00C-4249-U0-AX	
100		30	00D-4249-U0-AX		
150		21.2	00F-4249-P0-AX		
250		21.2	00G-4249-P0-AX		
CN	250	21.2	00G-4255-P0-AX		
Phenyl-Hexyl	150	21.2	00F-4257-P0-AX		
NH₂	150	21.2	00F-4378-P0-AX		
	250	21.2	00G-4378-P0-AX		
HILIC	100	21.2	00D-4450-P0-AX		
	150	21.2	00F-4450-P0-AX		
	250	21.2	00G-4450-P0-AX		
	250	30	00G-4450-U0-AX		
PFP(2)	100	21.2	00D-4448-P0-AX		
	100	30	00D-4448-U0-AX		
	150	21.2	00F-4448-P0-AX		
	250	21.2	00G-4448-P0-AX		
Silica (2)	100	21.2	00D-4274-P0-AX		
	150	21.2	00F-4274-P0-AX		
	250	21.2	00G-4274-P0-AX		
10 µm	C18(2)	50	21.2	00B-4253-P0-AX	
		100	21.2	00D-4253-P0-AX	
		150	21.2	00F-4253-P0-AX	
		150	30	00F-4253-U0-AX	
		250	21.2	00G-4253-P0-AX	
		250	30	00G-4253-U0-AX	
		250	50	00G-4253-V0-AX	
		C8(2)	250	21.2	00G-4250-P0-AX
			250	50	00G-4250-V0-AX
		Silica (2)	250	21.2	00G-4091-P0-AX
15 µm					
C18(2)	250	50	00G-4273-V0-AX		
	250	50	00G-4272-V0-AX		
Luna Omega					
Phase	Length	ID	Part No.		
5 µm					
Polar C18	100	21.2	00D-4754-P0-AX		
	100	30	00D-4754-U0-AX		
	150	21.2	00F-4754-P0-AX		
	150	30	00F-4754-U0-AX		
	250	21.2	00G-4754-P0-AX		
	250	30	00G-4754-U0-AX		
	250	50	00G-4754-V0-AX		
PS C18	50	21.2	00B-4753-P0-AX		
	50	30	00B-4753-U0-AX		
	100	21.2	00D-4753-P0-AX		
	100	30	00D-4753-U0-AX		
	150	21.2	00F-4753-P0-AX		
	150	30	00F-4753-U0-AX		
	250	21.2	00G-4753-P0-AX		
	250	30	00G-4753-U0-AX		
	250	50	00G-4753-V0-AX		

Synergi™				
Phase	Length	ID	Part No.	
4 µm				
Fusion-RP	100	21.2	00D-4424-P0-AX	
	150	21.2	00F-4424-P0-AX	
	250	21.2	00G-4424-P0-AX	
Hydro-RP	50	21.2	00B-4375-P0-AX	
	150	21.2	00F-4375-P0-AX	
	250	21.2	00G-4375-P0-AX	
Max-RP	150	21.2	00F-4337-P0-AX	
	250	21.2	00G-4337-P0-AX	
Polar-RP	50	21.2	00B-4336-P0-AX	
	100	21.2	00D-4336-P0-AX	
	100	30	00D-4336-U0-AX	
	150	21.2	00F-4336-P0-AX	
	150	30	00F-4336-U0-AX	
10 µm	Fusion-RP	150	21.2	00F-4425-P0-AX
		250	21.2	00G-4425-P0-AX
Hydro-RP	250	21.2	00G-4376-P0-AX	
Polar-RP	250	21.2	00G-4351-P0-AX	

Chiral Phases

Lux®			
Phase	Length	ID	Part No.
5 µm			
Amylose-1	150	21.2	00F-4732-P0-AX
	250	21.2	00G-4732-P0-AX
	250	30	00G-4732-U0-AX
	250	50	00G-4732-V0-AX
Amylose-2	150	21.2	00F-4472-P0-AX
	250	21.2	00G-4472-P0-AX
	250	30	00G-4472-U0-AX
Cellulose-1	150	21.2	00F-4459-P0-AX
	250	21.2	00G-4459-P0-AX
	250	30	00G-4459-U0-AX
	250	50	00G-4459-V0-AX
Cellulose-2	150	21.2	00F-4457-P0-AX
	250	21.2	00G-4457-P0-AX
	250	30	00G-4457-U0-AX
	250	50	00G-4457-V0-AX
Cellulose-3	150	21.2	00F-4493-P0-AX
	250	21.2	00G-4493-P0-AX
	250	30	00G-4493-U0-AX
	250	50	00G-4493-V0-AX
	250	50	00G-4493-V0-AX
Cellulose-4	150	21.2	00F-4491-P0-AX
	250	21.2	00G-4491-P0-AX
	250	30	00G-4491-U0-AX
	250	50	00G-4491-V0-AX
	250	50	00G-4491-V0-AX
i-Cellulose-5	150	21.2	00F-4756-P0-AX
	250	21.2	00G-4756-P0-AX
	250	30	00G-4756-U0-AX
	250	50	00G-4756-V0-AX
	250	50	00G-4756-V0-AX
i-Amylose-1	150	21.2	00F-4762-P0-AX
	250	21.2	00G-4762-P0-AX
	250	30	00G-4762-U0-AX
	250	50	00G-4762-V0-AX
	250	50	00G-4762-V0-AX
i-Amylose-3	150	21.2	00F-4779-P0-AX
	250	21.2	00G-4779-P0-AX
	250	30	00G-4779-U0-AX
	250	50	00G-4779-V0-AX
	250	50	00G-4779-V0-AX



Process Chromatography

Bulk HPLC Media

- Grams to Multi-Kilogram, Phenomenex can deliver
- Over 20 different media available
- Long lifetime and excellent reproducibility

Quick, Direct Scale-up from Analytical Methods

Scaling up is easier when using an HPLC media that provides near identical performance across all particle sizes and with increases in column diameter. Any mobile phase conditions developed on a Luna or Jupiter analytical column can be easily transferred to a 10 μm or 15 μm preparative column with equivalent resolution, selectivity, and proportional mass loading. Lux analytical columns also easily scale to 20 μm preparative columns.

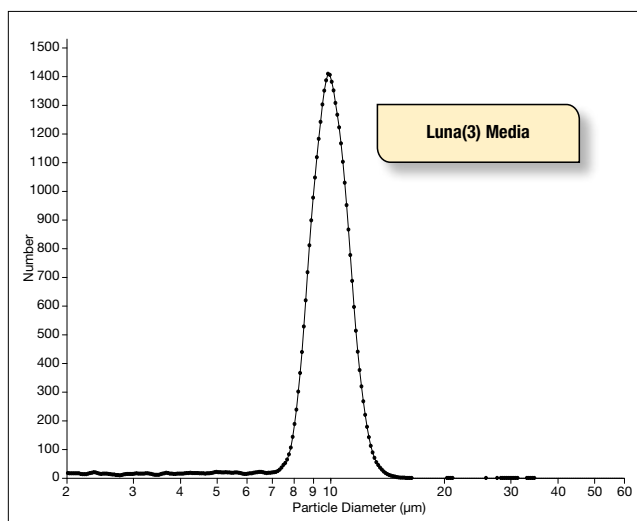
Mechanically Strong Media

- Media free of crushed or cracked silica and silica fines
- Backpressures that remain stable
- Consistent particle size distribution so performance is maintained
- Longer column lifetimes (frits stay unclogged)

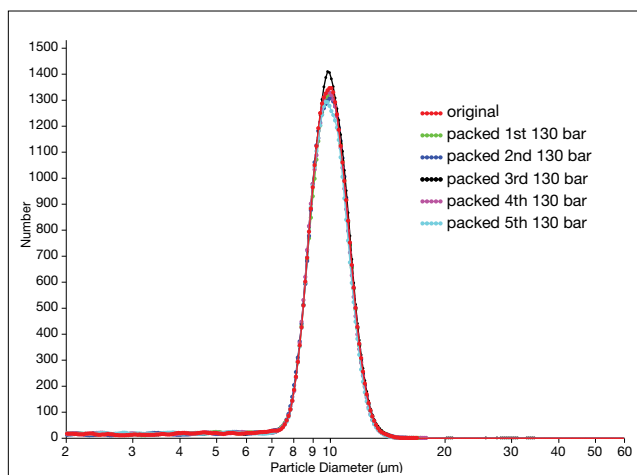
Withstand Multiple Repacking in Dynamic Axial Compression (DAC) Systems

Dynamic Axial Compression (DAC) systems apply high mechanical stress on the packing media. This, along with high flow rates and backpressures can crack or shear low mechanical strength silica particles, creating silica fines, which will rapidly degrade column efficiency and clog frits. Luna, Jupiter, and Lux media provide exceptional strength over multiple DAC packings without sacrificing performance as well as easily withstanding high mechanical stress.

Lower Backpressure with Narrower Particle Size Distribution



Mechanical Stability Demonstrated by Repeated Packing



Overlay of particle size distributions of Luna C18(3) repeatedly packed at 130 bars in a 5 cm ID DAC system



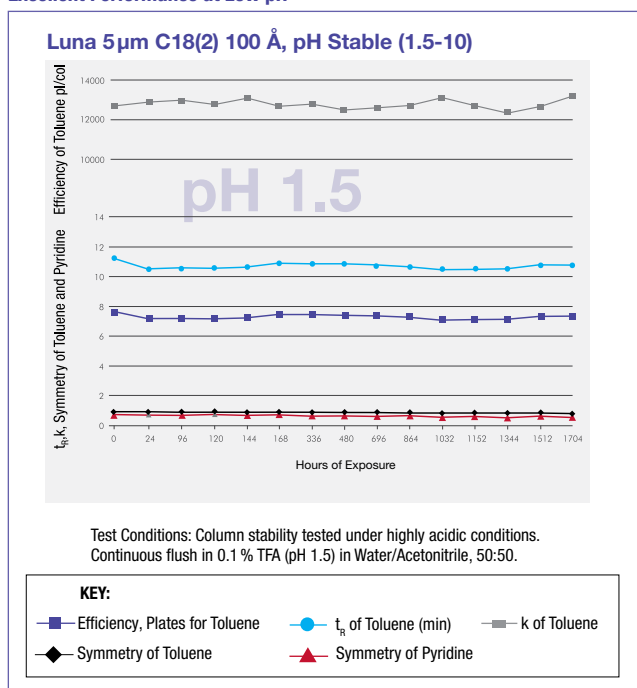
Process Chromatography

Chemically Stable Media

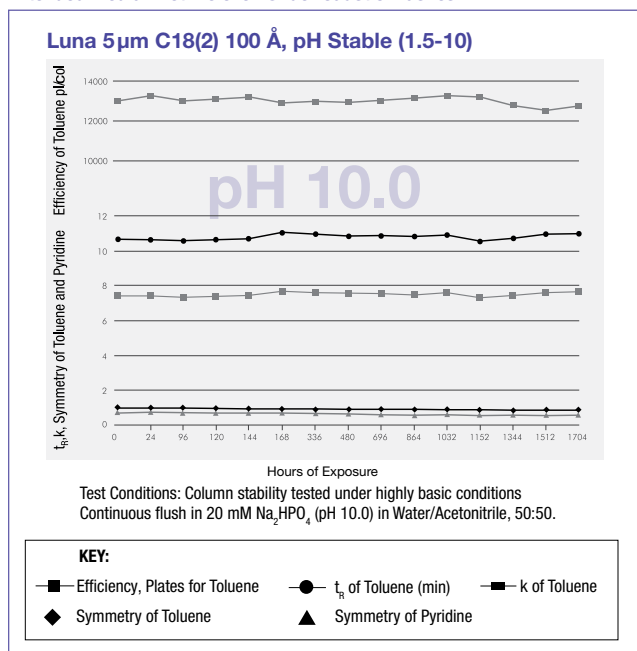
Chemical stability at pH levels outside the normal constraints of 2-7 is a critical factor in today's process environments for several reasons:

- Allows greater loading capacity
- Allows optimization of sample solubility
- pH adjustment to optimize recovery of API
- Clean-in-Place (CIP) processes by means of a caustic wash

Excellent Performance at Low pH



Extended Media Lifetime even Under Caustic Washes



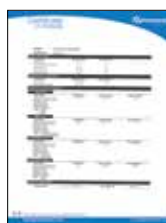
Controlled Manufacturing Process

We engineer and manufacture all of our media with your needs as a guideline. Our state-of-the-art facility gives us the capability to provide some of the most consistent media available on the market. With very high loadability, excellent mechanical strength, extended chemical stability, and batch-to-batch reproducibility, it is no wonder why more and more people turn to Phenomenex media every day.

Certificates

The development, production, and marketing of Phenomenex Bulk Media follow ISO 9001 guidelines.

Product Quality



ISO 9001

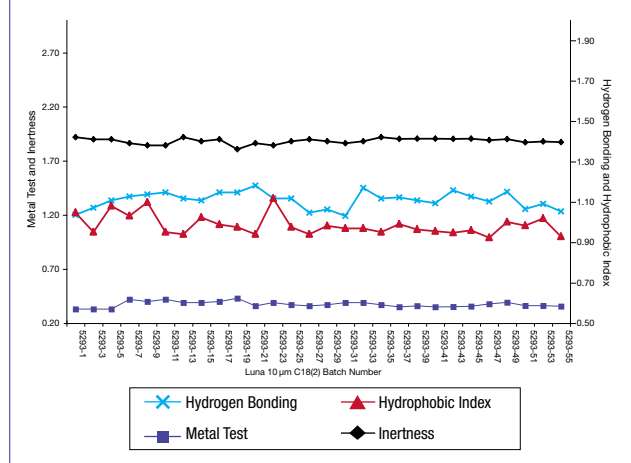


BSE/TSE Certificate



Batch-to-Batch Reproducibility

With over 20 years of proven reproducibility, you can be confident in your choice to develop methods on Luna. The following graph shows consistency in both inertness and hydrophobicity across 40 batches of Luna 10 µm C18(2).



Exceptional Chemical Stability for Low Leachates

The dense bonded phase density of Luna and Synergi provide revolutionary pH 1.5-10 stability[†], with Gemini offering an extended pH range of 1.0-12.0. The wide pH range of these media provides flexibility in method development allowing for improvements in resolution and greater mass loading of basic compounds ($pK_a > 9$) at high pH.

[†]Please see Sorbent Characteristics chart pp. 417-418 for exact pH limits of each phase.

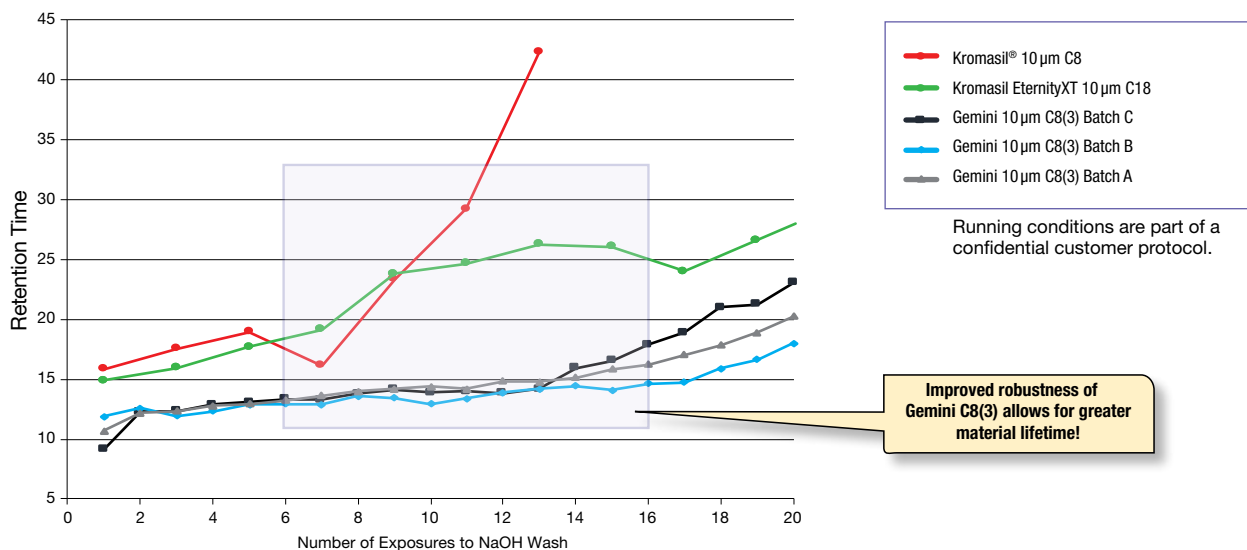
Process Chromatography

Gemini C8(3)

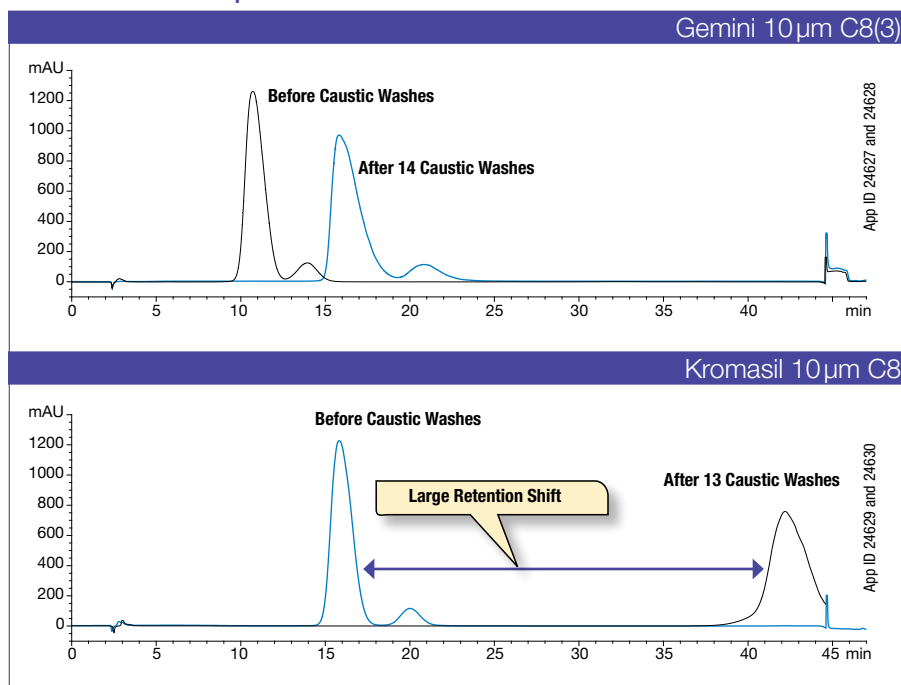
The Material Developed for High pH Insulin Purification

Many products can separate human insulin and its degradant, while few can withstand high pH caustic washes for aggregate removal. Now, there is a clear media choice. Gemini® C8(3) provides the needed separation, the needed low/high pH robustness, and the overall consistency in terms of efficiency and retention cycle to cycle to cycle. You don't have to choose between consistent performance or robustness; Gemini C8(3) was developed to give you the best of both worlds.

Insulin Retention vs. Exposures to NaOH Wash



Insulin Retention Comparison



Comparative separations may not be representative of all applications.

Process Chromatography

PREP LC Columns and Bulk HPLC Media

- Maintain or increase yield with less media
- Dramatically reduce cost of PREP/Process-LC purifications
- Withstand multiple axial compression packings with high mechanical strength media

Maintain or Increase Yield with Less Media

Higher silica surface area equals greater mass loading. With 400 m²/g surface area, Luna has one of the highest surface areas among popular PREP LC media. Even greater mass loading is possible with the 475 m²/g surface area of Synergi 80 Å media. Both Synergi and Luna are unique in that they offer high mass loading with low-density, rugged silica; requiring less media to pack a given volume. Thus while less media is needed to pack a given dimension compared to other common prep sorbents, mass loading remains high with peak resolution and purity maintained. Especially for early eluting target compounds, Luna has been shown to provide greater mass loading compared to some common prep media. This allows for increased loading on less media, and more yield per run.

Choose the Correct Media for your Application

Bonded Phase	Sorbent	Pore Size (Å)	Surface Area (m ² /g)	pH Stability	Particle Size (µm) ("bulk" indicates bulk media available)	Density	Applications
Achiral Media							
Si (Silica)	Luna Silica(3)	100	400	2.0 – 7.5	10- <i>PREP</i> (bulk)	0.47	Small Organic Molecules, Steroids, Nutraceuticals, Fat Soluble Vitamins, Tocopherols
	Luna Silica(2)	100	400	2.0 – 7.5	10 µm (bulk) 10- <i>PREP</i> (bulk) 15 µm (bulk) 20 µm (bulk)	0.45	Small Organic Molecules, Steroids, Nutraceuticals, Fat Soluble Vitamins, Tocopherols
C18	Luna C18(3)	100	400	1.5 – 10	10- <i>PREP</i> (bulk)	0.60	Pharmaceuticals, Peptides, Nutraceuticals, Agrochemical, Vitamins, Basic Compounds, General Reversed Phase Applications
	Luna C18(2)	100	400	1.5 – 10	10 µm (bulk) 10- <i>PREP</i> (bulk) 15 µm (bulk)	0.58	Pharmaceuticals, Peptides, Nutraceuticals, Agrochemical, Vitamins, Basic Compounds, General Reversed Phase Applications
	Synergi Hydro-RP C18 with Polar Endcapping	80	475	1.5 – 7.5	10 µm (bulk)	0.55	Very Polar Compounds, Pharmaceuticals, Vitamins, Antibiotics
	Jupiter 300 C18	300	170	1.5 – 10	10 µm (bulk), 15 µm (bulk)	0.44	Hydrophilic Proteins, Oligonucleotides (>30 mer)
C12	Synergi Max-RP	80	475	1.5 – 10	10 µm (bulk)	0.55	Pharmaceuticals, Nutraceuticals, Agrochemical, Vitamins, Amino Acids, Basic Compounds, General Reversed Phase Applications
C8	Luna C8(3)	100	400	1.5 – 10	10- <i>PREP</i> (bulk)	0.58	Pharmaceuticals, Peptides, Estrogens, Basic Compounds, General Reversed Phase Applications
	Luna C8(2)	100	400	1.5 – 10	10 µm (bulk) 10- <i>PREP</i> (bulk) 15 µm (bulk)	0.56	Pharmaceuticals, Peptides, Estrogens, Basic Compounds, General Reversed Phase Applications
	Gemini C8(3)	100	400	1.0 – 12.0	10 µm (bulk)	0.60	Small Molecules, Peptides, Proteins, Oligonucleotides
C4	Luna C4(2)	100	400	1.5 – 10	10- <i>PREP</i> (bulk)	0.54	Hydrophobic Compounds, Peptides, Small Proteins
	Jupiter 300 C4	300	170	1.5 – 10	10 µm (bulk), 15 µm (bulk)	0.38	Hydrophobic Proteins
Phenyl	Luna Phenyl-Hexyl	100	440	1.5 – 10	10 µm (bulk) 10- <i>PREP</i> (bulk) 15 µm (bulk)	0.58	Polar and Aromatic Compounds, Peptides, Antibiotics, Lipids, Phenols, Sweeteners
	Luna Polar-RP	100	400	1.5 – 7.0	10- <i>PREP</i> (bulk)	0.55	Polar and Aromatic Compounds, Hydrophilic Peptides, Antibiotics, Phenols, Sweeteners
	Synergi Polar-RP (Ether-Linked Phenyl)	80	475	1.5 – 7.0	10 µm (bulk)	0.55	Polar and Aromatic Compounds, Hydrophilic Peptides, Antibiotics, Phenols, Sweeteners
CN (Cyano)	Luna CN	100	400	1.5 – 7.0	10 µm (bulk)	0.55	Polar Compounds, Pharmaceuticals, Hydrophilic Peptides, Esters, Steroids, Phthalates, Compounds with COOH, CO, NH ₂ , NHR, or NR ₂ groups
NH ₂ (Amino)	Luna NH ₂	100	400	1.5 – 11	10 µm (bulk)	0.57	Sugars, Sugar Alcohols, Anionic Compounds, Steroids, Vitamins, Nucleosides, Oligonucleotides
Chiral Media							
cellulose tris(3,5-dimethylphenyl carbamate)	Lux Cellulose-1	1000	—	2 – 9	10 µm	0.62	Enhanced enantioselectivity for aromatic, conjugated and other chiral compounds
cellulose tris(3-chloro-4-methyl phenylcarbamate)	Lux Cellulose-2	1000	—	2 – 9	10 µm	0.62	Enhanced enantioselectivity for aromatic, conjugated and other chiral compounds
cellulose tris(4-methylbenzoate)	Lux Cellulose-3	1000	—	2 – 9	10 µm	0.62	Enhanced enantioselectivity for aromatic, conjugated and other chiral compounds
cellulose tris(4-chloro-3-methyl phenylcarbamate)	Lux Cellulose-4	1000	—	2 – 9	10 µm	0.62	Enhanced enantioselectivity for aromatic, conjugated and other chiral compounds



Process Chromatography

Scout Columns

Achiral Columns

Ordering Information

Luna (100 Å)		
Phases	250 x 4.6 mm	250 x 10 mm
10 µm-<i>PREP</i>		
C18(3)	00G-4616-E0	00G-4616-N0
C18(2)	00G-4324-E0	—
C8(3)	00G-4623-E0	00G-4623-N0
C8(2)	00G-4323-E0	00G-4323-N0
C4(2)	00G-4460-E0	00G-4460-N0
Phenyl-Hexyl	00G-4325-E0	00G-4325-N0
Polar-RP	00G-4757-E0	00G-4757-N0
Silica(3)	00G-4617-E0	00G-4617-N0
Silica(2)	00G-4322-E0	00G-4322-N0
10 µm		
CN	00G-4300-E0	—
NH ₂	00G-4379-E0	00G-4379-N0
15 µm		
C18(2)	00G-4273-E0	00G-4273-N0
C8(2)	00G-4272-E0	00G-4272-N0
Phenyl-Hexyl	00G-4286-E0	00G-4286-N0
Silica(2)	00G-4271-E0	—
20 µm		
Silica(2)	00G-4437-E0	—

Jupiter (300 Å)		
Phases	250 x 4.6 mm	250 x 10 mm
15 µm		
300 Å C18	00G-4057-E0	00G-4057-N0
300 Å C4	00G-4169-E0	00G-4169-N0

Gemini (110 Å)		
Phases	250 x 4.6 mm	250 x 10 mm
10 µm		
C8(3)	00G-4763-E0	00G-4763-N0

Chiral Columns

Ordering Information

Lux (1000 Å)		
Phases	250 x 4.6 mm	250 x 10 mm
10 µm		
Cellulose-1	00G-4501-E0	00G-4501-N0
Cellulose-2	00G-4502-E0	00G-4502-N0
Cellulose-3	00G-4624-E0	—
Cellulose-4	00G-4625-E0	—
20 µm		
Cellulose-1	00G-4473-E0	00G-4473-N0
Cellulose-2	00G-4464-E0	00G-4464-N0
Cellulose-3	00G-4504-E0	00G-4504-N0
Cellulose-4	00G-4503-E0	00G-4503-N0



Additional scout columns available. Contact us for 3µm, 4µm, 5µm, and 10µm media scout columns.



Process Chromatography

Bulk HPLC Media


Achiral Media

Ordering Information

Luna (100 Å)				
Phases	100 g	1 kg	5 kg	10 kg
10 µm-<i>PREP</i>				
C18(3)	04G-4616	04K-4616	04L-4616	04M-4616
C18(2)	04G-4324	04K-4324	04L-4324	04M-4324
C8(3)	04G-4623	04K-4623	04L-4623	04M-4623
C8(2)	04G-4323	04K-4323	04L-4323	04M-4323
C4(2)	04G-4460	04K-4460	04L-4460	04M-4460
Phenyl-Hexyl	04G-4325	04K-4325	04L-4325	04M-4325
Polar-RP	04G-4757	04K-4757	04L-4757	04M-4757
Silica(3)	04G-4617	04K-4617	04L-4617	04M-4617
Silica(2)	04G-4322	04K-4322	04L-4322	04M-4322
10 µm				
CN	04G-4300	04K-4300	04L-4300	—
NH ₂	04G-4379	04K-4379	—	—
15 µm				
C18(2)	04G-4273	04K-4273	04L-4273	04M-4273
C8(2)	04G-4272	04K-4272	04L-4272	04M-4272
Phenyl-Hexyl	04G-4286	04K-4286	04L-4286	04M-4286
Silica(2)	04G-4271	04K-4271	04L-4271	04M-4271
20 µm				
Silica(2)	04G-4437	04K-4437	—	—

Jupiter (300 Å)				
Phases	100 g	1 kg	5 kg	10 kg
15 µm				
300 Å C18	04G-4057	04K-4057	04L-4057	04M-4057
300 Å C4	04G-4169	04K-4169	04L-4169	04M-4169

Gemini (110 Å)				
Phases	100 g	1 kg	5 kg	10 kg
10 µm				
C8(3)	04G-4763	04K-4763	04L-4763	04M-4763


 For Sepra bulk sorbents, see p.369



Chiral Media

Ordering Information

Lux (1000 Å)			
Phases	10 g	100 g	1 kg
10 µm			
Cellulose-1	04D-4501	04G-4501	04K-4501
Cellulose-2	04D-4502	04G-4502	04K-4502
Cellulose-3	04D-4624	04G-4624	04K-4624
Cellulose-4	04D-4625	04G-4625	04K-4625

 Contact your Phenomenex technical consultant or local distributor for additional bulk packings and quantities not listed.

Process Chromatography

Sepra™ Bulk Sorbents

- Provides reproducible recoveries from capture to purification
- Removes contaminants and eliminates matrix effects
- Offers controlled selectivity for target analytes
- Results in high-throughput sample purification

Phenomenex offers a wide mix of bulk media including an array of large particle media for today's chemists who need effective capture and concentrating resins.

Sepra media offers purification of proteins, peptides, nucleic acids, antibodies, tryptic digests, nucleotides, viruses, and small molecular weight pharmaceuticals in a low pressure environment. It is an excellent economical alternative to high pressure RPC while still offering high resolution and loading capacity.



Capture and Concentrate Resins

Media Base Material	Brand	Phase	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Stability	Ordering Information		
								Sepra Bulk Sorbents		
								Phase	100 g	1 kg
Silica	Sepra	C18-E	50	65	500	17	2-9	C18-E	04G-4348	04K-4348
		C18-T	50	135	300	15	2-9	C18-T	04G-4405	04K-4405
		C8	50	65	500	10	2-9	C8	04G-4406	—
		Phenyl	50	65	500	10	2-9	Phenyl	04G-4407	—
		CN	50	65	500	10	2-9	CN	04G-4409	—
		NH ₂	50	65	500	5	2-9	NH ₂	04G-4408	04K-4408
		Florisil®	170 (60/100 mesh)	80	300	0	2-9	Florisil®	04G-4411	04K-4411
		SCX	50	65	500	9	2-9	SCX	04G-4413	04K-4413
		SAX	50	65	500	6	2-9	SAX	04G-4414	04K-4414
		WCX	55	70	500	8	2-9	WCX	04G-S027	—
		Silica	50	65	500	0	2-9	Silica	04G-4410	04K-4410
		EPH	200	70	Proprietary	0	2-7.5	EPH	04G-4508	—
Small Pore Polymer	Sepra ZT	ZT	30	85	800	—	1-14	ZT	04G-4426	—
		ZT-SCX	30	85	800	—	1-14	ZT-SCX	04G-4466	—
		ZT-WCX	30	85	800	—	1-14	ZT-WCX	04G-4478	—
		ZT-SAX	30	85	800	—	1-14	ZT-SAX	04G-4485	—
		ZT-WAX	30	85	800	—	1-14	ZT-WAX	04G-4463	—
Large Pore Polymer	Sepra ZTL	ZTL	115	330	500	—	1-14	ZTL	04G-4470	—
		ZTL-SCX	115	330	500	—	1-14	ZTL-SCX	04G-4467	04K-4467
		ZTL-WCX	115	330	500	—	1-14	ZTL-WCX	Inquire	Inquire
		ZTL-SAX	115	330	500	—	1-14	ZTL-SAX	Inquire	Inquire
		ZTL-WAX	115	330	500	—	1-14	ZTL-WAX	04G-4494	—
Styrenedivinylbenzene Polymer	Sepra SDB-L	SDB-L	95	255	500	—	1-14	SDB-L	04G-4412	04K-4412



Interested in MSPD for your analysis? Please contact us for technique and accessory information.

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