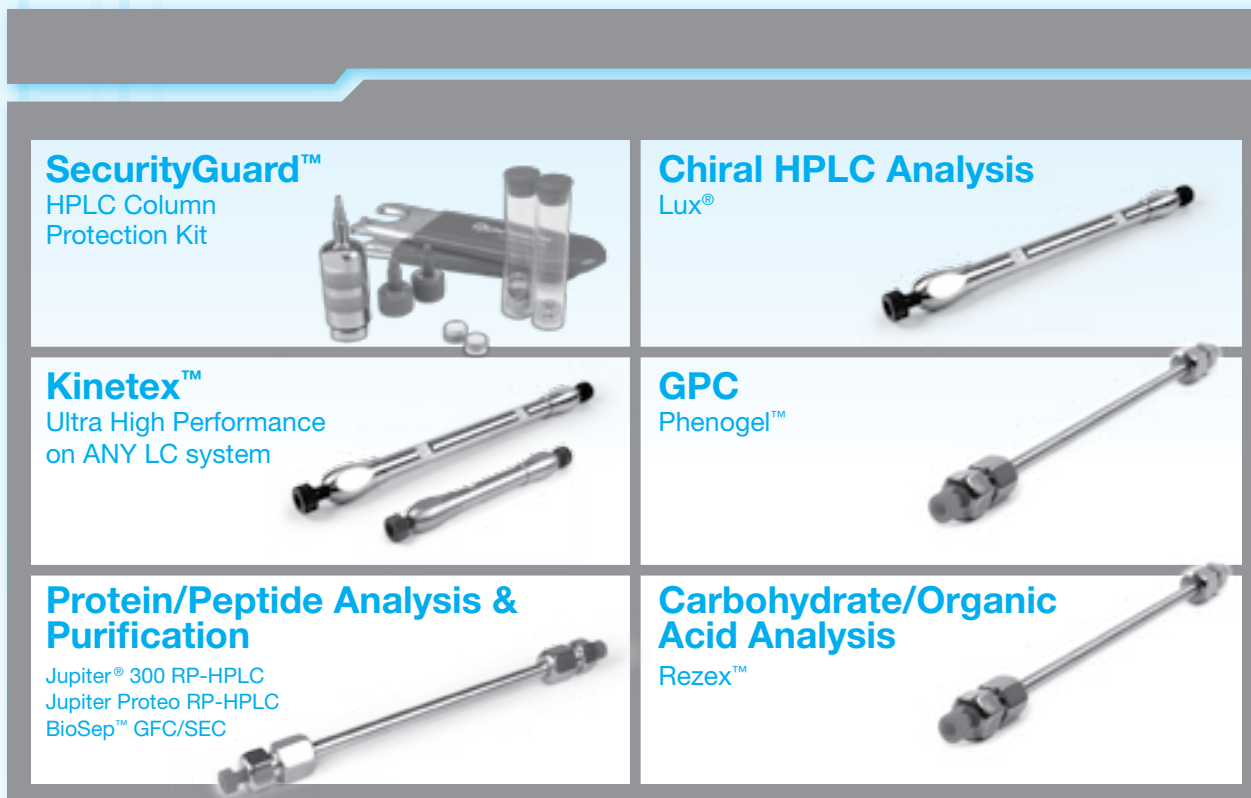


HPLC Columns



⦿ **HPLC** p. 23
Column Selection

⦿ **SecurityGuard** p. 24-25
HPLC Column Protection

⦿ **Kinetex** p. 26-35
Ultra High Performance

⦿ **Gemini®** p. 36-37
pH Stable 1-12

⦿ **Synergi™** p. 38-39
Full Range Selectivity

⦿ **Luna®** p. 40-41
One of the World's
Leading HPLC Columns

⦿ **Lux** p. 42-44
HPLC Chiral Analysis

⦿ **BioSep** p. 45-47
Size Exclusion (GFC) for
Proteins/Peptides

⦿ **Jupiter** p. 48-51
RP-HPLC for
Protein/Peptide Analysis

⦿ **Rezex** p. 52-54
Carbohydrate and
Organic Acid Analysis

⦿ **Phenogel** p. 55-56
Size Exclusion (GPC)

⦿ **AXIA™** p. 57-60
Preparative HPLC

HPLC Column Selection

Sample MW	Sample Solubility	Separation Mode	Our Recommended Column	Page				
MW < 5000	Organic-Soluble	Hexane-Soluble	Normal Phase Adsorption	Kinetex HILIC _____ 26 Luna Silica(2) _____ 40 Onyx Silica _____ *				
			Normal Phase Bonded	Luna CN, NH ₂ , HILIC _____ 40				
				Methanol/Methanol/H ₂ O Soluble	Reversed Phase Bonded	Kinetex C18, XB-C18, C8 _____ 26 Synergi Max-RP, Fusion-RP _____ 38 Luna C8(2), C18(2) _____ 40 Gemini C18, Gemini-NX C18 _____ 36 Lux _____ 42		
		Chiral	Lux _____ 42					
			Gel Permeation GPC		Phenogel 50 Å, 100 Å _____ 55 Shodex GPC _____ *			
		Aqueous-Soluble	Non ionic	Reversed Phase	Kinetex C18, XB-C18, C8, PFP _____ 26 Synergi Polar-RP, Hydro-RP _____ 38 Luna C8(2), C18(2), Luna PFP(2) _____ 40* Gemini C18, Gemini-NX C18 _____ 36 Onyx C8, C18 _____ *			
	Chiral HILIC			Lux _____ 42 Luna HILIC _____ 40				
				Ionic	Reversed Phase Ion Pairing/Suppression	Kinetex C18, XB-C18, C8, HILIC _____ 26 Synergi Max-RP, Hydro-RP _____ 38 Luna C8(2), C18(2) _____ 40 Gemini C18, Gemini-NX C18 _____ 36 Onyx C8, C18 _____ *		
	Ion-Exchange		Luna SCX, NH ₂ _____ 40 PhenoSphere SAX _____ *					
			HILIC Chiral		Kinetex HILIC _____ 26 Luna HILIC _____ 40 Lux _____ 42 Chirex _____ *			
	Peptides			Reversed Phase	Jupiter Proteo _____ 48 PolymerX RP-1 _____ * Gemini-NX C18 _____ 36 Kinetex C18, XB-C18 _____ 26			
			MW > 5000		Organic-Soluble	Gel Permeation Chromatography (GPC)	Unknown MW Range	Phenogel Linear (2) _____ 55 Shodex GPC _____ *
							Known MW Range	Specific Pore: Phenogel _____ 55 Shodex GPC _____ *
	Aqueous-Soluble			Gel Filtration Aqueous GFC/SEC	pH 2-7.5	BioSep-SEC-S Series _____ 45 Shodex OHPak _____ *		
		pH > 7.5				PolySep-GFC-P _____ *		
Ion-Exchange		Cation-Exchange			Shodex IEC CM-825 _____ *			
		Anion-Exchange		Shodex IEC DEAE _____ * Clarity Oligo-WAX _____ *				
Reversed Phase		pH 2-10		Jupiter 300 C4, C5, C18 _____ 48				
				pH > 10	PolymerX RP-1 _____ * Hamilton PRP-3 _____ *			
Hydrophobic Interaction (HIC)		Shodex HIC _____ *						
Affinity/Bioaffinity		Shodex AFpak _____ *						

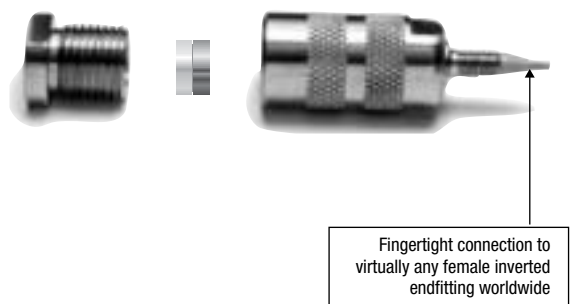
*Visit www.phenomenex.com for products not featured in this guide.

HPLC Column Protection

SecurityGuard™

- Protect HPLC columns and extend lifetime
- Virtually no change in chromatography
- Available in analytical, semi-prep, and preparative sizes
- Simple to use

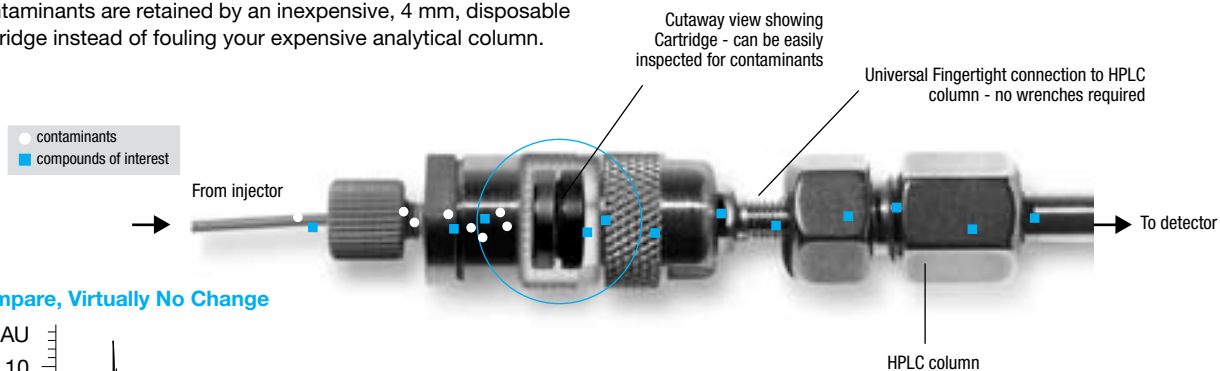
Did you know a common cause of high backpressure, split peaks, broad peaks, baseline noise, baseline drift and loss of resolution is contaminants? The fact is all mobile phases contain some chemical contaminants or microparticulates, from the sample, solvent, or wear on the polymeric seals of the pump or injector. These contaminants can clog frits, irreversibly bind to an HPLC column, degrade performance, and even damage the flow cell. An easy solution, SecurityGuard™ is a universal HPLC guard cartridge system designed to effectively (and inexpensively), protect your valuable columns, from the damaging effects of chemical contaminants, without altering your chromatographic results.



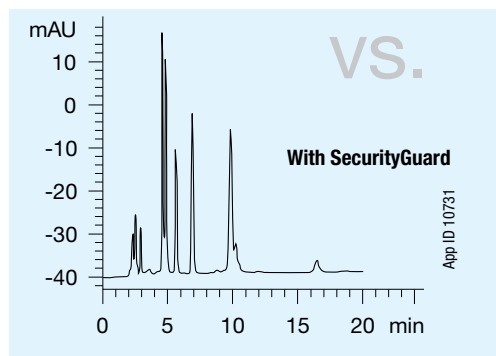
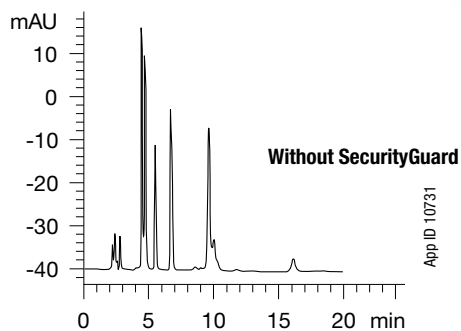
A Universal Guard Cartridge System

How It Works*

The SecurityGuard analytical cartridge holder (patented) directly finger-tightens into virtually any manufacturer's column. Contaminants are retained by an inexpensive, 4 mm, disposable cartridge instead of fouling your expensive analytical column.



Compare, Virtually No Change



Columns: As specified within App ID
Dimensions: 150 x 4.6 mm
Guard Cartridge: SecurityGuard C18 (ODS) 4 x 3.0 mm ID
Mobile Phase: 0.1 M Ammonium acetate/Acetonitrile/Methanol (35:25:40)
Flow Rate: 0.6 mL/min
Detection: UV @ 245 nm
Sample: 1. Clonazepam 4. Bromazepam
 2. Oxazepam 5. Temazepam
 3. Diazepam 6. Medazepam

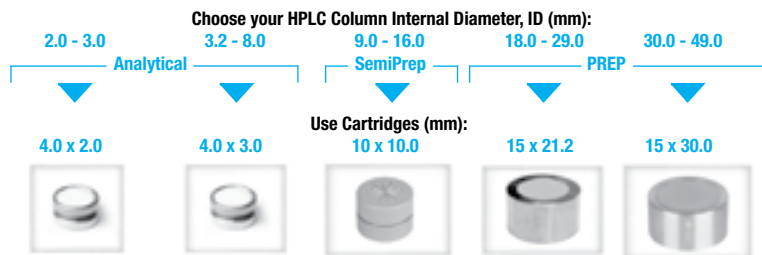
*Feature applies to analytical-sized guard system only, and does not apply to SemiPrep or PREP guard cartridges.

SecurityGuard is a trademark of Phenomenex.

HPLC Column Protection

SecurityGuard Cartridges and Holders

Step 1: Choose column ID
Step 2: Match column phase



Ordering Information

Material	Description	pH Stability	/10pk	/10pk	/3pk	ea	ea
Cartridges for General Purpose/Pharmaceutical							
C18	(ODS, Octadecyl)	1.5 - 10	AJO-4286	AJO-4287	AJO-7221	AJO-7839	AJO-8301
C12	(Dodecyl)	1.5 - 10	AJO-6073	AJO-6074	AJO-7275	AJO-7842	AJO-8304
C8	(MOS, Octyl)	1.5 - 10	AJO-4289	AJO-4290	AJO-7222	AJO-7840	AJO-8302
C5	(Pentyl)	1.5 - 10	AJO-4292	AJO-4293	AJO-7372	—	—
C1	(TMS)	2 - 9	AJO-4298	AJO-4299	AJO-7373	—	—
Silica	—	—	AJO-4347	AJO-4348	AJO-7223	AJO-7229	AJO-8312
HILIC	HILIC	1.5 - 8	AJO-8328	AJO-8329	—	—	—
NH ₂	(Amino, Aminopropyl)	1.5 - 11	AJO-4301	AJO-4302	AJO-7364	AJO-8162	AJO-8309
CN	(Cyano, Cyanopropyl)	2 - 7.5	AJO-4304	AJO-4305	AJO-7313	AJO-8220	AJO-8311
Phenyl	(Phenylhexyl)	1.5 - 10	AJO-4350	AJO-4351	AJO-7314	AJO-7841	AJO-8303
PFP(2)	Pentafluorophenyl	1.5 - 8	AJO-8326	AJO-8327	AJO-8376	AJO-8377	AJO-8378
SCX	(SA, Strong Cation Exchanger)	2.5 - 7.5	AJO-4307	AJO-4308	AJO-7369	AJO-8595	AJO-8596
SAX	(SB, Strong Anion Exchanger)	2.5 - 7.5	AJO-4310	AJO-4311	AJO-7370	—	—
RP-1	(Reversed Phase - Polymer)	0 - 14	AJO-5808	AJO-5809	AJO-7368	AJO-8358	—
Polar-RP	(Ether-linked Phenyl)	1.5 - 7	AJO-6075	AJO-6076	AJO-7276	AJO-7845	AJO-8307
Fusion-RP	(C18 Polar Embedded)	1.5 - 10	AJO-7556	AJO-7557	AJO-7558	AJO-7844	AJO-8306
AQ C18	(Polar Endcapped C18)	1.5 - 7.5	AJO-7510	AJO-7511	AJO-7512	AJO-7843	AJO-8305
Gemini-NX	(C18 TWIN-NX™ Technology)	1 - 12	AJO-8367	AJO-8368	AJO-8369	AJO-8370	AJO-8371
Gemini C18	(C18 TWIN Technology)	1 - 12	AJO-7596	AJO-7597	AJO-7598	AJO-7846	AJO-8308
Gemini C6-Phenyl	(C6-Phenyl TWIN Technology)	1 - 12	AJO-7914	AJO-7915	—	—	—
Oligo-RP	(C18 TWIN Technology)	1 - 12	AJO-8134	AJO-8135	AJO-8136	AJO-8210	AJO-8310
Oligo-WAX	(WA, Weak Anion Exchanger)	1.5 - 11	—	AJO-8324	AJO-8325	AJO-8639	AJO-8420
Cartridges for Protein and Polypeptide Reversed Phase							
For use with silica columns for separation of proteins & peptides, such as Jupiter® (Phenomenex); Vydac® 218TP, 214TP (Alltech Associates, Inc.); Nucleosil® 300 Å C18, C4; HYPERSIL® 300 Å, and other widepore or 300 Å brands.			/10pk	/10pk	/3pk	ea	ea
Widepore C18	(ODS, Octadecyl)	1.5 - 10	AJO-4320	AJO-4321	AJO-7224	AJO-7230	AJO-8313
Widepore C5	(Pentyl)	1.5 - 10	AJO-4326	AJO-4327	AJO-7371	—	—
Widepore C4	(Butyl)	1.5 - 10	AJO-4329	AJO-4330	AJO-7225	AJO-7231	AJO-8314
Cartridges for Silica GFC							
(Aqueous SEC) For use with silica GFC columns, such as BioSep (Phenomenex); ZORBAX® GF-Series; Bio-Sil® (Bio-Rad).			—	/10pk	/3pk	ea	—
GFC-2000	—	2 - 7.5	—	AJO-4487	AJO-7365	AJO-8588	—
GFC-3000	—	2 - 7.5	—	AJO-4488	AJO-7366	AJO-8589	—
GFC-4000	—	2 - 7.5	—	AJO-4489	AJO-7367	AJO-8590	—
Cartridges for Chiral							
For use with chiral columns, such as Lux® Cellulose-1, -2, -3, -4, & Amylose-2 (Phenomenex); CHIRALCEL® OD-H®, CHIRALCEL® DJ-H® & CHIRALPAK® AD®-H (DAICEL Chemical Industries, Ltd.)			/10pk	/10pk	/3pk	ea	ea
Lux Cellulose-1	Cellulose tris (3, 5-dimethylphenylcarbamate)	2 - 9	AJO-8402	AJO-8403	AJO-8404	AJO-8405	AJO-8406
Lux Cellulose-2	Cellulose tris (3-chloro-4-methylphenylcarbamate)	2 - 9	AJO-8398	AJO-8366	AJO-8399	AJO-8400	AJO-8401
Lux Cellulose-3	Cellulose tris (4-methylbenzoate)	2 - 9	AJO-8621	AJO-8622	AJO-8623	AJO-8624	AJO-8625
Lux Cellulose-4	Cellulose tris (4-chloro-3-methylphenylcarbamate)	2 - 9	AJO-8626	AJO-8627	AJO-8628	AJO-8629	AJO-8630
Lux Amylose-2	Amylose tris (5-chloro-2-methylphenylcarbamate)	2 - 9	AJO-8471	AJO-8470	AJO-8472	AJO-8473	AJO-8474
Cartridges for Carbohydrate/Organic Acid							
For organic acid and carbohydrate analysis, such as Rezex™ (Phenomenex); Aminex® (Bio-Rad); Interaction; Sugar-Pak™ (Waters).			—	/10pk	—	—	—
Carbo-H+	—	1 - 8	—	AJO-4490	—	—	—
Carbo-Ag+	—	Neutral	—	AJO-4491	—	—	—
Carbo-Pb ⁺²	—	Neutral	—	AJO-4492	—	—	—
Carbo-Ca ⁺²	—	Neutral	—	AJO-4493	—	—	—
Guard Cartridge Holders (one-time purchase only)							
			/kit	/holder	/kit	/kit	
			KJO-4282	AJO-7220	AJO-8223	AJO-8277	

*For use with saccharide and oligosaccharide columns in Ag⁺ form.





Ultra-High Performance on Any LC System

- Achieve sub-2 µm performance within HPLC backpressure limitations
- Substitute 3 µm and 5 µm columns for 2-3x higher efficiency
- Obtain higher throughput without sacrificing resolution
- Easy method transfer across LC system platforms
- Reduce solvent consumption with faster analysis
- Reach lower levels of detection and quantitation



Material Characteristics*

Packing Material	Total Particle Size (µm)	Porous Shell (µm)	Solid Core (µm)	Pore Size (Å)	Effective Surface Area (m ² /g)	Effective Carbon Load %	pH Stability	Pressure Stability
new Kinetex XB-C18	2.6	0.35	1.9	100	200	10	1.5 - 10**	1000/600 [†] bar
Kinetex C18	2.6	0.35	1.9	100	200	12	1.5 - 10**	
new Kinetex C8	2.6	0.35	1.9	100	200	8	1.5 - 8.0	
Kinetex PFP	2.6	0.35	1.9	100	200	9	1.5 - 8.0	
Kinetex HILIC	2.6	0.35	1.9	100	200	0	2.0 - 7.5	
new Kinetex XB-C18	1.7	0.23	1.25	100	200	10	1.5 - 10**	1000 bar
Kinetex C18	1.7	0.23	1.25	100	200	12	1.5 - 10**	
new Kinetex C8	1.7	0.23	1.25	100	200	8	1.5 - 8.0	
Kinetex PFP	1.7	0.23	1.25	100	200	9	1.5 - 8.0	
Kinetex HILIC	1.7	0.23	1.25	100	200	0	2.0 - 7.5	

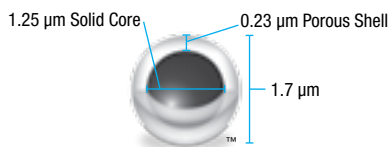
*For the evaluation of effective surface area and carbon load, please request technical note, TN-1064
 **Columns are pH stable from 1.5-10 under isocratic conditions. Columns are pH stable 2-8 under gradient conditions.
[†]2.1 mm ID Kinetex columns are pressure stable up to 1000 bar.

Innovation in Particle Technology

The Kinetex core-shell particle is not fully porous. Using sol-gel processing techniques that incorporate nano structuring technology, a durable, homogenous porous shell is grown on a solid silica core. This highly optimized process combined with uniform particle size distribution produces a column that generates extremely high plate counts. When using Kinetex 2.6 µm, less column backpressure is generated, allowing it to be used on any LC system.†

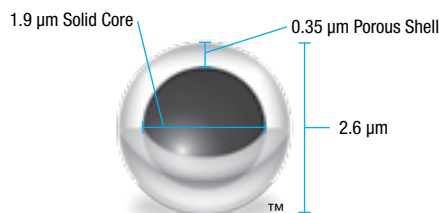
Kinetex 1.7 µm Core-Shell Particle

- Reduced diffusion path maximizes efficiency
- Increased efficiencies compared to traditional fully porous sub-2 µm columns. Typical operating backpressures > 400 bar

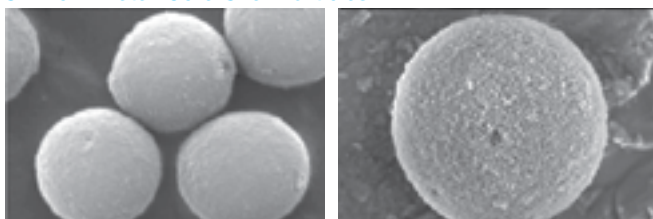


Kinetex 2.6 µm Core-Shell Particle

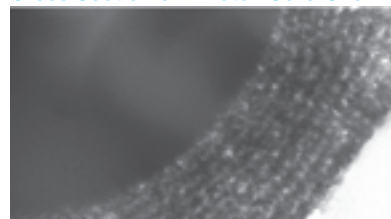
- Reduced diffusion path maximizes efficiency
- Ultra-high performance on any system with Kinetex 2.6 µm columns



SEM of Kinetex Core-Shell Particles



Cross Section of Kinetex Core-Shell Particle

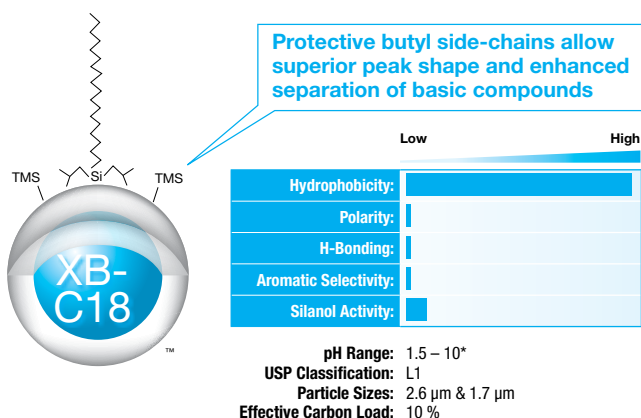


†When using Kinetex 1.7 µm, increased performance can be achieved, however higher pressure-capable instrumentation is required.

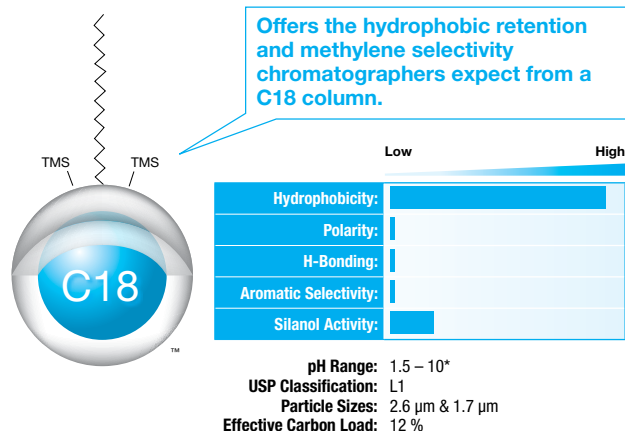
Complementary and Orthogonal Selectivities

To provide alternative and orthogonal selectivity phases, Kinetex™ columns are available in 5 selectivities: XB-C18, C18, C8, PFP (Pentafluorophenyl), and HILIC (Hydrophilic Interaction Liquid Chromatography), for resolution of a wide range of compounds from polar to hydrophobic, aromatic, and isomers.

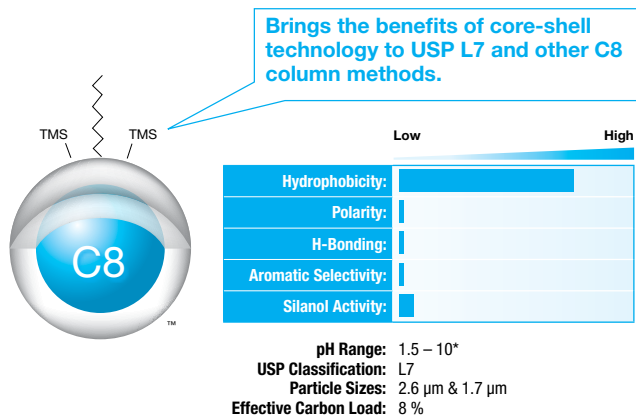
NEW! Kinetex XB-C18



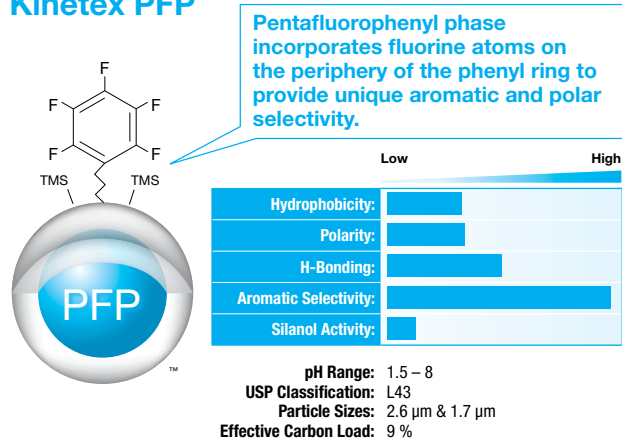
Kinetex C18



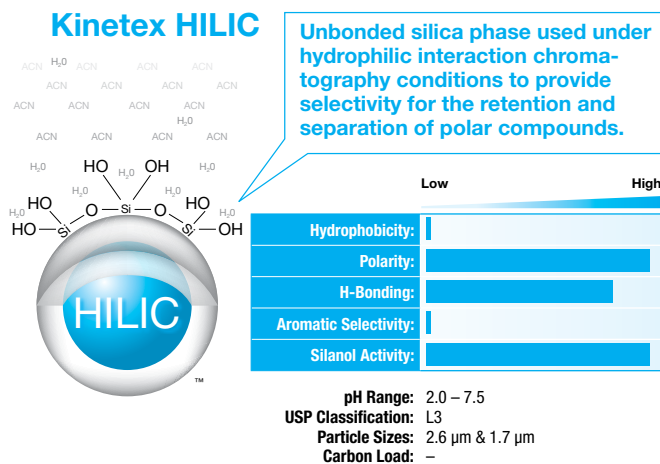
NEW! Kinetex C8



Kinetex PFP



Kinetex HILIC



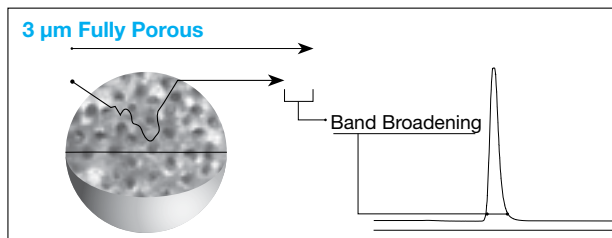
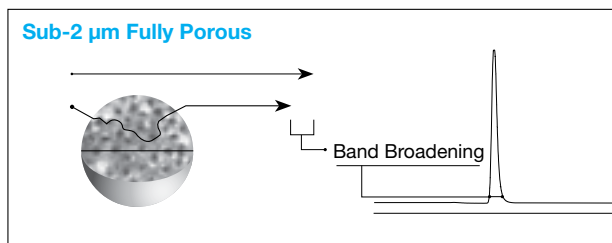
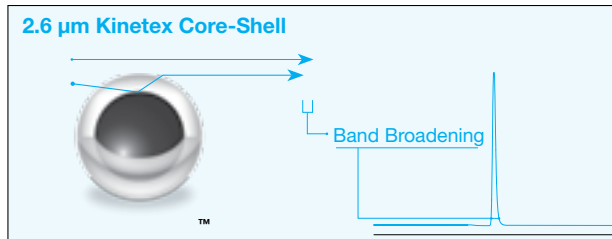
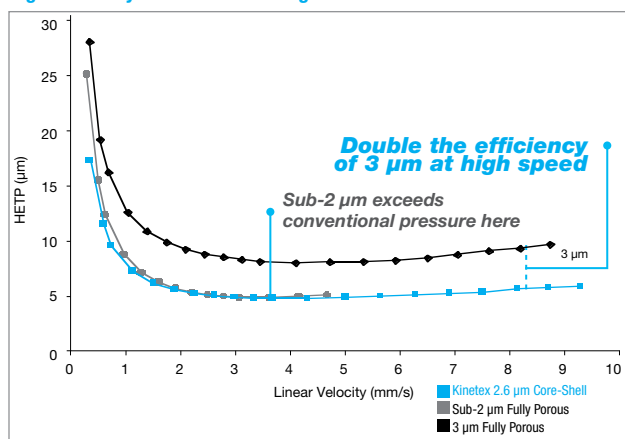
*Columns are pH stable from 1.5-10 under isocratic conditions. Columns are pH stable 2-8 under gradient conditions.

Optimized for Ultra-High Performance

Faster Mass Transfer

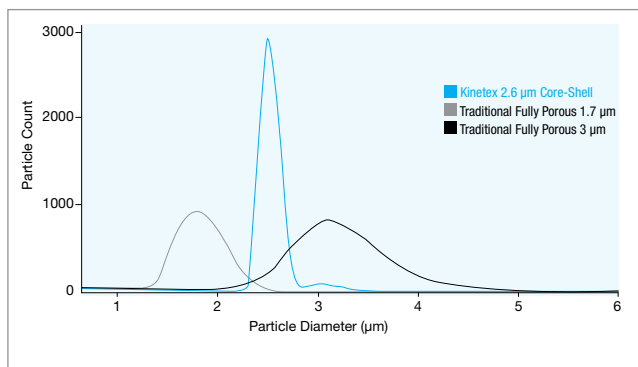
Since the Kinetex particle is not fully porous, analytes spend less time diffusing into and out of the pores as they travel through the column. This shorter diffusion path allows for faster mass transfer. The result is less band broadening for higher peak efficiency comparable to or better than sub-2 µm fully porous particles.

High Efficiency over Extended Range of Flow Rates

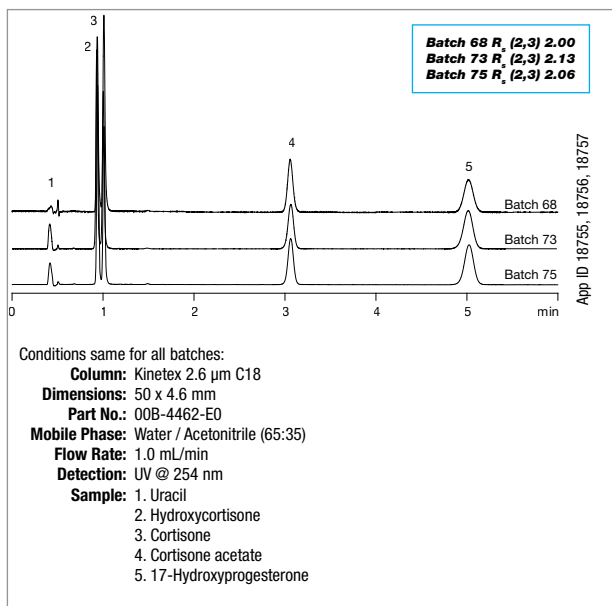


Kinetex particles are nearly monodispersed. This extremely narrow particle size distribution results in ultra-high column efficiency and excellent reproducibility.

Uniform Particle Size Distribution

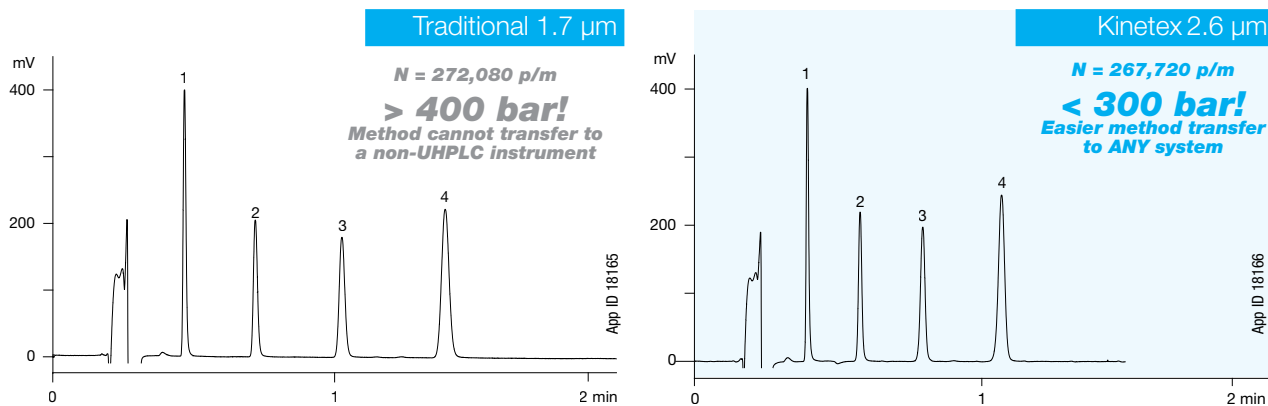


Batch-to-Batch Reproducibility Overlay



Achieve Sub-2 µm Performance within HPLC Backpressure Limitations

With the efficiency of a sub-2 µm column and typical operating backpressure less than 400 bar¹, you can achieve the promise of ultra-high performance on **any LC system**.



Conditions for both columns:

Column: Kinetex 2.6 µm C18
Traditional 1.7 µm C18

Dimensions: 50 x 2.1 mm

Mobile Phase: Acetonitrile / Water (50:50)

Flow Rate: 0.6 mL/min

Temperature: 25 °C

Detection: UV @ 254 nm

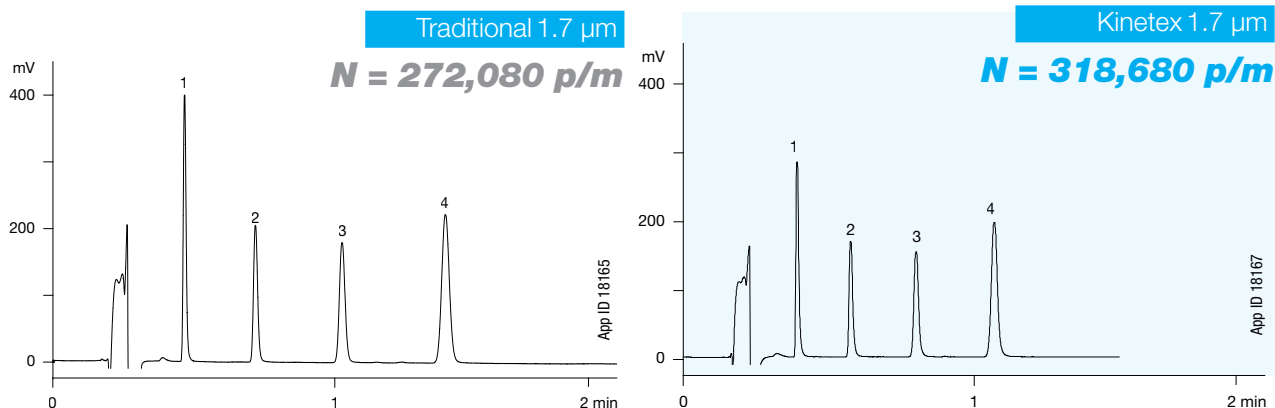
Instrument: *Waters® ACQUITY® UPLC®

Sample: 0.5 µL test mixture

- | | |
|-----------------|----------------|
| 1. Acetophenone | 3. Toluene |
| 2. Benzene | 4. Naphthalene |

Unparalleled Levels of Ultra-High Performance

For users of higher pressure capable instruments who want the highest level of efficiency, we introduce the Kinetex 1.7 µm column - the first sub-2 µm core-shell particle available on the market.



Conditions for both columns:

Column: Kinetex 1.7 µm C18
Traditional 1.7 µm C18

Dimensions: 50 x 2.1 mm

Mobile Phase: Acetonitrile / Water (50:50)

Flow Rate: 0.6 mL/min

Temperature: 25 °C

Detection: UV @ 254 nm

Instrument: *Waters® ACQUITY® UPLC®

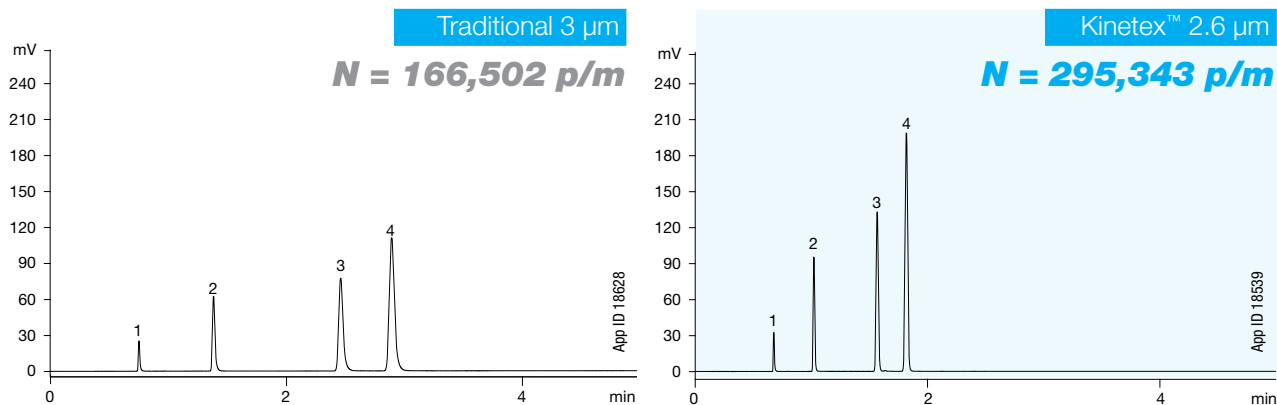
- | | |
|--------------------------------|----------------|
| Sample: 1. Acetophenone | 3. Toluene |
| 2. Benzene | 4. Naphthalene |

¹ Kinetex 2.6 µm columns, 2.1 mm ID, are pressure rated to 1000 bar use on both HPLC and UHPLC instrumentation.

* Waters, ACQUITY, and UPLC are registered trademarks of Waters Corporation. Phenomenex is not affiliated with Waters Corporation. Comparative separations may not be representative of all applications.

Substitute 3 μm and 5 μm Columns for 2-3x Higher Efficiency

Replace traditional 3 μm or 5 μm analytical columns with Kinetex 2.6 μm core-shell columns for immediate performance improvements in efficiency, speed, resolution, and sensitivity. Optimize methods for ultra-high performance and transfer them to any system.

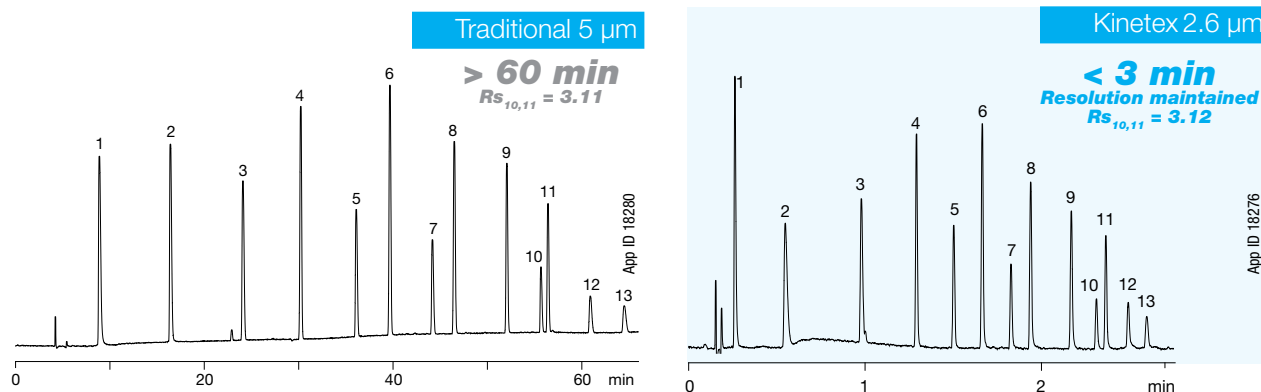


Conditions for both columns:

- Column:** Kinetex 2.6 μm C18
Traditional 3 μm C18
- Dimensions:** 150 x 4.6 mm
- Mobile Phase:** Acetonitrile / Water (70:30)
- Flow Rate:** 1.8 mL/min
- Temperature:** 25 °C
- Backpressure:** 380 bar (Kinetex)
250 bar (Traditional 3 μm)
- Detection:** UV @ 254 nm
- Instrument:** Agilent 1200SL
- Sample:** 1. Uracil
2. Acetophenone
3. Toluene
4. Naphthalene

Obtain Higher Throughput without Sacrificing Resolution

For the ultimate sample throughput demands, Kinetex columns provide the efficiency needed to significantly reduce run times. In this separation of 13 ketones, a 20-fold increase in productivity is accomplished while still maintaining resolution.



Column: Traditional 5 μm C18
Dimensions: 250 x 4.6 mm
Mobile Phase: A: Water
B: Acetonitrile

Gradient:	Time (min)	% B	Time (min)	% B
	0	5	66	95
	4.78	5	66.01	5
	51.52	95	86.38	5

Flow Rate: 0.714 mL/min
Temperature: 45 °C
Detection: UV @ 258 nm

Sample:

1. Acetone	8. Hexanophenone
2. 2-Butanone	9. Octanophenone
3. 2-Pentanone	10. 2-Tridecanone
4. Acetophenone	11. Decanophenone
5. 2-Heptanone	12. 2-Pentadecanone
6. Butyrophenone	13. 2-Hexadecanone
7. 2-Nonanone	

Column: Kinetex 2.6 μm C18
Dimensions: 50 x 4.6 mm
Part No.: 00B-4462-E0
Mobile Phase: A: Water
B: Acetonitrile

Gradient:	Time (min)	% B	Time (min)	% B
	0	5	2.75	95
	0.23	5	2.76	5
	2.19	95	3.61	5

Flow Rate: 3.4 mL/min
Temperature: 45 °C
Detection: UV @ 258 nm
Backpressure: 350 bar

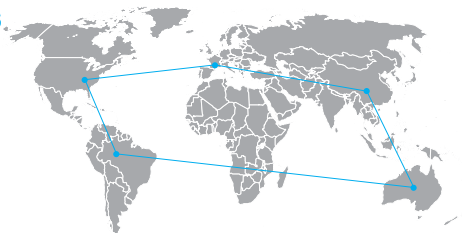
Sample:

1. Acetone	8. Hexanophenone
2. 2-Butanone	9. Octanophenone
3. 2-Pentanone	10. 2-Tridecanone
4. Acetophenone	11. Decanophenone
5. 2-Heptanone	12. 2-Pentadecanone
6. Butyrophenone	13. 2-Hexadecanone
7. 2-Nonanone	

Comparative separations may not be representative of all applications.

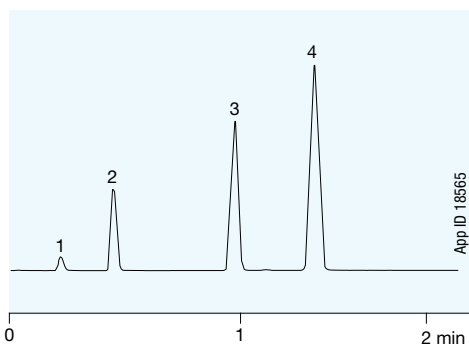
Easy Method Transfer Across LC System Platforms

UHPLC methods developed with fully porous sub-2 µm columns often generate backpressure higher than HPLC system limitations. With Kinetex 2.6 µm core-shell technology, you are no longer restricted from developing high performance LC methods on any system and transferring them anywhere. In these examples different internal diameters of Kinetex columns are used on various systems to illustrate the versatility of Kinetex core-shell technology. Please note the flow rates are scaled to maintain the same linear velocity.



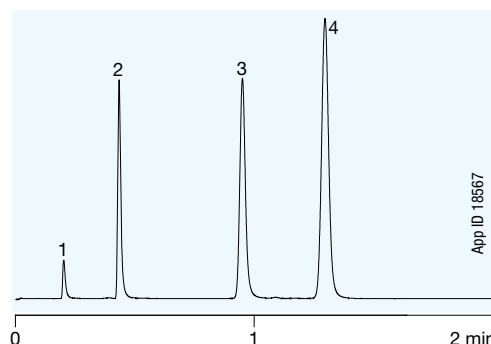
Kinetex 4.6 mm ID on Agilent 1100

Column: Kinetex 2.6 µm C18
Dimensions: 50 x 4.6 mm
Part No.: 00B-4462-E0
Mobile Phase: Acetonitrile / Water (50:50)
Flow Rate: 2.35 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: 1. Uracil
 2. Acetophenone
 3. Toluene
 4. Naphthalene



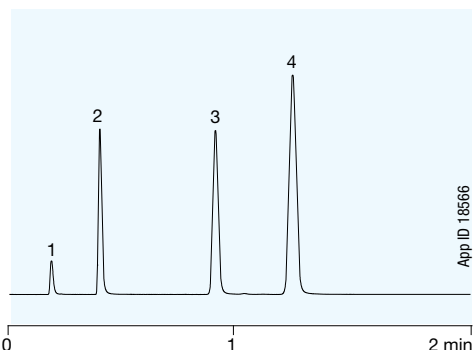
Kinetex 3.0 mm ID on *Shimadzu Prominence™ UFLCXR™

Column: Kinetex 2.6 µm C18
Dimensions: 50 x 3.0 mm
Part No.: 00B-4462-Y0
Mobile Phase: Acetonitrile / Water (50:50)
Flow Rate: 1.0 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: 1. Uracil
 2. Acetophenone
 3. Toluene
 4. Naphthalene



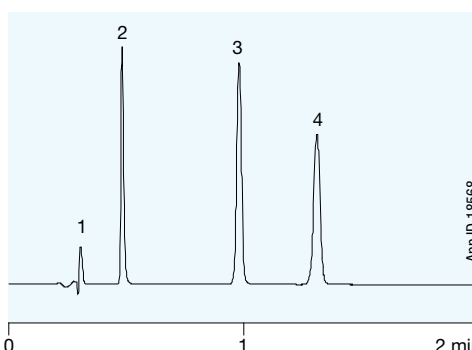
Kinetex 2.1 mm ID on Agilent 1200SL

Column: Kinetex 2.6 µm C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4462-AN
Mobile Phase: Acetonitrile / Water (50:50)
Flow Rate: 0.49 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: 1. Uracil
 2. Acetophenone
 3. Toluene
 4. Naphthalene



Kinetex 2.1 mm ID on *Waters® ACQUITY® UPLC®

Column: Kinetex 2.6 µm C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4462-AN
Mobile Phase: Acetonitrile / Water (50:50)
Flow Rate: 0.49 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: 1. Uracil
 2. Acetophenone
 3. Toluene
 4. Naphthalene



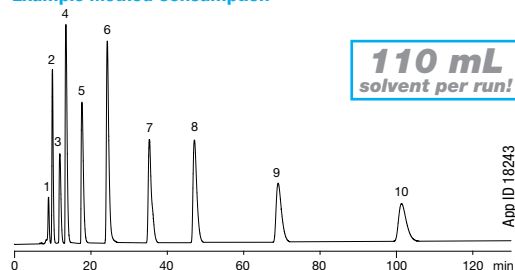
* Waters, ACQUITY, and UPLC are registered trademarks of Waters Corporation. Prominence and UFLC are trademarks of Shimadzu Corporation. Phenomenex is not affiliated with Agilent Technologies, Waters Corp. or Shimadzu.

Improve Performance, Save Solvent

When chromatographic column performance improves you can not only decrease your analysis time but also decrease your overall solvent consumption without compromising your separations. Use Kinetex core-shell technology to dramatically decrease the solvent consumption in your laboratory and increase sample throughput.

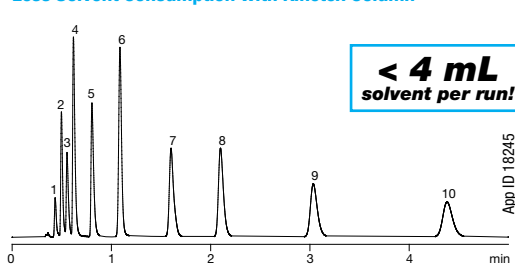
Column: Traditional 5 µm C18
Dimensions: 250 x 4.6 mm
Flow Rate: 1.0 mL/min

Example Method Consumption



Column: Kinetex 2.6 µm C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4462-AN
Flow Rate: 0.6 mL/min

Less Solvent Consumption with Kinetex Column



Conditions for both columns:

Mobile Phase: A: 20 mM Potassium phosphate pH 7
B: Methanol / Acetonitrile (50:50)
A/B (48:52)
Temperature: 40 °C
Detection: UV @ 254 nm

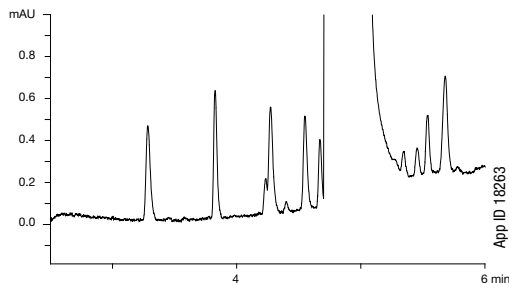
Sample:

- | | |
|---------------------|------------------|
| 1. Tianeptine | 6. Amoxapine |
| 2. Desmethyldoxepin | 7. Doxepin |
| 3. Protriptyline | 8. Nortriptyline |
| 4. Desipramine | 9. Amitriptyline |
| 5. Imipramine | 10. Clomipramine |

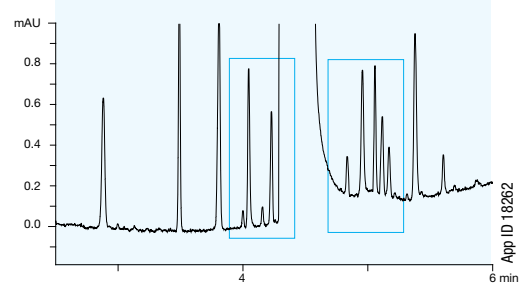
Reach Lower Levels of Detection and Quantitation

The combination of the small particle size, narrow particle size distribution, and the significantly shorter diffusion path results in much higher column efficiencies and increased chromatographic resolution. The increased efficiencies provide an immediate benefit on sensitivity since higher chromatographic efficiencies translate into significantly narrower and taller peaks, making it easier to detect low level impurities.

*ZORBAX® 3.5 µm SB-C18



Kinetex 2.6 µm C18



Conditions for both columns:

Dimensions: 150 x 4.6 mm
Mobile Phase: A: Water
B: Acetonitrile
Gradient: (95:5) A/B for 1.16 min, then to (5:95) A/B
Flow Rate: 1.5 mL/min
Temperature: 45 °C
Detection: UV @ 254 nm
Instrument: Agilent 1200

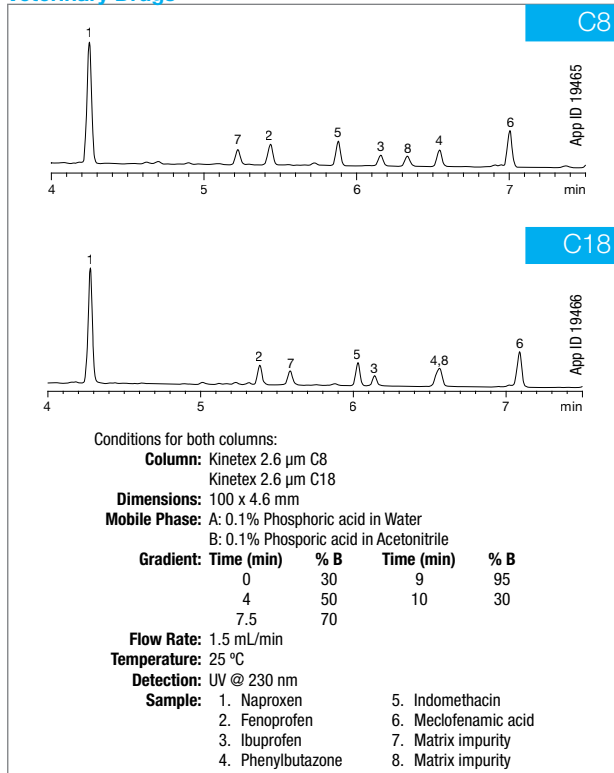
Sample:

- | | |
|---------------------|-------------------------------------|
| 1. Pyridine | 9. Nortriptyline |
| 2. Acetaminophen | 10. 4-Chlorobenzoic acid |
| 3. Pindolol | 11. 5-Methyl-2-hydroxy benzaldehyde |
| 4. Quinine | 12. 4-Chlorocinnamic acid |
| 5. Acebutolol | 13. Diazepam |
| 6. Chlorpheniramine | 14. Diflunisal |
| 7. Triprolidine | 15. Niflumic acid |
| 8. Prednisolone | 16. Hexanophenone |

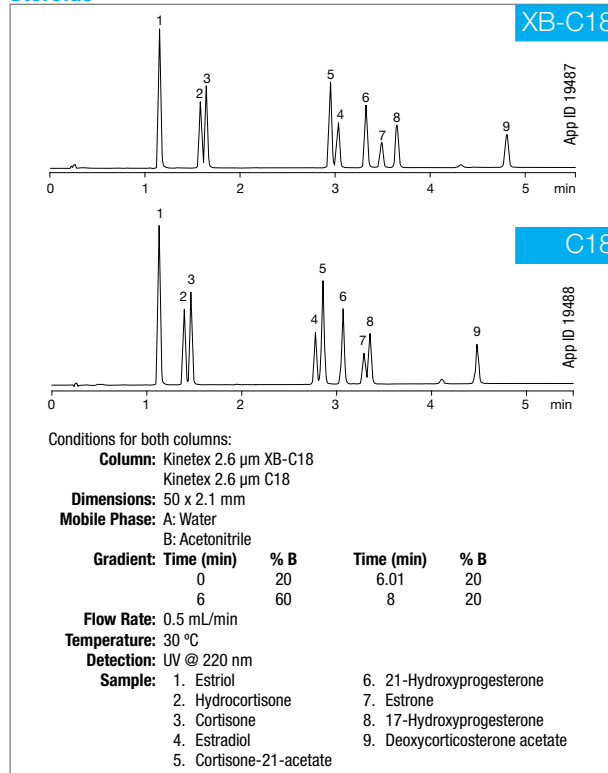
* ZORBAX is a registered trademark of Agilent Technologies. Comparative separations may not be representative of all applications. Phenomenex is not affiliated with Agilent Technologies.

For more applications on our Kinetex HPLC columns, contact your local Phenomenex Distributor.

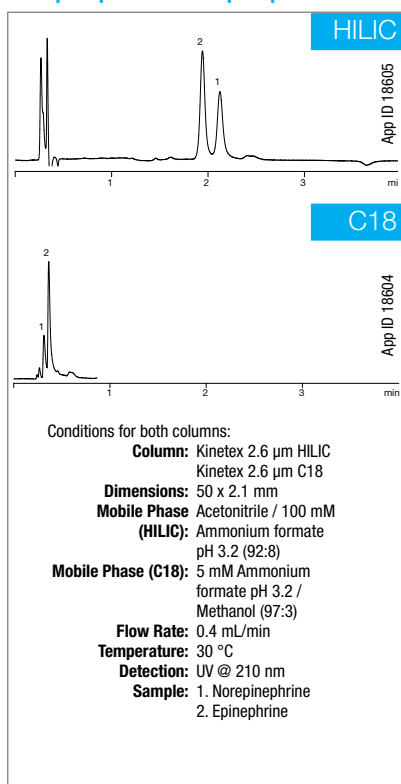
Veterinary Drugs



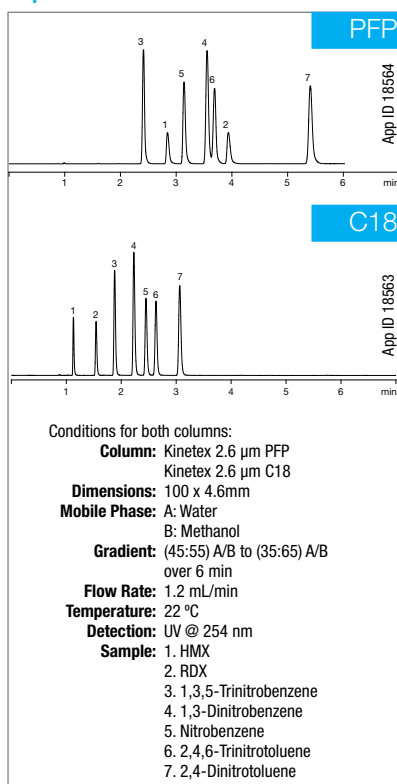
Steroids



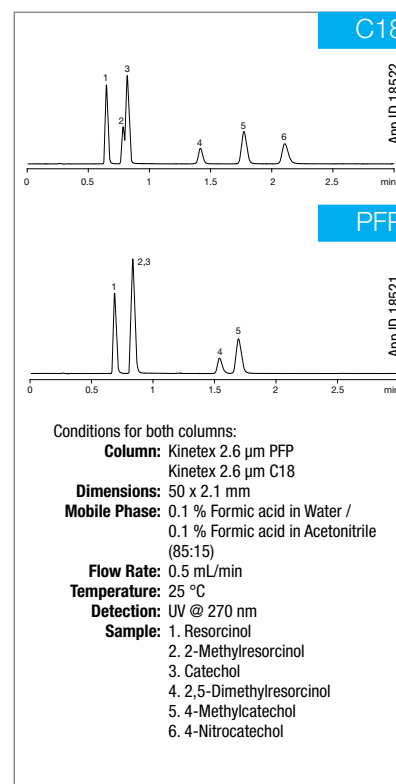
Norepinephrine and Epinephrine



Explosives



Resorcinol



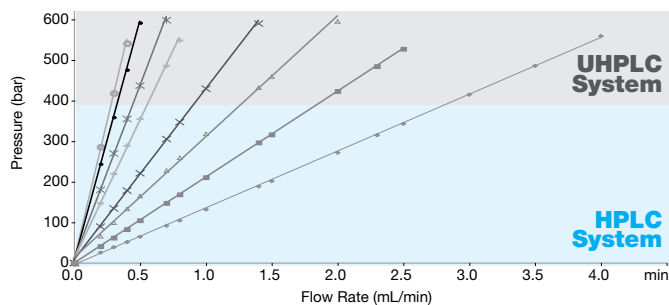
Comparative separations may not be representative of all applications.

Choosing the Best Kinetex Column

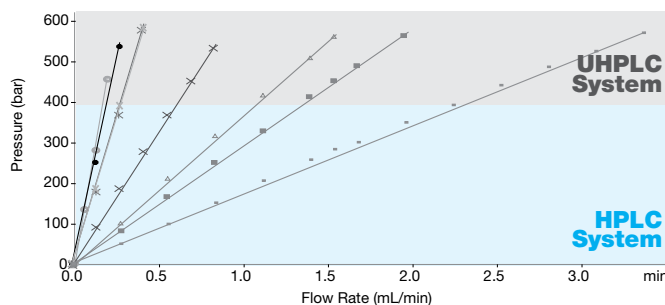
Expected Backpressure at Different Flow Rates*

There is an optimal Kinetex column for your system and operating conditions. Use these graphs to determine the starting Kinetex particle size and dimension for your method.

50:50 (Acetonitrile:Water)

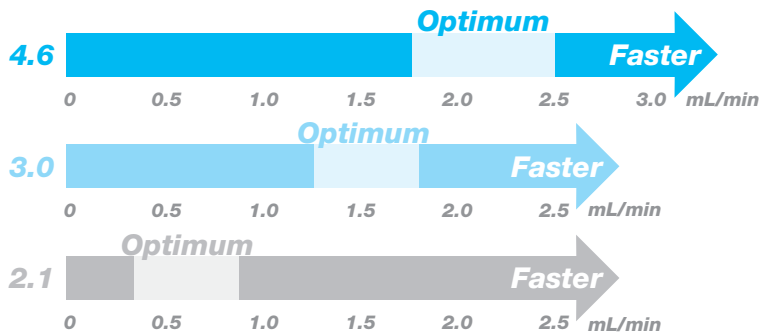


60:40 (Methanol:Water)



- Kinetex 100 x 2.1 mm, 1.7 μm
- Kinetex 50 x 2.1 mm, 1.7 μm
- × Kinetex 150 x 2.1 mm, 2.6 μm
- + Kinetex 100 x 2.1 mm, 2.6 μm
- Kinetex 50 x 2.1 mm, 2.6 μm
- △ Kinetex 150 x 4.6 mm, 2.6 μm
- Kinetex 100 x 4.6 mm, 2.6 μm
- ◆ Kinetex 50 x 4.6 mm, 2.6 μm

Select the right Kinetex column ID and flow rate (mL/min)



KINETEX CALCULATOR!

Instantly optimize your method at www.phenomenex.com/optimize OR contact Your Phenomenex representative for optimization assistance.



Ordering Information

2.6 µm Analytical Columns (mm)						KrudKatcher™ Ultra
Phases	30 x 4.6	50 x 4.6	75 x 4.6	100 x 4.6	150 x 4.6	/3pk
XB-C18	—	00B-4496-E0	00C-4496-E0	00D-4496-E0	00F-4496-E0	AF0-8497
C18	00A-4462-E0	00B-4462-E0	00C-4462-E0	00D-4462-E0	00F-4462-E0	AF0-8497
C8	—	00B-4497-E0	00C-4497-E0	00D-4497-E0	00F-4497-E0	AF0-8497
PFP	00A-4477-E0	00B-4477-E0	00C-4477-E0	00D-4477-E0	00F-4477-E0	AF0-8497
HILIC	—	00B-4461-E0	00C-4461-E0	00D-4461-E0	00F-4461-E0	AF0-8497

2.6 µm Solvent Saver MidBore™ Columns (mm)						KrudKatcher™ Ultra
Phases	30 x 3.0	50 x 3.0	75 x 3.0	100 x 3.0	150 x 3.0	/3pk
XB-C18	—	00B-4496-Y0	—	00D-4496-Y0	—	AF0-8497
C18	00A-4462-Y0	00B-4462-Y0	00C-4462-Y0	00D-4462-Y0	00F-4462-Y0	AF0-8497
C8	—	00B-4497-Y0	—	00D-4497-Y0	—	AF0-8497
PFP	00A-4477-Y0	00B-4477-Y0	00C-4477-Y0	00D-4477-Y0	00F-4477-Y0	AF0-8497
HILIC	—	—	—	—	00F-4461-Y0	AF0-8497

2.6 µm Minibore Columns (mm)					KrudKatcher™ Ultra
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	/3pk
XB-C18	00A-4496-AN	00B-4496-AN	00D-4496-AN	00F-4496-AN	AF0-8497
C18	00A-4462-AN	00B-4462-AN	00D-4462-AN	00F-4462-AN	AF0-8497
C8	00A-4497-AN	00B-4497-AN	00D-4497-AN	00F-4497-AN	AF0-8497
PFP	00A-4477-AN	00B-4477-AN	00D-4477-AN	00F-4477-AN	AF0-8497
HILIC	—	00B-4461-AN	00D-4461-AN	00F-4461-AN	AF0-8497

1.7 µm Minibore Columns (mm)				KrudKatcher™ Ultra
Phases	50 x 2.1	100 x 2.1	150 x 2.1	/3pk
XB-C18	00B-4498-AN	00D-4498-AN	—	AF0-8497
C18	00B-4475-AN	00D-4475-AN	00F-4475-AN	AF0-8497
C8	00B-4499-AN	00D-4499-AN	—	AF0-8497
PFP	00B-4476-AN	00D-4476-AN	00F-4476-AN	AF0-8497
HILIC	00B-4474-AN	—	—	AF0-8497



The KrudKatcher Ultra:

- Fits virtually all UHPLC / HPLC columns 1.0 to 4.6 mm ID
- Pressure rated to **20,000 psi (1,375 bar)**
- Extremely low dead volume minimizes sample peak dispersion



The KrudKatcher Ultra filter body houses an integrated 0.5 µm 316 stainless steel depth filter that efficiently removes microparticulates from the flow stream without contributing to system backpressure or dead volume (<0.2 µL).

Ordering Information

KrudKatcher Ultra In-Line Filter		
Part No.	Description	Unit

AF0-8497	HPLC Krudkatcher Ultra Column In-Line Filter, 0.5 µm Depth Filter x 0.004 in. ID	3/pk
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KrudKatcher Ultra requires 5/16 in. wrench. Wrench not provided.

UHPLC / HPLC Sure-Lok™ High Pressure PEEK™ Male Nut Fittings

Ordering Information

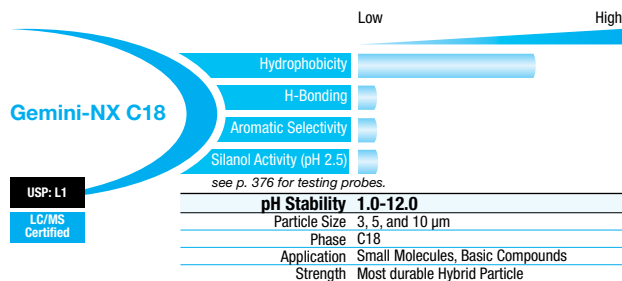
Part No.	Description	Unit
----------	-------------	------

AQ0-8503	Sure-Lok High Pressure PEEK 1-Pc Nut 10-32, for 1/16 in. Tubing, 12,000 psi (827 bar)	10/pk
AQ0-8530	Sure-Lok Fitting Tightening Tool, Aluminum	ea



Gemini-NX C18

- Control selectivity of ionizable compounds for optimized methods
- Consistent performance in both volatile and non-volatile buffers
- High sample loading capacity for metabolite identification and preparative purification
- pH stable 1-12 for durability

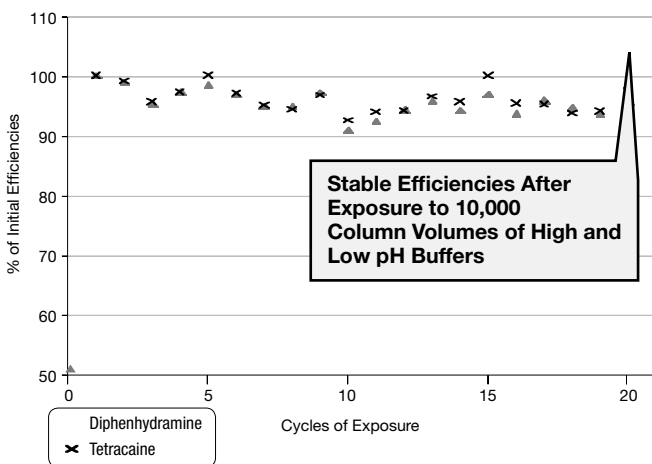


Material Characteristics

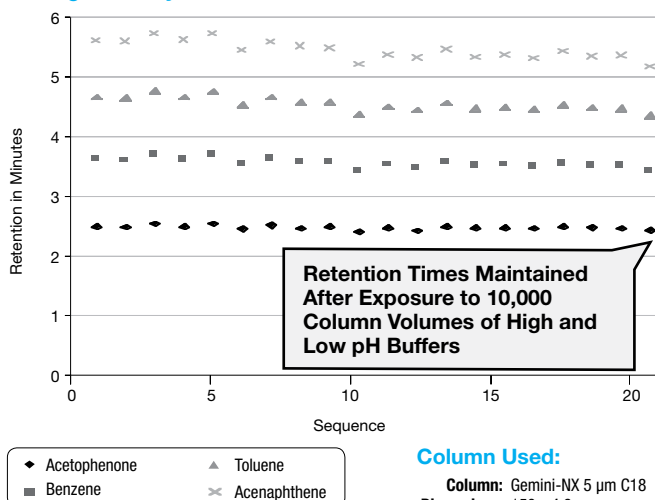
Packing Material	Particle Shape/Size (μm)	Pore Size (\AA)	Surface Area (m^2/g)	Carbon Load (%)	End Capping
Gemini-NX C18	Spherical 3, 5, 10	110	375	14	TMS

Gemini-NX Tested for Extreme Durability in Changing Mobile Phase pH

Column Efficiencies Maintained in High pH Testing for 20 Cycles



Retention Times of Four Probes Maintained in Neutral pH Testing for 20 Cycles



Column Used:

Column: Gemini-NX 5 μm C18
Dimensions: 150 x 4.6 mm
Part No.: 00F-4454-E0

Step 1

24x High pH Flush Procedures

Mobile Phase: A: 10 mM Ammonium Bicarbonate pH 10.5
B: Acetonitrile
Gradient: 5% to 95% B in 6 min
Hold at 95% B for 2 min
Re-equilibrate: 5% B for 2 min
Flow Rate: 1.5 mL/min

Step 2

High pH Testing

Isocratic: 10 mM Ammonium Bicarbonate pH 10.5 / Acetonitrile (50:50)
Flow Rate: 1.5 mL/min
Detection: UV @ 230 nm
Samples: 1. Tetracaine
2. Diphenhydramine

Step 3

1x Neutral Flush Procedure

Mobile Phase: A: Water
B: Acetonitrile
Gradient: 5% B for 2 min
5% to 100% B in 3 min
Hold at 100% B for 5 min
Flow Rate: 1.5 mL/min

Step 4

Neutral pH Testing

Isocratic: Water / Acetonitrile (35:65)
Flow Rate: 1.0 mL/min
Detection: UV @ 254 nm
Samples: 1. Acetophenone
2. Benzene
3. Toluene
4. Acenaphthene

Step 5

24x Low pH Flush Procedure

Mobile Phase: A: 0.5% Formic Acid in Water
B: 0.5% Formic Acid in Acetonitrile, pH 2.0
Gradient: 5% to 95% B in 6 min
Hold at 95% B for 2 min
Re-equilibrate: 5% B for 2 min
Flow Rate: 1.5 mL/min

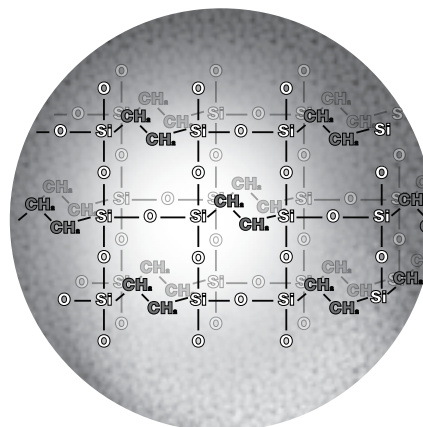
Step 6

Neutral pH Flush Repeats Repeats for 20 Cycles



Second-Generation TWIN-NX™ Technology

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.



Ordering Information

3 µm Microbore, Minibore and Narrow Bore Columns (mm)										SecurityGuard™ Cartridges (mm)	
Phases	50 x 1.0	20 x 2.0	30 x 2.0	50 x 2.0	100 x 2.0	150 x 2.0	50 x 3.0	100 x 3.0	150 x 3.0	4 x 2.0*	
NX C18	—	00M-4453-B0	00A-4453-B0	00B-4453-B0	00D-4453-B0	00F-4453-B0	00B-4453-Y0	00D-4453-Y0	00F-4453-Y0	/10pk	AJO-8367
											for ID: 2.0-3.0 mm

3 µm Analytical Columns (mm)							SecurityGuard™ Cartridges (mm)		
Phases	20 x 4.0	30 x 4.6	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*		
NX C18	—	—	00B-4453-E0	00D-4453-E0	00F-4453-E0	00G-4453-E0	/10pk	AJO-8368	
									for ID: 3.2-8.0 mm



5 µm Minibore and Narrow Bore Columns (mm)									SecurityGuard™ Cartridges (mm)		
Phases	30 x 2.0	50 x 2.0	150 x 2.0	250 x 2.0	50 x 3.0	100 x 3.0	150 x 3.0	250 x 3.0	4 x 2.0*		
NX C18	00A-4454-B0	00B-4454-B0	00F-4454-B0	—	00B-4454-Y0	00D-4454-Y0	00F-4454-Y0	00G-4454-Y0	/10pk	AJO-8367	
											for ID: 2.0-3.0 mm

5 µm Analytical Columns (mm)						SecurityGuard™ Cartridges (mm)		
Phases	30 x 4.6	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*		
NX C18	—	00B-4454-E0	00D-4454-E0	00F-4454-E0	00G-4454-E0	/10pk	AJO-8368	
								for ID: 3.2-8.0 mm



For Gemini Capillary HPLC Columns, Guards, and Adapter, contact your Phenomenex technical consultant or local distributor.

5 µm Semi-Prep Columns (mm)			SecurityGuard™ Cartridges (mm)		
Phases	150 x 10	250 x 10	10 x 10†		
NX C18	00F-4454-N0	00G-4454-N0	/3pk	AJO-8369	
					for ID: 9-16 mm



Axia™ Packed Preparative Columns (mm)							SecurityGuard™ Cartridges (mm)	
Phases	50 x 21.2	100 x 21.2	150 x 21.2	250 x 21.2	50 x 30	75 x 30	15 x 21.2**	15 x 30.0*
5 µm							/ea	/ea
NX C18	00B-4454-P0-AX	00D-4454-P0-AX	00F-4454-P0-AX	00G-4454-P0-AX	00B-4454-U0-AX	00C-4454-U0-AX	AJO-8370	AJO-8371
10 µm							/ea	/ea
NX C18	00B-4455-P0-AX	00D-4455-P0-AX	00F-4455-P0-AX	00G-4455-P0-AX	—	—	AJO-8370	AJO-8371
							for ID: 18-29 mm	30-49 mm

Axia™ Packed Preparative Columns (mm) continued							SecurityGuard™ Cartridges (mm)		
Phases	100 x 30	150 x 30	250 x 30	50 x 50	100 x 50	150 x 50	250 x 50	15 x 30.0*	
5 µm							—	/ea	
NX C18	00D-4454-U0-AX	00F-4454-U0-AX	00G-4454-U0-AX	00B-4454-V0-AX	—	—	—	AJO-8371	
10 µm							—	/ea	
NX C18	00D-4455-U0-AX	00F-4455-U0-AX	00G-4455-U0-AX	00B-4455-V0-AX	00D-4455-V0-AX	00F-4455-V0-AX	00G-4455-V0-AX	AJO-8371	
									for ID: 30-49 mm

*SecurityGuard™ Analytical Cartridges require holder, Part No.: KJO-4282

†SemiPrep SecurityGuard™ Cartridges require holder, Part No.: AJO-7220

**PREP SecurityGuard™ Cartridges require holder, Part No.: AJO-8223

‡PREP SecurityGuard™ Cartridges require holder, Part No.: AJO-8277

Gemini is a registered trademark of Phenomenex, Inc.
TWIN-NX is a trademark of Phenomenex, Inc.

Full Range Selectivity for Reversed Phase Separation

Synergi Polar-RP Phenyl Ether-Linked

For polar and aromatic mixtures

Ether linkage increases aromaticity of the phenyl group and also provides π - π interactions with conjugated compounds

Polar endcapping provides added retention for polar compounds

Ultra-pure Silica

Synergi Fusion-RP C18 Polar Embedded

Balanced non-polar and polar performance

Embedded polar group complements C18 ligand with balanced polar selectivity

TMS endcapping ensures sharp peaks

Ultra-pure Silica

Synergi Hydro-RP C18 Polar Endcapped

Strong non-polar and polar retention

Polar endcapping provides added retention for polar compounds

Ultra-pure Silica

Synergi Max-RP C12 TMS Endcapped

Excellent for basic compounds at neutral pH

High density ligands and extensive endcapping ensure sharp peaks

Ultra-pure Silica

Material Characteristics

Packing Material	Particle Shape/Size (µm)	Pore Size (Å)	Pore Volume (mL/g)	Surface Area (m ² /g)	Carbon Load %	Calculated Bonded Phase Coverage (µmole/m ²)	End Capping	pH Ranges	USP
Synergi Max-RP	Spher. 2.5	100	—	400	17	—	TMS	1.5-10.0	—
Synergi Hydro-RP	Spher. 2.5	100	—	400	19	—	Hydrophilic	1.5-7.5	L1
Synergi Polar-RP	Spher. 2.5	100	—	400	11	—	Hydrophilic	1.5-7.0	L11
Synergi Fusion-RP	Spher. 2.5	100	—	400	12	—	TMS	1.5-10.0	L1
Synergi Max-RP	Spher. 4, 10	80	1.05	475	17	3.21	TMS	—	—
Synergi Hydro-RP	Spher. 4, 10	80	1.05	475	19	2.45	Hydrophilic	—	—
Synergi Polar-RP	Spher. 4, 10	80	1.05	475	11	3.15	Hydrophilic	—	—
Synergi Fusion-RP	Spher. 4, 10	80	1.05	475	12	N/A	TMS	—	—

Fast LC Solutions

Ordering Information

2.5 µm High Speed Technology (HST) Columns (mm)						
Phases	30 x 2.0	50 x 2.0	100 x 2.0	50 x 3.0	100 x 3.0	50 x 4.6
Max-RP	00A-4372-B0	00B-4372-B0	00D-4372-B0	00B-4372-Y0	00D-4372-Y0	00B-4372-E0
Hydro-RP	00A-4387-B0	00B-4387-B0	00D-4387-B0	00B-4387-Y0	00D-4387-Y0	00B-4387-E0
Polar-RP	00A-4371-B0	00B-4371-B0	00D-4371-B0	00B-4371-Y0	00D-4371-Y0	00B-4371-E0
Fusion-RP	00A-4423-B0	00B-4423-B0	00D-4423-B0	00B-4423-Y0	00D-4423-Y0	00B-4423-E0



For information about HST Columns, contact your Phenomenex technical consultant or local distributor.

Ordering Information

2.5 µm MercuryMS LC/MS Cartridges (mm)						Columns (mm)	
Phases	10 x 2.0	10 x 4.0	20 x 2.0	20 x 4.0	20 x 2.0	20 x 4.0	
Max-RP	00N-4372-B0-CE	00N-4372-D0-CE	00M-4372-B0-CE	00M-4372-D0-CE	00M-4372-B0	00M-4372-D0	
Hydro-RP	00N-4387-B0-CE	00N-4387-D0-CE	00M-4387-B0-CE	00M-4387-D0-CE	00M-4387-B0	00M-4387-D0	
Polar-RP	—	00N-4371-D0-CE	00M-4371-B0-CE	00M-4371-D0-CE	00M-4371-B0	00M-4371-D0	
Fusion-RP	00N-4423-B0-CE	00N-4423-D0-CE	00M-4423-B0-CE	00M-4423-D0-CE	00M-4423-B0	00M-4423-D0	

Mercury MS™ Cartridge Holders



Direct-Connect Holder

Standard Holder

Ordering Information

Direct-Connect Cartridge Holders

Part No.	Description
CHO-7187	10 mm direct-connect holder
CHO-7188	20 mm direct-connect holder

Standard Cartridge Holders

Part No.	Description
CHO-5846	10 mm standard holder
CHO-5845	20 mm standard holder

Capillary Columns

Ordering Information

4 µm Synergi Capillary Columns (mm)							4 µm Synergi Capillary Guard Columns (mm)		
Phases	50 x 0.30	150 x 0.30	250 x 0.30	50 x 0.50	150 x 0.50	250 x 0.50	Phases	20 x 0.30	20 x 0.50
Max-RP	00B-4337-AC	00F-4337-AC	—	—	00F-4337-AF	00G-4337-AF	Max-RP	03M-4337-AC	03M-4375-AF
Hydro-RP	00B-4375-AC	00F-4375-AC	00G-4375-AC	00B-4375-AF	00F-4375-AF	00G-4375-AF	Hydro-RP	03M-4375-AC	03M-4375-AF
Fusion-RP	00B-4424-AC	00F-4424-AC	—	00B-4424-AF	00F-4424-AF	00G-4424-AF	Fusion-RP	03M-4424-AC	—

Analytical Columns

Ordering Information

4 µm Microbore and Minibore Columns (mm)								SecurityGuard™ Cartridges (mm)	
Phases	50 x 1.0	150 x 1.0	250 x 1.0	30 x 2.0	50 x 2.0	75 x 2.0	150 x 2.0	250 x 2.0	4 x 2.0*
Max-RP	00B-4337-A0	00F-4337-A0	—	00A-4337-B0	00B-4337-B0	00C-4337-B0	00F-4337-B0	00G-4337-B0	/10pk
Hydro-RP	00B-4375-A0	00F-4375-A0	00G-4375-A0	00A-4375-B0	00B-4375-B0	00C-4375-B0	00F-4375-B0	00G-4375-B0	AJO-6073
Polar-RP	00B-4336-A0	00F-4336-A0	—	00A-4336-B0	00B-4336-B0	00C-4336-B0	00F-4336-B0	00G-4336-B0	AJO-7510
Fusion-RP	00B-4424-A0	00F-4424-A0	—	00A-4424-B0	00B-4424-B0	00C-4424-B0	00F-4424-B0	00G-4424-B0	AJO-6075
									AJO-7556

for ID: 2.0-3.0 mm

4 µm Narrow Bore Columns (mm)					SecurityGuard™ Cartridges (mm)	
Phases	30 x 3.0	50 x 3.0	150 x 3.0	250 x 3.0	4 x 2.0*	
Max-RP	00A-4337-Y0	00B-4337-Y0	00F-4337-Y0	00G-4337-Y0	/10pk	
Hydro-RP	00A-4375-Y0	00B-4375-Y0	00F-4375-Y0	00G-4375-Y0	AJO-6073	
Polar-RP	00A-4336-Y0	00B-4336-Y0	00F-4336-Y0	00G-4336-Y0	AJO-7510	
Fusion-RP	00A-4424-Y0	00B-4424-Y0	00F-4424-Y0	00G-4424-Y0	AJO-6075	
					AJO-7556	

for ID: 2.0-3.0 mm

4 µm Analytical Columns (mm)						SecurityGuard™ Cartridges (mm)	
Phases	30 x 4.6	50 x 4.6	75 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*	
Max-RP	00A-4337-E0	00B-4337-E0	00C-4337-E0	00F-4337-E0	00G-4337-E0	/10pk	
Hydro-RP	00A-4375-E0	00B-4375-E0	00C-4375-E0	00F-4375-E0	00G-4375-E0	AJO-6074	
Polar-RP	00A-4336-E0	00B-4336-E0	00C-4336-E0	00F-4336-E0	00G-4336-E0	AJO-7511	
Fusion-RP	00A-4424-E0	00B-4424-E0	00C-4424-E0	00F-4424-E0	00G-4424-E0	AJO-6076	
						AJO-7557	

for ID: 3.2-8.0 mm



Synergi Preparative columns are also available. Please contact your Phenomenex technical consultant or local Distributor.

One of the World's Leading HPLC Columns

Develop or Improve your HPLC Method

- Exceptionally rugged USP phases
- Easy method scalability with 3, 5, 10, 10-PREP and 15 µm medias
- Extensive batch traceability and reproducibility data supplied with every column

Material Characteristics

Packing Material	Particle Shape/Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load %	Calculated Bonded Phase Coverage (µmole/m ²)	End Capping	pH Stability
Luna Silica(2)	Spher. 3, 5, 10, 10-PREP, 15	100	400	0	–	No	2.0 - 7.5
Luna C5	Spher. 5, 10	100	440	12.5	7.85	Yes	1.5 - 10*
Luna C8(2)	Spher. 3, 5, 10, 10-PREP, 15	100	400	13.5	5.50	Yes	1.5 - 10*
Luna C18(2)	Spher. 2.5, 3, 5, 10, 10-PREP, 15	100	400	17.5	3.00	Yes	1.5 - 10*
Luna Phenyl-Hexyl	Spher. 3, 5, 10, 10-PREP, 15	100	400	17.5	4.00	Yes	1.5 - 10*
Luna CN	Spher. 3, 5, 10	100	400	7.0	3.80	Yes	1.5 - 7.0
Luna NH ₂	Spher. 3, 5, 10	100	400	9.5	5.80	No	1.5 - 11
Luna SCX	Spher. 5, 10	100	400	Binding Capacity: 0.15 meq/g		No	2.0 - 7.0
Luna HILIC	Spher. 3, 5	200	200	5.7	4.30	No	1.5 - 8.0
Luna PFP(2)	Spher. 3, 5	100	400	11.5	2.20	Yes	1.5 - 8.0

* pH range under isocratic conditions. pH range is 2 - 8 under gradient conditions.

USP Phases for Virtually Every Application

Luna Bonded Phase Selectivity Chart

USP Column Classification	Phase	Description	Common Applications
L1	C18(2)	2.5, 3, 5, 10, 10-PREP, 15 µm C18 phase. Excellent efficiency, peak shape and resolution. Slightly lower carbon load than original Luna C18.	Acetaminophen, Aspirin, Caffeine, Albuterol, Amitriptyline Hydrochloride, Amoxicillin, Atenolol, Cephalexin, Cephadrine capsules, Chloramphenicol, Cortisone Acetate, Dextromethorphan, Diphenhydramine, Pseudoephedrine, Dopamine, Estradiol, Guaifenesin, Ibuprofen, Sterile Imipenem, Imipramine, Lidocaine, Lorazepam, Minoxidil, Naproxen, Phenylephrine Hydrochloride, Phenylpropranolamine, Prednisone oral solution, Procainamide, Propoxyphene, Reserpine
L3	Silica(2)	3, 5, 10 µm Ultra-pure silica with high column bed stability enhanced by particle shape uniformity.	Alprazolam, Hydrocodone bitartrate, Hydrocortisone, Fat Soluble Vitamins, Phthalates, Fatty Acids, Lutein, Lycopene, Estradiol
L7	C8(2)	3, 5, 10, 10-PREP, 15 µm C8 phase for excellent efficiency, peak shape and resolution. Significantly improved performance over traditional C8 phases due to high surface coverage.	Doxepine, Doxylamine succinate, Fluoxetine, Glyburide, Ibuprofen Oral Suspension, Propranolol, Levonorgestrel, Ethinyl estradiol, Melengestrol acetate, Glucosamine
L8	NH ₂	3, 5, 10 µm Amino phase. Can be used in reversed or normal phase modes. Stable from pH 1.5 to 11.0 and under 100% aqueous conditions. High performance silica and bonding techniques produces a rugged, highly reproducible column.	Simple sugars, Carboplatin, Lactulose concentrate, Levocarnitine tablets
L9	SCX	5, 10 µm A Benzene Sulfonic Acid bonded phase is used to make this Strong Cation Exchange (SCX) column. Offers great peak shape and resolution.	Cough and cold compounds, Raclopride, Sodium Acetate, Erythromycin
L10	CN	3, 5, 10 µm Cyano phase. Can be used as reversed- or normal-phase material. The use of Luna base silica results in overall phase reproducibility and performance.	Benzalkonium Chloride, Nortriptyline HCl Capsules, Prednisolone, Tetracaine, Quinapril tablets
L11	Phenyl-Hexyl	3, 5, 10, 10-PREP, 15 µm A phenyl phase which employs a hexyl alkyl linker as opposed to the traditional propyl chain. Offers great stability as well as alternative selectivity.	Oxacillin, Captopril, Chlorpheniramine, Pseudoephedrine, Methadone Hydrochloride Oral Concentration
L20	HILIC	3, 5 µm HILIC phase that provides excellent selectivity for polar compounds; and improved MS sensitivity with low bleed.	Drug metabolites, Water soluble vitamins, Melamine, Cyanuric acid, Metanephrine, Normetanephrine
L43	PFP(2)	3, 5 µm A pentafluorophenyl phase that provides excellent selectivity for aromatic compounds from influence of fluorine substitution on phenyl ring. Multiple retention mechanisms. Orthogonal selectivity to traditional C18 phases.	Positional isomers, Geometric isomers, Taxanes, Aflatoxins

Luna® is a registered trademark of Phenomenex, Inc.



Try Gemini®-NX for even longer column lifetimes (see page 36-37).

Ordering Information



3 µm Microbore and Minibore columns (mm)				SecurityGuard™ Cartridges (mm)	
Phases	30 x 2.0	50 x 2.0	100 x 2.0	150 x 2.0	4 x 2.0
Silica(2)	00A-4162-B0	00B-4162-B0	00D-4162-B0	00F-4162-B0	AJO-4347
C8(2)	00A-4248-B0	00B-4248-B0	00D-4248-B0	00F-4248-B0	AJO-4289
C18(2)	00A-4251-B0	00B-4251-B0	00D-4251-B0	00F-4251-B0	AJO-4286
CN	00A-4254-B0	00B-4254-B0	00D-4254-B0	00F-4254-B0	AJO-4304
Phenyl-Hexyl	00A-4256-B0	00B-4256-B0	00D-4256-B0	00F-4256-B0	AJO-4350
NH ₂	00A-4377-B0	00B-4377-B0	00D-4377-B0	00F-4377-B0	AJO-4301
HILIC	—	00B-4449-B0	00D-4449-B0	00F-4449-B0	AJO-8328
PFP(2)	00A-4447-B0	00B-4447-B0	00D-4447-B0	00F-4447-B0	AJO-8326

for ID: 2.0-3.0 mm

5 µm Microbore and Minibore columns (mm)			SecurityGuard™ Cartridges (mm)	
Phases	150 x 2.0	250 x 2.0	4 x 2.0*	
Silica(2)	00F-4274-B0	00G-4274-B0	/10pk	
C5	00F-4043-B0	—	AJO-4347	
C8(2)	00F-4249-B0	00G-4249-B0	AJO-4292	
C18(2)	00F-4252-B0	00G-4252-B0	AJO-4289	
CN	00F-4255-B0	00G-4255-B0	AJO-4286	
Phenyl-Hexyl	00F-4257-B0	00G-4257-B0	AJO-4304	
NH ₂	00F-4378-B0	00G-4378-B0	AJO-4350	
PFP(2)	00F-4448-B0	—	AJO-4301	
			AJO-8326	

for ID: 2.0-3.0 mm

3 µm Narrow Bore and analytical columns (mm)								SecurityGuard™ Cartridges (mm)		
Phases	30 x 3.0	50 x 3.0	150 x 3.0	30 x 4.6	50 x 4.6	75 x 4.6	100 x 4.6	150 x 4.6	4 x 2.0	4 x 3.0
Silica(2)	—	—	00F-4162-Y0	—	00B-4162-E0	—	00D-4162-E0	00F-4162-E0	/10pk	/10pk
C8(2)	00A-4248-Y0	00B-4248-Y0	00F-4248-Y0	00A-4248-E0	00B-4248-E0	00C-4248-E0	00D-4248-E0	00F-4248-E0	AJO-4347	AJO-4348
C18(2)	00A-4251-Y0	00B-4251-Y0	00F-4251-Y0	00A-4251-E0	00B-4251-E0	00C-4251-E0	00D-4251-E0	00F-4251-E0	AJO-4289	AJO-4290
CN	—	00B-4254-Y0	00F-4254-Y0	00A-4254-E0	00B-4254-E0	00C-4254-E0	00D-4254-E0	00F-4254-E0	AJO-4286	AJO-4287
Phenyl-Hexyl	—	00B-4256-Y0	00F-4256-Y0	00A-4256-E0	00B-4256-E0	00C-4256-E0	00D-4256-E0	00F-4256-E0	AJO-4304	AJO-4305
NH ₂	—	00B-4377-Y0	00F-4377-Y0	—	00B-4377-E0	—	00D-4377-E0	00F-4377-E0	AJO-4350	AJO-4351
HILIC	—	00B-4449-Y0	00F-4449-Y0	—	—	—	00D-4449-E0	00F-4449-E0	AJO-4301	AJO-4302
PFP(2)	—	00B-4447-Y0	00F-4447-Y0	—	00B-4447-E0	—	00D-4447-E0	00F-4447-E0	AJO-8328	AJO-8329
									AJO-8326	AJO-8327

for ID: 2.0-3.0 mm

3.2-8.0 mm

5 µm Narrow Bore and analytical columns (mm)								SecurityGuard™ Cartridges (mm)	
Phases	30 x 3.0	50 x 3.0	150 x 3.0	250 x 3.0	30 x 4.6	50 x 4.6	75 x 4.6	4 x 2.0*	4 x 3.0*
Silica(2)	—	—	—	—	—	00B-4274-E0	—	/10pk	/10pk
C5	—	—	00F-4043-Y0	—	—	00B-4043-E0	—	AJO-4347	AJO-4348
C8(2)	—	00B-4249-Y0	00F-4249-Y0	00G-4249-Y0	00A-4249-E0	00B-4249-E0	00C-4249-E0	AJO-4292	AJO-4293
C18(2)	00A-4252-Y0	00B-4252-Y0	00F-4252-Y0	00G-4252-Y0	00A-4252-E0	00B-4252-E0	00C-4252-E0	AJO-4289	AJO-4290
CN	—	00B-4255-Y0	00F-4255-Y0	00G-4255-Y0	00A-4255-E0	00B-4255-E0	00C-4255-E0	AJO-4286	AJO-4287
Phenyl-Hexyl	00A-4257-Y0	00B-4257-Y0	00F-4257-Y0	00G-4257-Y0	00A-4257-E0	00B-4257-E0	00C-4257-E0	AJO-4304	AJO-4305
NH ₂	—	00B-4378-Y0	00F-4378-Y0	00G-4378-Y0	00A-4378-E0	00B-4378-E0	00C-4378-E0	AJO-4350	AJO-4351
SCX	—	—	—	—	—	00B-4398-E0	—	AJO-4301	AJO-4302
HILIC	—	—	00F-4450-Y0	—	—	—	—	AJO-4307	AJO-4308
PFP(2)	—	00B-4448-Y0	00F-4448-Y0	—	00A-4448-E0	00B-4448-E0	—	AJO-8328	AJO-8329
								AJO-8326	AJO-8327

for ID: 2.0-3.0 mm

3.2-8.0 mm

5 µm Analytical columns (mm)			SecurityGuard™ Cartridges (mm)	
Phases	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*
Silica(2)	00D-4274-E0	00F-4274-E0	00G-4274-E0	/10pk
C5	00D-4043-E0	00F-4043-E0	00G-4043-E0	AJO-4348
C8(2)	00D-4249-E0	00F-4249-E0	00G-4249-E0	AJO-4293
C18(2)	00D-4252-E0	00F-4252-E0	00G-4252-E0	AJO-4290
CN	00D-4255-E0	00F-4255-E0	00G-4255-E0	AJO-4287
Phenyl-Hexyl	00D-4257-E0	00F-4257-E0	00G-4257-E0	AJO-4286
NH ₂	00D-4378-E0	00F-4378-E0	00G-4378-E0	AJO-4305
SCX	00D-4398-E0	00F-4398-E0	00G-4398-E0	AJO-4351
HILIC	00D-4450-E0	00F-4450-E0	00G-4450-E0	AJO-4302
PFP(2)	00D-4448-E0	00F-4448-E0	00G-4448-E0	AJO-4308
				AJO-8329
				AJO-8327

for ID: 3.2-8.0 mm



Method development column kits and method validation column kits are available. Contact Phenomenex or your local distributor for details.



Luna Preparative columns are also available. Contact Phenomenex or your local distributor for more information about Axia Preparative Columns.

*SecurityGuard™ Analytical Cartridges require holder, Part No.: KJ0-4282

Five Distinct Polysaccharide Phases to Resolve 92 % of Your Enantiomers*

Lux columns offer a wide and complementary range of enantioselectivity for even the most difficult chiral separation projects.

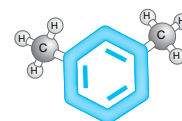
- High efficiency and loading capacity
- Stable in Normal Phase, Polar Organic, SFC, and Reversed Phase Conditions
- 3 μm and 5 μm packed columns and 20 μm bulk media for scale up†

Technical Specifications

Particle Size	3, 5, 20* μm
pH Stability	2-9
Maximum Pressure	300 bar
Temperature Range	0-50 °C
Shipping Solvent	n-Hexane/2-propanol (9:1, v/v)

*Please inquire for availability

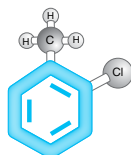
Lux chiral columns are made with high quality silica, and undergo a specialized coating and packing process that ensures high efficiencies while maintaining essential enantioselectivity abilities.



Cellulose-O-CONH

Lux Cellulose-1

Cellulose tris(3,5-dimethylphenylcarbamate)



Cellulose-O-CONH

Lux Cellulose-2

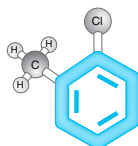
Cellulose tris(3-chloro-4-methylphenylcarbamate)



Cellulose-O

Lux Cellulose-3

Cellulose tris(4-methylbenzoate)



Cellulose-O-CONH

Lux Cellulose-4

Cellulose tris(4-chloro-3-methylphenylcarbamate)



Amylose-O-CONH

Lux Amylose-2

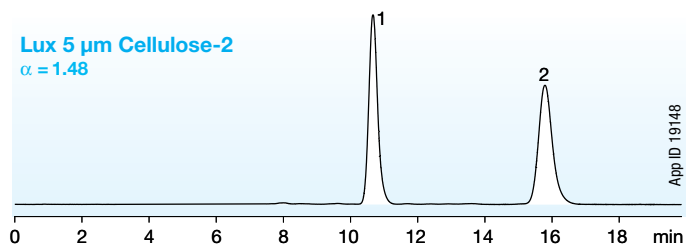
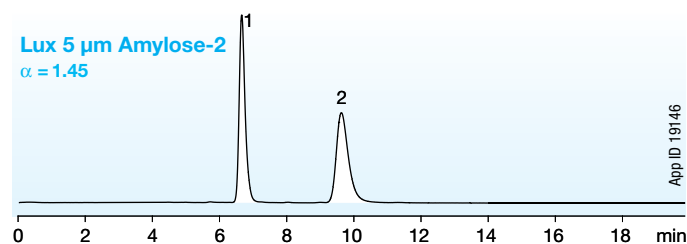
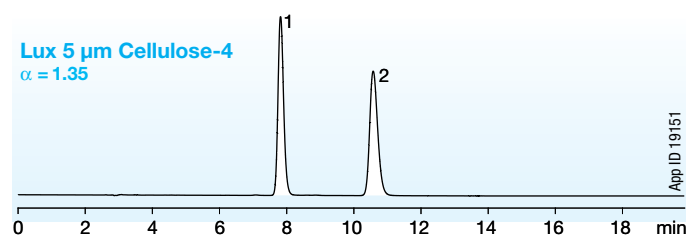
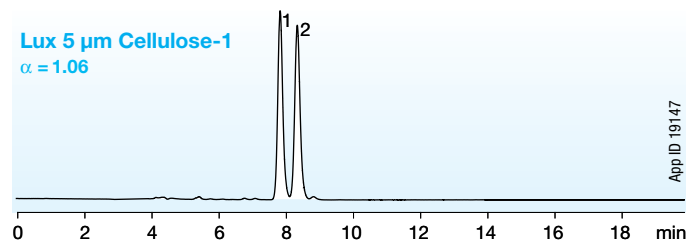
Amylose tris(5-chloro-2-methylphenylcarbamate)

* Based on 233 compounds screened on all five Lux phases.

Achieve Optimal Resolution by Screening all Five Complementary Lux Chiral Columns

Utilizing differences in selectivity can help develop methods more efficiently by offering broad and contrasting chiral recognition abilities. Lux chiral selectors provide a variety of selectivities that give you the opportunity to screen for the ideal chiral separation.

Etozolin



Conditions for all columns:

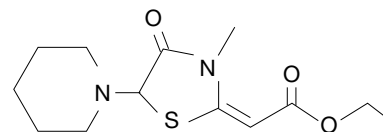
Dimensions: 250 x 4.6 mm

Mobile Phase: Acetonitrile / 0.1 % Diethylamine in 20 mM NH_4HCO_3 (60:40)

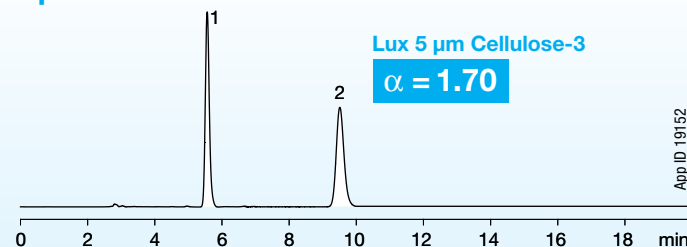
Flow Rate: 1 mL/min

Detection: UV @ 220 nm

Temperature: Ambient



Optimal Resolution



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

Comparative separations may not be representative of all applications.

Ordering Information

3 µm Analytical Columns (mm)							SecurityGuard™ Cartridges (mm)	
Phases	50 x 2.0	150 x 2.0	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 2.0*	4 x 3.0*
							/10pk	/10pk
Cellulose-1	00B-4458-B0	00F-4458-B0	00B-4458-E0	00D-4458-E0	00F-4458-E0	00G-4458-E0	AJO-8402	AJO-8403
Cellulose-2	00B-4456-B0	00F-4456-B0	00B-4456-E0	00D-4456-E0	00F-4456-E0	00G-4456-E0	AJO-8398	AJO-8366
Cellulose-3	00B-4492-B0	00F-4492-B0	00B-4492-E0	00D-4492-E0	00F-4492-E0	00G-4492-E0	AJO-8621	AJO-8622
Cellulose-4	00B-4490-B0	00F-4490-B0	00B-4490-E0	00D-4490-E0	00F-4490-E0	00G-4490-E0	AJO-8626	AJO-8627
Amylose-2	00B-4471-B0	00F-4471-B0	00B-4471-E0	00D-4471-E0	00F-4471-E0	00G-4471-E0	AJO-8471	AJO-8470
							for ID: 2.0–3.0 mm	3.2–8.0 mm

5 µm Analytical Columns (mm)						SecurityGuard™ Cartridges (mm)	
Phases	50 x 2.0	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 2.0*	4 x 3.0*
						/10pk	/10pk
Cellulose-1	00B-4459-B0	00B-4459-E0	00D-4459-E0	00F-4459-E0	00G-4459-E0	AJO-8402	AJO-8403
Cellulose-2	00B-4457-B0	00B-4457-E0	00D-4457-E0	00F-4457-E0	00G-4457-E0	AJO-8398	AJO-8366
Cellulose-3	00B-4493-B0	00B-4493-E0	00D-4493-E0	00F-4493-E0	00G-4493-E0	AJO-8621	AJO-8622
Cellulose-4	00B-4491-B0	00B-4491-E0	00D-4491-E0	00F-4491-E0	00G-4491-E0	AJO-8626	AJO-8627
Amylose-2	00B-4472-B0	00B-4472-E0	00D-4472-E0	00F-4472-E0	00G-4472-E0	AJO-8471	AJO-8470
						for ID: 2.0–3.0 mm	3.2–8.0 mm

5 µm Semi-Prep Columns (mm)			SecurityGuard™ Cartridges (mm)
Phases	150 x 10.0	250 x 10.0	10 x 10.0*
			/3pk
Cellulose-1	00F-4459-N0	00G-4459-N0	AJO-8404
Cellulose-2	00F-4457-N0	00G-4457-N0	AJO-8399
Cellulose-3	00F-4493-N0	00G-4493-N0	AJO-8623
Cellulose-4	00F-4491-N0	00G-4491-N0	AJO-8628
Amylose-2	00F-4472-N0	00G-4472-N0	AJO-8472
			for ID: 9–16 mm

20 µm Bulk Media		
Phases	100 g	1 kg
	Inquire	Inquire
Cellulose-1	04G-4473	04K-4473
Cellulose-2	04G-4464	04K-4464

Please inquire for 20 µm Lux Amylose-2, Cellulose-3 or Cellulose-4 media.



Lux Preparative columns are also available. Contact Phenomenex or your local distributor for more information on AXIA Preparative Columns.

Chiral Screening and Separation Services

HPLC | SFC | Preparative | Training

For more information on our services or to begin a project, please contact your local Phenomenex chiral expert or email us at: phenologix@phenomenex.com

You can also visit us on the web at: www.phenomenex.com/phenologix



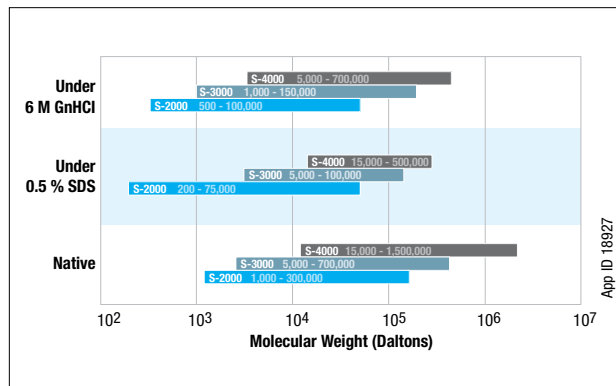
Aqueous Size Exclusion/ Gel Filtration for Protein and Peptide Analysis

Gel Filtration Chromatography is used for the analysis and/or characterization of proteins, peptides and other biomolecules; including antibodies, immunoglobulins, protein complexes, protein aggregates, and desalting. BioSep GFC columns offer many important benefits for your separation needs.

- Hydrophilically bonded rigid spherical silica gel has nominal adsorption and high sample recoveries
- Narrow defined pore size distribution produces exceptional separations for SEC
- Optimized packing specifications provide high resolution, maximized efficiencies, and exceptional peak asymmetry

Molecular Weight Separation Range for Proteins on BioSep-SEC-S

3 BioSep phase options to separate samples of varying molecular weight (MW) ranges: 2000, 3000, 4000, as described below:

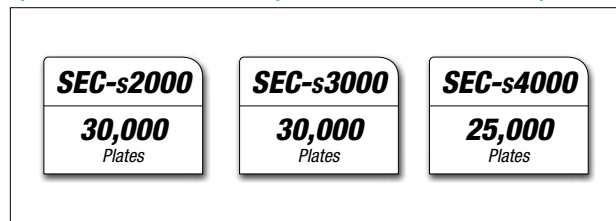


High Efficiencies for Greater Resolution

Due to a tight particle size distribution and a specialized packing process and specifications, you will see greater baseline separation between your analytes.

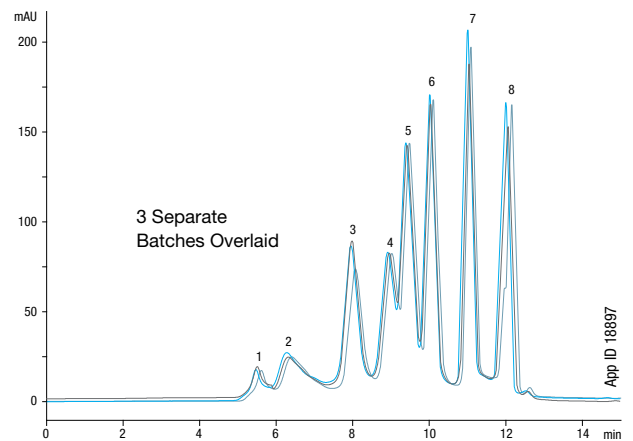
Efficiency

(minimum number theoretical plates on 300 x 7.8 mm column)



Batch-to-Batch Reproducibility

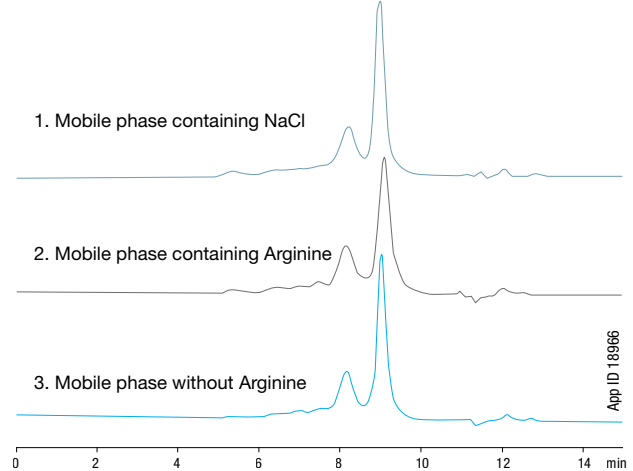
Batch-to-batch and column-to-column reproducibility is imperative. Each batch of BioSep media is carefully monitored and QC tested to ensure proper size, shape and pore characteristics, which ensures the same high quality separation time and time again.



Highly Inert Material for Better Recovery and Quantitation

BioSep columns experience a nominal amount of non-specific interactions which provides an extremely inert media demonstrating distinct advantages for accurate quantitation of your proteins and aggregates.

Human Serum under Different Mobile Phases



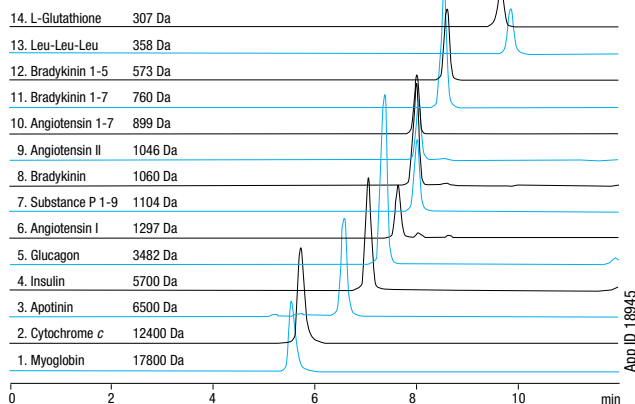
Equal recovery of proteins and aggregates under different mobile phase conditions is indicative of a highly inert column.

Low MW Proteins and Peptides on BioSep-SEC-s2000

BioSep-SEC-s2000 columns are used for peptide therapeutics, small proteins, PEGylated peptides and small PEGylated proteins, as well as biogeneric aggregate applications.

Low MW Protein and Peptide Mixture

Column: BioSep-SEC-s2000
Dimensions: 300 x 7.8 mm
Part No.: 00H-2145-KO
Mobile: 45% Acetonitrile, 0.1% TFA
Phase:
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 214 nm
Sample:



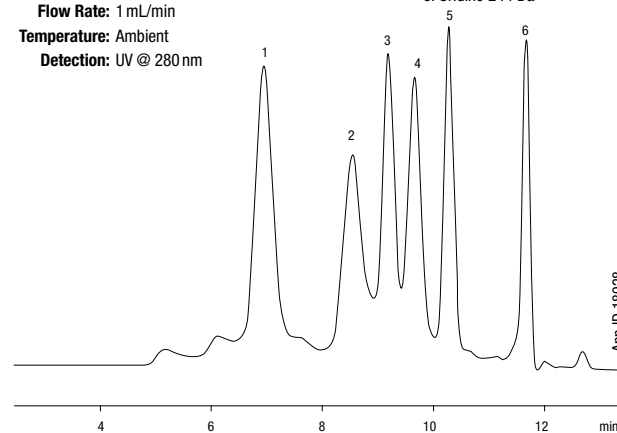
Medium MW Proteins on BioSep-SEC-s3000

BioSep-SEC-s3000 columns are great for medium to large MW proteins, serum proteins, and immunoglobulin aggregate and applications.

Protein Mixture

Column: BioSep-SEC-s3000
Dimensions: 300 x 7.8 mm
Part No.: 00H-2146-KO
Mobile Phase: 100 mM Sodium Phosphate pH 7.0, 300 mM Sodium Chloride
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 280 nm

Sample: 1. Thyroglobulin 669 kDa
2. IgG 156 kDa
3. BSA 66 kDa
4. Ovalbumin 45 kDa
5. Myoglobin 16.9 kDa
6. Uridine 244 Da



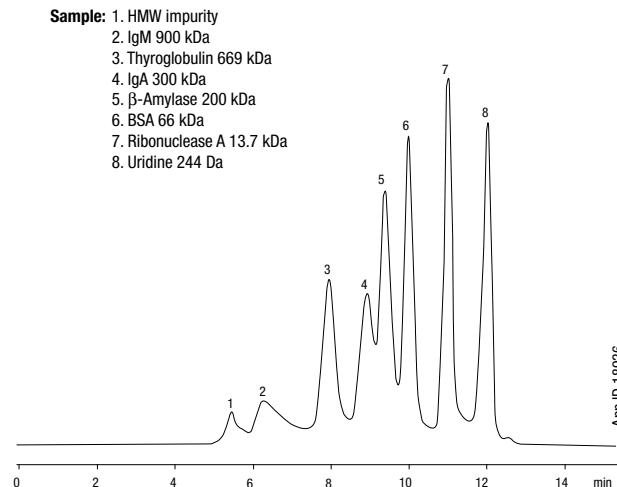
Large MW Proteins on BioSep-SEC-s4000

BioSep-SEC-s4000 is capable of resolving large MW proteins and PEGylated IgG applications.

High MW Protein Mixture

Column: BioSep-SEC-s4000
Dimensions: 300 x 7.8 mm
Part No.: 00H-2147-KO
Mobile: 100 mM Sodium Phosphate pH 7.0,
Phase: 300 mM Sodium Chloride
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 214 nm

Sample: 1. HMW impurity
2. IgM 900 kDa
3. Thyroglobulin 669 kDa
4. IgA 300 kDa
5. β-Amylase 200 kDa
6. BSA 66 kDa
7. Ribonuclease A 13.7 kDa
8. Uridine 244 Da

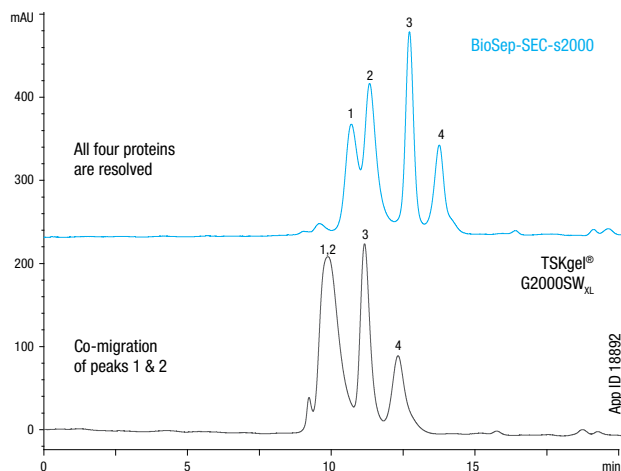


Protein Separation of 50-300,000 MW on BioSep-SEC-s2000 vs. TSKgel® G2000SW_{XL}

Conditions for both columns:

Columns: BioSep-SEC-s2000
TSKgel® G2000SW_{XL}
Dimensions: 300 x 7.8 mm
Mobile: 10 mM Tris pH 7.4,
Phase: 150 mM Sodium Chloride
Flow Rate: 0.6 mL/min

Temperature: Ambient
Detection: UV @ 214 nm
Sample: 1. Hu IgA 300 kDa
2. β-Amylase 200 kDa
3. BSA 66 kDa
4. Ovalbumin 45 kDa



- Global support and availability in over 65 countries
- 3 batches available for validation
- Large inventory for immediate shipment

Technical Data and Specifications

	BioSep SEC-s2000	BioSep SEC-s3000	BioSep SEC-s4000
Resin Type	Silica	Silica	Silica
Particle Size (µm)	5	5	5
Pore Size (Å)	145	290	500
pH Range	2.5 - 7.5	2.5 - 7.5	2.5 - 7.5
Maximum Backpressure (psi)	1,500	1,500	1,500
Typical Backpressure (psi)	800	800	700
Efficiency (minimum number theoretical plates 300 x 7.8 mm)	30,000	30,000	25,000
Maximum Flow Rate	This is a function of pressure. Columns can withstand up to 1,500 psi, but avoid sudden pressure changes.		
Column Hardware	Standard: 316 stainless steel column with stainless steel frits. Titanium frits available.		
Maximum Temp.	50 °C		
Maximum Salt Conc.	1 M		
Denaturants	0.5% SDS, 6 M Guanidine HCl, or 8 M urea		
Regeneration	After exposure to denaturants, wash with water overnight.		
Max. Organic Modifier	Up to 100% CH ₃ CN. Start with 100% H ₂ O, linear gradient to 100% CH ₃ CN over 50 min.		
	Up to 90% CH ₃ CN, 10% DMSO or 500 mM β-mercaptoethanol.		
Cleaning Procedure	General protein removal: wash with 30 mL of 0.1 M NaH ₂ PO ₄ , pH 3.0. Hydrophobic protein removal: use acetonitrile gradient. Strongly adsorbed proteins: wash with 30 mL of 0.5% SDS or 6 M Guanidine thiocyanate or 10% DMSO.		
Storage	Overnight storage: run mobile phase at 0.2 mL/minute. Prolonged storage: use 0.05% Na ₃ N in H ₂ O or 10% methanol in H ₂ O.		
Column Protection	Use of a SecurityGuard is recommended to prolong column lifetime.		

Cross Reference Chart

Phenomenex BioSep Phases	TSK-Gel®	Shodex®	Sepax	Bio-Rad®	Waters® BioSuite™	Zorbax®
SEC-s2000	G2000SW G2000SW _{XL}	PROTEIN KW-802.5	SRT®-100* SRT®-150	Bio-Sil® SEC 125	BioSuite™ 125	GF-250
SEC-s3000	G3000SW G3000SW _{XL}	PROTEIN KW-803	SRT®-300	Bio-Sil® SEC 250	BioSuite™ 250	GF-450
SEC-s4000	G4000SW G4000SW _{XL}	PROTEIN KW-804	SRT®-500**	Bio-Sil® SEC 400	BioSuite™ 450**	

** Only up to 1,500,000 MW
* Only above 1,000 MW

Ordering Information

*SecurityGuard Analytical cartridges require holder, Part No.: KJO-4282
** PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8223

Stainless Steel Columns (mm):	Narrow Bore	Analytical	Preparative	SecurityGuard™ Cartridges (mm)
Phases	300 x 4.6	300 x 7.8	600 x 7.8	4 x 3.0* 15 x 21.2**
BioSep-SEC-s2000	00H-2145-E0	00H-2145-K0	00K-2145-K0	00H-2145-P0
BioSep-SEC-s3000	00H-2146-E0	00H-2146-K0	00K-2146-K0	00H-2146-P0
BioSep-SEC-s4000	00H-2147-E0	00H-2147-K0	00K-2147-K0	00H-2147-P0

for ID: 4.6-7.8 mm for ID: 21.2 mm

Stainless Steel Guard Columns (mm)	Narrow Bore	Express	Analytical
Phases	30 x 4.6	35 x 7.8	75 x 7.8
BioSep-SEC-s2000	03A-2145-E0	03Q-2145-K0	03C-2145-K0
BioSep-SEC-s3000	03A-2146-E0	03Q-2146-K0	03C-2146-K0
BioSep-SEC-s4000	03A-2147-E0	03Q-2147-K0	03C-2147-K0

Aqueous SEC 1 Column Check Standard

(for BioSep-SEC-S and other protein SEC columns)

Part No.: AL0-3042

Unit quantity: Dry; reconstituted to 2 mL

Contains: Bovine thyroglobulin; Human gamma globulin; Ovalbumin; Myoglobin; Uridine (reconstitute with 1 mL of 100 mM Sodium phosphate pH 6.8)

Diluent: 100 mM Sodium phosphate pH 6.8

Storage: Add 0.1% Na₃N to the solution and refrigerate

Test Conditions

Mobile phase: 100 mM Sodium phosphate, pH 6.8

Flow rate: 1.0 mL/min for a 300 x 7.8 mm column

Injection volume: 10 µL

Detection: UV @ 280 nm



Other column dimensions available upon request.

RP-HPLC for Protein/Peptide Analysis and Purification

The Jupiter HPLC column portfolio, including Jupiter 300 and Jupiter Proteo, offers optimized reversed phase solutions for protein and peptide characterization and purification. With these columns, one can identify, purify, and analyze almost any protein.

Jupiter 300 – 300 Å columns designed to analyze and purify intact proteins

- For separation of intact proteins > 10,000 MW
- Available with C18, C5, and C4 bonded phases
- 1.5 – 10 pH stability for method ruggedness and easy protein removal
- Direct scale-up to preparative and bulk materials

Jupiter Proteo – 90 Å columns engineered for increased peak capacity and resolution of peptide maps as well as peptide separations

- For separation of intact proteins and peptides < 10,000 MW
- Available with novel C12 bonded phase for excellent selectivity
- Identify post-translational modifications
- Capillary columns available for increased sensitivity

Material Characteristics

Packing Material	Particle Shape/Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load %	Calculated Bonded Phase Coverage (µmole/m ²)	End Capping
C4	Spher. 5, 10, 15	300	170	5.0	6.30	Yes
C5	Spher. 5, 10, 15	300	170	5.5	5.30	Yes
C18	Spher. 3, 5, 10, 15	300	170	13.3	5.50	Yes
Proteo	Spher. 4, 10	90	475	15.0	—	Yes

Dependable Solutions for Protein/Peptide Researchers

Jupiter HPLC columns are used throughout the life science industry in a variety of departments. Phenomenex offers support and solutions in all areas of protein research and manufacturing, especially in characterization, purification, and proteomics/biomarker discovery.

Type of Work	Key Applications
Protein Characterization	<ul style="list-style-type: none"> • Identify post-translational modifications • Analyze intact antibodies • Study PEGylated proteins
Protein/ Peptide Purification	<ul style="list-style-type: none"> • Separate target compound from impurities • Purify antibodies • Separate protein components from one another • Easy, direct scale up to preparative and process scales • Perform peptide mapping for differential proteomics
Proteomics/ Biomarker Discovery	<ul style="list-style-type: none"> • Identify low level proteins utilizing capillary columns • Excellent resin for 2nd dimension of 2D-HPLC

Jupiter 300 – for Intact Protein Separation and Purification

Jupiter 300 has proven its performance to biochromatographers worldwide as a leading 300 Å column in the market.

- **300 Å column for analysis and purification of proteins > 10,000 MW**
- **Highly efficient columns with long lifetime due to super-smooth, high-mechanical-strength 300 Å silica**
- **Excellent column for LC/MS due to low phase bleed and exceptional performance at low buffer concentrations**

Selecting the Appropriate 300 Å Phase

Jupiter 300 C4 This low hydrophobicity phase is less likely to cause irreversible adsorption of “sticky” proteins and allows for the use of shallow gradients along with lower concentrations of organic solvent.

- For proteins >10,000 Da
- For highly hydrophobic proteins

Jupiter 300 C5 This bonded phase imparts greater pH stability compared to traditional C4 phase. One can expect longer column lifetimes and more stable, reproducible retention times because of the bonded phase’s increased stability to hydrolysis.

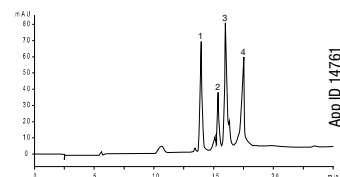
- For proteins >10,000 Da
- For highly hydrophobic proteins
- More retentive than C4, offering slightly different selectivity

Jupiter 300 C18 Excellent for polar as well as non-polar proteins; most retentive of Jupiter 300 phases, allowing one to separate proteins with slight differences in hydrophobicity

- For proteins >10,000 Da
- For hydrophilic proteins
- Most retentive phase

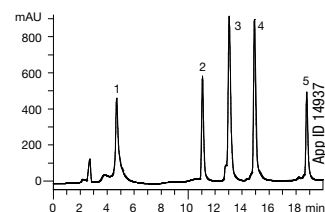
Large Proteins on Jupiter 300 C4

Column: Jupiter 300 5 µm C4 300Å
Dimensions: 150 x 4.6 mm
Part No.: 00F-4167-E0
Mobile Phase: A: 0.1 % TFA in Water
 B: 0.08 % TFA in Acetonitrile
Gradient: A/B (95:5) to A/B (20:80) in 20 minutes
Flow Rate: 1 mL/min
Temperature: 22 °C
Detection: UV @ 280 nm
Inj. Volume: 25 µL
Sample: 1. Bovine Serum Albumin
 2. Glutamic Dehydrogenase
 3. β-Galactosidase
 4. Ovalbumin



Separation on Jupiter 300 C18

Column: Jupiter 300 5 µm C18 300 Å
Dimensions: 150 x 2.0 mm
Part No.: 00F-4053-B0
Mobile Phase: A: 0.1 %TFA/ 95 % Water / 5 % Acetonitrile
 B: 0.085 % TFA/ 95 % Acetonitrile/ 5 % Water
Gradient: A/B (88:12) to A/B (15:85) in 21 minutes
Flow Rate: 0.2 mL/min
Detection: UV @ 220 nm
Sample: 1. Aprotinin
 2. Ribonuclease
 3. Lysozyme
 4. Lactalbumin
 5. Leptin

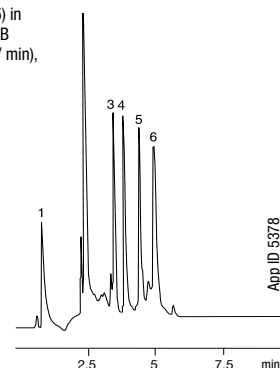


Sharp Peaks and High Yields

Ultra-pure silica and dense bonded phase coverage provide sharp peaks for your sample by decreasing the number of non-specific interactions. Sharpened peak symmetry allows for easier quantitation, improved resolution, and separation of complex mixtures. High yields result in more material for downstream analysis, decreased number of purification runs, and lower production costs.

Sharp Peaks for Easy Quantitation

Column: Jupiter 300 5 µm C4 300 Å
Dimensions: 50 x 4.6 mm
Part No.: 00B-4167-E0
Mobile Phase: A: 0.1% TFA in Water
 B: 0.1% TFA in Acetonitrile
Gradient: A/B (100:0) to A/B (80:20) in 1 min (20 % B/ min), then to A/B (65:35) in 1.5 min (10 % B/ min), then to A/B (53.5:46.5) in 1.5 min (7.67 % B/ min), hold for 2 min (constant B)
Flow Rate: 1 mL/min
Detection: UV @ 220 nm
Sample: 1. Alkaline Phosphatase
 2. Cyanocobalamin
 3. RNase
 4. Insulin
 5. Transferrin
 6. Trypsin Inhibitor



Jupiter Proteo – for Peptide Mapping and Peptide Purification

Separating peptide fragments by reversed phase chromatography is a standard method of protein analysis and is used to develop well-characterized biopharmaceuticals. In an effort to support proteomic research and the growth of the synthetic peptide industry, we have engineered a column with a sorbent and surface chemistry that successfully leverages the physical and chemical properties of polypeptides.

- Novel 90 Å, C12 bonded phase optimized for peptide mapping and the separation of synthetic peptides
- Identify oxidation, deamidation, and other post-translational modifications
- Resolve peptides differing in hydrophobicity by one methyl group

Identify More Peaks in Peptide Maps with Increased Peak Capacity

Jupiter Proteo is designed to selectively separate and to optimize information on peptide fragments obtained in a protein digest. In the example, a Jupiter Proteo column offers better selectivity and resolving power compared with a commercial 300 Å, silica-based C18 reversed phase column.

Myoglobin Tryptic Digest

Conditions for all columns:

Dimensions: 250 x 4.6 mm

Mobile Phase: A: 0.012 % TFA in Water
B: 0.01 % TFA in Acetonitrile

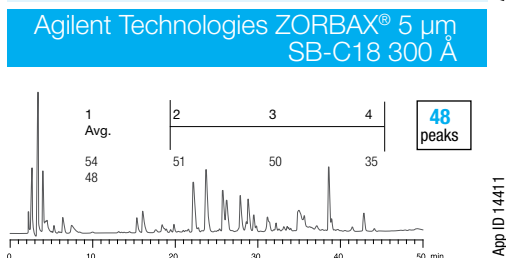
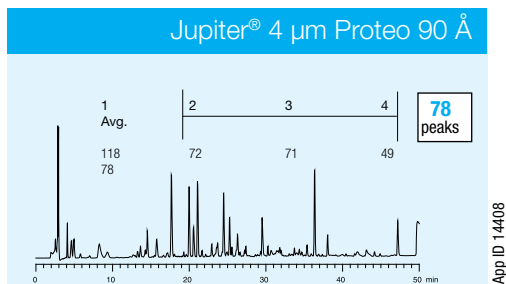
Gradient: A/B (95:5) for 5 min, then to A/B (60:40) in 55 minutes

Flow Rate: 1 mL/min

Temperature: 22 °C

Detection: UV @ 210 nm

Sample: Myoglobin Tryptic Digest



Selectivity to Improve Resolution

Jupiter Proteo can be used to resolve peptides of MW < 10,000 Da and often is able to separate peptides of only 1-2 amino acid difference. By comparing the resolution of five peptide standards with amino acid sequences that differ in hydrophobicity by one methyl group each with respect to efficiency, selectivity, and resolution it is evident that Jupiter Proteo fully resolves each peptide.

Methylene Selectivity

Conditions for all columns:

Dimensions: 250 x 4.6 mm

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

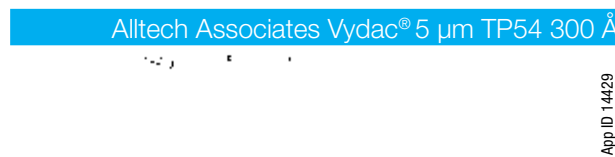
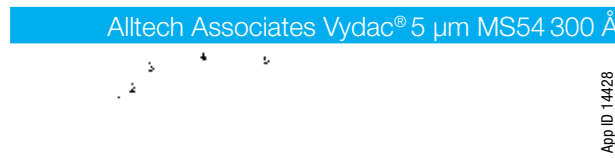
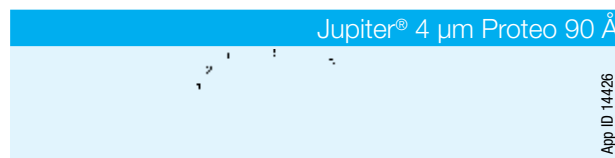
Gradient: A/B (95:5) to
A/B (55:45) in 20 minutes

Flow Rate: 1 mL/min

Temperature: 22 °C

Detection: UV @ 214 nm

Sample: 1. NH₂-Arg-Gly-Gly-Ala-Gly-Gly-Leu-Gly-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-Leu-Gly-Leu-Gly-Lys-Amide



Determining peak counts - The large number of peaks in a given tryptic digest makes counting peaks visually both inaccurate and subjective. For a more accurate approach, peak counting was performed using Agilent Technologies (HP) ChemStation™ software. Four different integration parameters at different sensitivity settings were used in calculating the number of peaks and an average. The parameters changed within each method were: minimum peak area, minimum peak height, peak width, and threshold. The table below describes the parameters used for each calculation.

Method	Threshold	Peak Width	Min Area	Min Height
1	1.0	0.1	10.0	20.0
2	2.0	0.2	10.0	20.0
3	3.0	0.3	20.0	10.0
4	3.0	0.3	20.0	50.0

Ordering Information

4 µm & 5 µm Capillary Columns (mm)							Capillary Guard Columns (mm)	
Phases	50 x 0.30	150 x 0.30	250 x 0.30	50 x 0.50	150 x 0.50	250 x 0.50	20 x 0.30	20 x 0.50
5 µm C4 300 Å	00B-4167-AC	00F-4167-AC	00G-4167-AC	00B-4167-AF	00F-4167-AF	—	03M-4167-AC	03M-4167-AF
5 µm C18 300 Å	00B-4053-AC	00F-4053-AC	00G-4053-AC	00B-4053-AF	00F-4053-AF	00G-4053-AF	03M-4053-AC	03M-4053-AF
4 µm Proteo 90 Å	00B-4396-AC	00F-4396-AC	00G-4396-AC	00B-4396-AF	00F-4396-AF	00G-4396-AF	03M-4396-AC	—

3 µm, 4 µm & 5 µm Microbore and Minibore Columns (mm)							SecurityGuard™ Cartridges (mm)	
Phases	50 x 1.0	150 x 1.0	250 x 1.0	50 x 2.0	150 x 2.0	250 x 2.0	4 x 2.0*	
5 µm C4 300 Å	00B-4167-A0	00F-4167-A0	00G-4167-A0	00B-4167-B0	00F-4167-B0	00G-4167-B0	/10pk	
5 µm C5 300 Å	00B-4052-A0	00F-4052-A0	00G-4052-A0	00B-4052-B0	00F-4052-B0	00G-4052-B0	AJ0-4329	
5 µm C18 300 Å	00B-4053-A0	00F-4053-A0	00G-4053-A0	00B-4053-B0	00F-4053-B0	00G-4053-B0	AJ0-4320	
4 µm Proteo 90 Å	00B-4396-A0	00F-4396-A0	00G-4396-A0	00B-4396-B0	00F-4396-B0	00G-4396-B0	AJ0-6073	
	—	—	—	—	—	—	/10pk	
3 µm C18 300 Å	—	—	—	00B-4263-B0	00F-4263-B0	—	AJ0-4320	

for ID: 2.0-3.0 mm

3 µm, 4 µm & 5 µm Analytical and Preparative Columns (mm)						SecurityGuard™ Cartridges (mm)		
Phases	50 x 4.6	150 x 4.6	250 x 4.6	250 x 10	250 x 21.2	4 x 3.0*	10 x 10†	15 x 21.2**
						/10pk	/3pk	/ea
5 µm C4 300 Å	00B-4167-E0	00F-4167-E0	00G-4167-E0	00G-4167-N0	00G-4167-P0	AJ0-4330	AJ0-7225	AJ0-7231
5 µm C5 300 Å	00B-4052-E0	00F-4052-E0	00G-4052-E0	00G-4052-N0	00G-4052-P0	AJ0-4327	AJ0-7371	—
5 µm C18 300 Å	00B-4053-E0	00F-4053-E0	00G-4053-E0	00G-4053-N0	00G-4053-P0	AJ0-4321	AJ0-7224	AJ0-7230
4 µm Proteo 90 Å	00B-4396-E0	00F-4396-E0	00G-4396-E0	00G-4396-N0	00G-4396-P0	AJ0-6074	AJ0-7275	AJ0-7842
	—	—	—	—	—	/10pk	—	—
3 µm C18 300 Å	—	00F-4263-E0	00G-4263-E0	—	—	AJ0-4321	—	—

for ID: 3.2-8.0 mm 9-16 mm 18-29 mm

10 µm Analytical and Preparative Columns (mm)						SecurityGuard™ Cartridges (mm)			
Phases	250 x 4.6	250 x 10	250 x 21.2	250 x 30	250 x 50	4 x 3.0*	10 x 10†	15 x 21.2**	15 x 30.0*
						/10pk	/3pk	/ea	/ea
C4 300 Å	00G-4168-E0	00G-4168-N0	00G-4168-P0	00G-4168-U0	00G-4168-V0	AJ0-4330	AJ0-7225	AJ0-7231	AJ0-8314
C5 300 Å	00G-4054-E0	00G-4054-N0	00G-4054-P0	—	00G-4054-V0	AJ0-4327	AJ0-7371	—	—
C18 300 Å	00G-4055-E0	00G-4055-N0	00G-4055-P0	00G-4055-U0	00G-4055-V0	AJ0-4321	AJ0-7224	AJ0-7230	AJ0-8313
Proteo 90 Å	00G-4397-E0	00G-4397-N0	—	—	—	AJ0-6074	AJ0-7275	AJ0-7842	AJ0-8304

for ID: 3.2-8.0 mm 9-16 mm 18-29 mm 30-49 mm

15 µm Analytical and Preparative Columns (mm)						SecurityGuard™ Cartridges (mm)			
Phases	250 x 4.6	250 x 10	250 x 21.2	250 x 30	250 x 50	4 x 3.0*	10 x 10†	15 x 21.2**	15 x 30.0*
						/10pk	/3pk	/ea	/ea
C4 300 Å	00G-4169-E0	00G-4169-N0	00G-4169-P0	00G-4169-U0	00G-4169-V0	AJ0-4330	AJ0-7225	AJ0-7231	AJ0-8314
C5 300 Å	00G-4056-E0	00G-4056-N0	00G-4056-P0	—	00G-4056-V0	AJ0-4327	AJ0-7371	—	—
C18 300 Å	00G-4057-E0	00G-4057-N0	00G-4057-P0	00G-4057-U0	00G-4057-V0	AJ0-4321	AJ0-7224	AJ0-7230	AJ0-8313

for ID: 3.2-8.0 mm 9-16 mm 18-29 mm 30-49 mm

Ordering Information

*SecurityGuard™ Analytical Cartridges require holder, Part No.: KJ0-4282
 †SemiPrep SecurityGuard™ Cartridges require holder, Part No.: AJ0-7220

**PREP SecurityGuard™ Cartridges require holder, Part No.: AJ0-8223
 ††PREP SecurityGuard™ Cartridges require holder, Part No.: AJ0-8277

Bulk Material

10 µm Bulk Packings

Phase	100 g	1 kg	5 kg	10 kg	50 kg	100 kg
	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire
C4 300 Å	04G-4168	04K-4168	04L-4168	04M-4168	04N-4168	04P-4168
C5 300 Å	04G-4054	04K-4054	04L-4054	04M-4054	04N-4054	04P-4054
C18 300 Å	04G-4055	04K-4055	04L-4055	04M-4055	04N-4055	04P-4055
Proteo 90 Å	04G-4397	04K-4397	04L-4397	04M-4397	04N-4397	04P-4397

15 µm Bulk Packings

Phases	100 g	1 kg	5 kg	10 kg	50 kg	100 kg
	Inquire	Inquire	Inquire	Inquire	Inquire	Inquire
C4 300 Å	04G-4169	04K-4169	04L-4169	04M-4169	04N-4169	04P-4169
C5 300 Å	04G-4056	04K-4056	04L-4056	04M-4056	04N-4056	04P-4056
C18 300 Å	04G-4057	04K-4057	04L-4057	04M-4057	04N-4057	04P-4057



Carbohydrate and Organic Acid Analysis

- Excellent resolution
- Wide range of selectivities
- Excellent column-to-column reproducibility
- Recommended alternative to Bio-Rad® Aminex®, Supelco® SUPELCOGEL™ and Waters® Sugar-Pak™ at cost-effective prices

Rezex columns contain sulfonated styrene-divinylbenzene spheres in 4 and 8 % cross-link forms as well as various ionic forms, including calcium, sodium, hydrogen, potassium, lead, and silver. So all you have to do is select the column with the appropriate selectivity.

Find the Column For Your Application

Phases Available	Description	Applications	Additional Notes
RCM-Monosaccharide (L19 packing)*	8 % cross-linked resin CALCIUM ionic form	Monosaccharides and sugar alcohols from sweeteners and corn and cane sugars Di, tri, and tetra saccharides	– Our most commonly used column type – Easy regeneration with calcium nitrate solutions
RHM-Monosaccharide (L17 packing)*	8 % cross-linked resin HYDROGEN ionic form	Monosaccharides in combination with organic acids, fatty acids, alcohols, ketones, neutral compounds, or inorganic salts	– Versatile column, generally run with a mobile phase of deionized water
RAM-Carbohydrate	8 % cross-linked resin SILVER ionic form	Selectivity complimentary to other Rezex column types	
RSO-Oligosaccharide	4 % cross-linked resin SILVER ionic form	High resolution of oligosaccharides up to 18 degrees of polymerization (Dp)	– Guard column is recommended to protect the ionic integrity of the matrix
RNO-Oligosaccharide	4 % cross-linked resin SODIUM ionic form	High resolution of oligosaccharides	
RPM-Monosaccharide (L34 packing)*	8 % cross-linked resin LEAD ionic form	Monosaccharides and sugar alcohol analysis. Cellobiose, glucose, xylose, arabinose, and mannose & other cellulose products	
RNM-Carbohydrate (L58 packing)*	8 % cross-linked resin SODIUM ionic form	For matrices which contain high concentration of inorganic sodium, Example-molasses	– Easily regenerated to the original ionic strength
ROA-Organic Acid (L22 packing)*	8 % cross-linked resin HYDROGEN ionic form	Organic acids alone or in combination with carbohydrates, alcohols, fatty acids, or neutral compounds; Amino sugars	– Selectivity can be altered by changing the pH as well as the type of dilute mineral acid used as the mobile phase
RFQ-Fast Acid	8 % cross-linked resin HYDROGEN ionic form	Rapid screening of fruit quality; ethanol, acetic acid, glycerol, & standard alcohol mixtures	– Analytes are routinely chromatographed under 5 minutes
RKP-Potassium	8 % cross-linked resin POTASSIUM ionic form	Analysis of glyphosate	
RCU-USP Sugar Alcohols (L19 packing)*	8 % cross-linked resin CALCIUM ionic form	For sugar analysis according to the USP procedures	– Sorbitol and mannitol can be resolved using simple isocratic conditions

* United States Pharmacopeia (USP)



Rezex™ vs. Bio-Rad Aminex®

Phenomenex guarantees satisfaction when using Rezex HPLC columns. As illustrated below, Rezex offers advantages that enhance chromatographic results, increase throughput, and simplify quantitation.

Easier, Accurate Quantitation

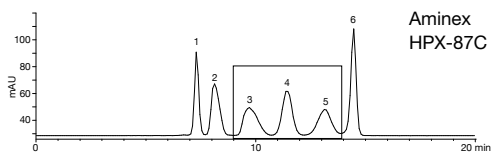
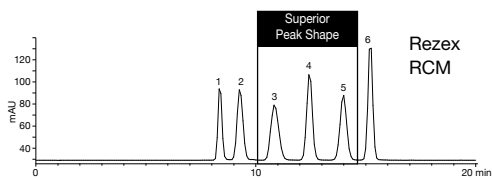
Due to improved peak shape

Saccharides

Conditions for both columns:

Column: Rezex RCM-Monosaccharide
Aminex HPX-87C
Dimensions: 300 x 7.8 mm
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80 °C

Sample: 1. Melezitose 4. Mannose
2. Maltose 5. Fructose
3. Glucose 6. Ribitol

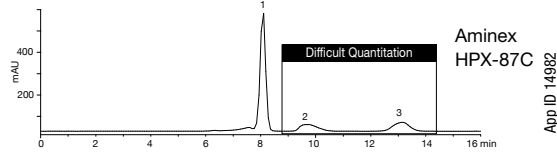
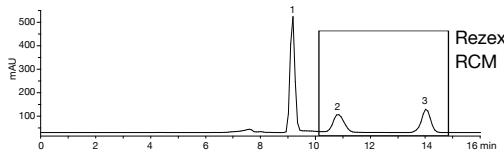


Orange Juice

Conditions for both columns:

Column: Rezex RCM-Monosaccharide
Aminex HPX-87C
Dimensions: 300 x 7.8 mm
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80 °C

Sample: 1. Sucrose
2. Glucose
3. Fructose



Longer Column Lifetime

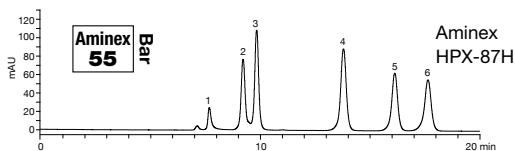
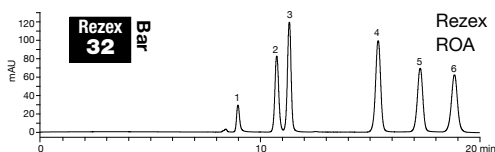
Due to lower backpressures

Aliphatic Acids

Conditions for both columns:

Column: Rezex ROA-Organic Acid
Aminex HPX-87H
Dimensions: 300 x 7.8 mm
Mobile Phase: 0.005 N H₂SO₄
Flow Rate: 0.5 mL/min
Detection: UV @ 210 nm
Temperature: 40 °C

Sample: 1. Oxalic Acid 4. Succinic Acid
2. Citric Acid 5. Formic Acid
3. Tartaric Acid 6. Acetic Acid



Baseline Separation of Critical Sample Components

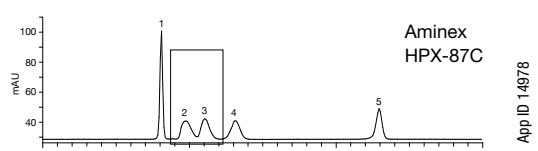
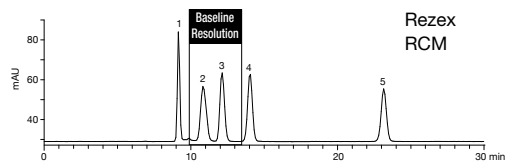
Due to improved resolution

Sugars

Conditions for both columns:

Column: Rezex RCM-Monosaccharide
Aminex HPX-87C
Dimensions: 300 x 7.8 mm
Mobile Phase: Water
Flow Rate: 0.6 mL/min
Detection: ELSD
Temperature: 80 °C

Sample: 1. Sucrose 4. Fructose
2. Glucose 5. Sorbitol
3. Galactose



Comparative separations may not be representative of all applications. Aminex® is a registered trademark of Bio-Rad. Phenomenex is in no way affiliated with Bio-Rad.

Retention Times for Some Carbohydrates and Sugar Alcohols

Counter Ion Analyte	RAM Ag ⁺	RCM Ca ⁺²	RNM Na ⁺	RHM H ⁺	RPM Pb ⁺²
Adonitol (Ribitol)	11.54	14.93	11.10	11.11	20.15
D-Altrose	11.95	12.71	11.45	10.21	15.82
D-(-)-Arabinose	13.01	13.56	12.65	11.24	16.47
D-(+)-Cellobiose	8.86	8.60	8.49	8.02	11.00
D-(+)-Digitoxose	11.90	13.82	11.39	12.59	15.32
Dulcitol	11.64	21.61	11.10	10.71	33.25
Meso-Erythritol	12.31	15.49	11.78	12.14	19.82
D-(-) Fructose	12.05	13.65	11.76	10.31	17.71
L-(-)-Fucose	12.75	13.19	12.30	11.65	16.19
D-(+)-Galactose	11.87	11.73	11.47	10.19	14.94
Gentiobiose	8.70	8.40	8.40	7.87	10.53
D-(+)-Glucose	11.04	10.37	10.71	9.62	12.92
Inositol	12.59	13.35	12.14	9.98	18.87
Isomaltose	9.11	8.74	8.76	8.02	11.28
Lactose	9.27	9.03	8.78	8.32	11.89
Lactulose	9.75	10.32	9.23	8.57	13.95
D- Lyxose	12.41	14.06	11.98	10.68	16.66
D- Maltose	9.16	8.81	8.75	8.18	11.59
Maltotriose	8.27	8.10	7.94	7.51	11.02
Maltulose	9.25	9.47	8.82	8.27	12.40
D- Mannitol	11.36	17.82	10.80	10.59	24.90
D-(+)-Mannose	12.04	12.04	11.54	10.16	16.39
Melibiose	9.26	9.04	8.82	8.14	11.97
D-(+)-Melezitose	8.00	7.93	7.66	7.54*	9.94
D-(+)-Raffinose	8.10	8.16	7.76	7.88*	10.28
L-(+)-Rhamnose	11.50	12.18	11.00	10.90	14.47
D-(-)-Ribose	14.59	23.38	14.34	11.42	33.48
Salicin	18.51	18.58	17.36	14.98	26.81
D-Sorbitol	11.91	22.45	11.39	10.83	35.97
Stachyose	7.60	7.59	7.30	7.27	9.72
Sucrose	9.03	8.71	8.65	9.24*	11.00
Trehalose	8.91	8.72	8.49	8.32	11.01
Xylitol	12.69	22.01	12.16	11.78	32.38
D-(+)-Xylose	12.06	11.62	11.68	10.24	13.84

* Partial hydrolysis results.

Conditions:

Dimensions: 300 x 7.8 mm
Mobile Phase: Water (degassed)
Flow Rate: 0.6 mL/min
Temperature: 80 °C
Detection: RI @ 40 °C

Column Cross Reference Chart

Phenomenex® Rezex™	Bio-Rad® Aminex™	Supelco® SUPELCOGEL™	Waters® Sugar-Pak™
RCM-Monosaccharide	HPX-87C 125-0095	Supelcogel Ca	Sugar-Pak 1
RHM-Monosaccharide	HPX-87H 125-0140	Supelcogel C-610H & H	N/A
RPM-Monosaccharide	HPX-87P 125-0098	Supelcogel Pb	N/A
RNM-Carbohydrate	HPX-87N 125-0143	N/A	N/A
RSO-Oligosaccharide	HPX-42A 125-0097	Supelcogel Ag1 & Ag2	N/A
ROA-Organic Acid	HPX-87H 125-0140	Supelcogel C-610H & H	N/A
RFQ-Fast Acid	Fast Acid 125-0100	N/A	N/A
RKP-Potassium	HPX-87K 125-0142	Supelcogel K	N/A
RCU-USP Sugar Alcohols	Sugar Alcohols 125-0094	N/A	N/A

Ordering Information

SecurityGuard™ Analytical Cartridges require universal holder Part No.: KJO-4282

Columns					Guards		SecurityGuard™ Cartridges (mm)
Description	Part No.	Cross Linkage	Ionic Form	Size (mm)	Part No.	Size (mm)	4 x 3.0 /10pk
RCM-Monosaccharide	00H-0130-KO	8 %	Calcium	300 x 7.8	03B-0130-KO	50 x 7.8	AJO-4493
RHM-Monosaccharide	00H-0132-KO	8 %	Hydrogen	300 x 7.8	03B-0132-KO	50 x 7.8	AJO-4490
RAM-Carbohydrate	00H-0131-KO	8 %	Silver	300 x 7.8	—	—	AJO-4491
RSO-Oligosaccharide	00P-0133-NO	4 %	Silver	200 x 10.0	03R-0133-NO	60 x 10.0	—
RNO-Oligosaccharide	00P-0137-NO	4 %	Sodium	200 x 10.0	03R-0137-NO	60 x 10.0	—
RPM-Monosaccharide (for USP procedure)	00H-0135-KO 00D-0135-KO	8 % 8 %	Lead Lead	300 x 7.8 100 x 7.8	03B-0135-KO 03B-0135-KO	50 x 7.8 50 x 7.8	AJO-4492 AJO-4492
RNM-Carbohydrate	00H-0136-KO	8 %	Sodium	300 x 7.8	03B-0136-KO	50 x 7.8	—
ROA-Organic Acid	00H-0138-KO	8 %	Hydrogen	300 x 7.8	03B-0138-KO	50 x 7.8	AJO-4490
ROA-Organic Acid	00F-0138-KO	8 %	Hydrogen	150 x 7.8	03B-0138-KO	50 x 7.8	AJO-4490
ROA-Organic Acid	00G-0138-EO	8 %	Hydrogen	250 x 4.6	—	—	AJO-4490
RKP-Potassium	00H-3252-KO	8 %	Potassium	300 x 7.8	—	—	—
RFQ-Fast Acid	00D-0223-KO	8 %	Hydrogen	100 x 7.8	03B-0223-KO	50 x 7.8	AJO-4490
RCU-USP Sugar Alcohols	00G-0130-D0	8 %	Calcium	250 x 4.0	03A-0130-D0	30 x 4.0	AJO-4493

for ID: 3.2-8.0 mm

Aminex is a registered trademark of Bio-Rad.
 Supelco is a trademark of Supelco.
 Sugar-Pak is a trademark of Waters Corporation.
 Rezex is a trademark of Phenomenex, Inc.
 Phenomenex is in no way affiliated with any of the companies mentioned above.

- 5 and 10 μm particle sizes
- Narrow bore (4.6 mm ID) solvent-saver to preparative columns available
- Very good alternative to Polymer Labs PLgel and Waters Styragel, Ultrastyrigel, Styragel HT, and Styragel HR columns
- Highly cross-linked for mechanical and chemical stability
- Temperature stable to 140 °C

Phenogel is available in seven different pore sizes ranging from 50 Å to 10⁶ Å^a, and a linear bed configuration. Pore size distribution and pore volume are closely controlled parameters in the manufacturing process; accounting for the high resolution, tight linear calibration curves and excellent column-to-column reproducibility.

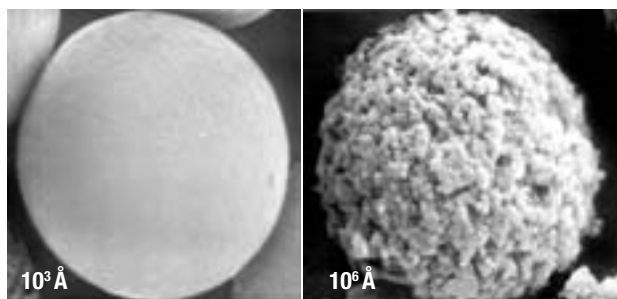
Sample Elution

Each standard dimension Phenogel column (300 x 7.8 mm) has an internal volume of 15 mL that is distributed as follows:

- 3 mL is occupied by the solid portions of the gel particles (20 % of total column volume)
- 6 mL is the pore volume of the packing material (40 % of total column volume)
- 6 mL is the interstitial volume or volume between the gel particles (40 % of total column volume)

Thus, about 6 mL of solvent must elute through each column before even the largest molecules can emerge, while the smallest molecules emerge with the total column volume of 12 mL. This constant distribution of volume makes it possible to predict the amount of solvent and time necessary to complete any analysis.

SEM Photos of Phenogel Polymer Beads



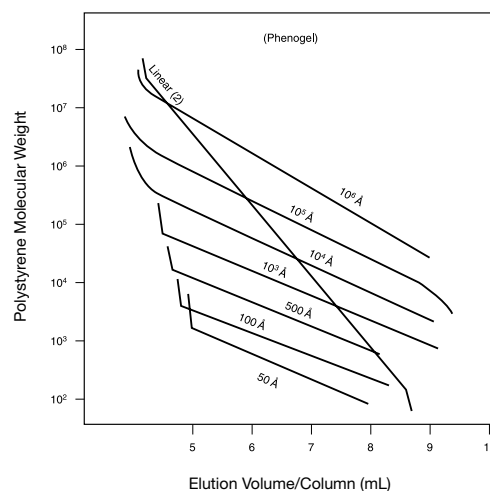
^aPore Size is expressed in Angstroms (10⁻¹⁰ meters). This is actually a convention used by manufacturers to indicate the approximate molecular weight of compounds that can be separated on a given SEC packing; these values do not indicate the actual size (diameter) of the pores on the surface of the particle. Exclusion Limit is expressed in daltons (the molecular weight) of the specified compound excluded from the pores of the base material. Practically speaking however, the exclusion limit is more accurately a reflection of the hydrodynamic volume occupied by the solvated compound.

Technical Specifications

Material:	SDVB
Particle Size:	5, 10 μm
Porosities:	50 Å to 10 ⁶ Å [†] , and mixed beds
Typical Pressure:	5 μm: 350 psi 10 μm: 200 psi
Maximum Pressure:	650 psi
Maximum Temperature:	140 °C
Minimum Efficiency*:	5 μm: 45,000 p/m** 10 μm: 35,000 p/m**
Typical Flow Rates:	4.6 mm ID: 0.35 mL/min 7.8 mm ID: 1.0 mL/min 21.2 mm ID: 8.0 mL/min
End Fittings:	Valco Compatible

* Tested in THF ** For 300 x 7.8 mm ID columns

Column Molecular Weight Calibration Curves



Column Selection by Molecular Weight

Sample Type	Molecular Weight	Phenogel Column
Small Organics	100 - 3 K	50 Å
	500 - 6 K	100 Å
	1 K - 15 K	500 Å
Resins	1 K - 75 K	10 ³ Å
	5 K - 500 K	10 ⁴ Å
	10 K - 1,000 K	10 ⁵ Å
High MW Polymers	60 K - 10,000 K	10 ⁶ Å
	K	10 ⁶ Å
	100 - 10,000 K	Linear(2)

Phenogel™ GPC/SEC Columns

GPC
Size Exclusion

Ordering Information

5 µm Columns (mm)		Guards			
		300 x 7.8	600 x 7.8	300 x 21.2	50 x 7.8
Pore Size	MW Range				
50 Å	100-3 K	00H-0441-KO	—	—	03B-2088-KO
100 Å	500-6 K	00H-0442-KO	00K-0442-KO	—	03B-2088-KO
500 Å	1K-15 K	00H-0443-KO	—	—	03B-2088-KO
10 ³ Å	1K-75 K	00H-0444-KO	—	—	03B-2088-KO
10 ⁴ Å	5K-500 K	00H-0445-KO	00K-0445-KO	00H-0445-PO	03B-2088-KO
10 ⁵ Å	10K-1,000 K	00H-0446-KO	00K-0446-KO	00H-0446-PO	03B-2088-KO
10 ⁶ Å	60K-10,000 K	00H-0447-KO	—	00H-0447-PO	03B-2088-KO
		300 x 7.8	600 x 7.8	—	50 x 7.8
Mixed Beds		—			
Linear(2)	100-10,000 K	00H-3259-KO	00K-3259-KO	—	03B-2088-KO

Other Shipping Solvents:
Methanol, Methylene Chloride, Cyclohexane, Ethyl Acetate, NMP, DMAC, DMF

Size (mm)

30 x 4.6
50 x 4.6
300 x 4.6
300 x 7.8
600 x 7.8
300 x 21.2
600 x 21.2

NOTE: Phenogel columns are routinely shipped in THF. Columns can be shipped in Toluene and Chloroform upon request at no additional charge.

5 µm Narrow Bore (NB) Columns (mm)		Guards	
		300 x 4.6	30 x 4.6
Pore Size	MW Range		
50 Å	100-3 K	00H-0441-E0	03A-2088-E0
100 Å	500-6 K	00H-0442-E0	03A-2088-E0
500 Å	1K-15 K	00H-0443-E0	03A-2088-E0
10 ³ Å	1K-75 K	00H-0444-E0	03A-2088-E0
10 ⁴ Å	5K-500 K	00H-0445-E0	03A-2088-E0

Phenogel Columns are a Recommended Alternative to:

Manufacturer	Columns
Jordi Associates	Jordi GPC-DVB
Polymer Labs	PLgel™
Waters	Styragel® µStyragel™ UltraStyragel™ Styragel® HT Styragel® HR

10 µm Columns (mm)		Guards				
		300 x 7.8	600 x 7.8	300 x 21.2	600 x 21.2	50 x 7.8
Pore Size	MW Range					
50 Å	100-3 K	00H-0641-KO	00K-0641-KO	00H-0641-PO	00K-0641-PO	03B-2090-KO
100 Å	500-6 K	00H-0642-KO	00K-0642-KO	00H-0642-PO	00K-0642-PO	03B-2090-KO
500 Å	1K-15 K	00H-0643-KO	00K-0643-KO	—	00K-0643-PO	03B-2090-KO
10 ³ Å	1K-75 K	00H-0644-KO	00K-0644-KO	00H-0644-PO	00K-0644-PO	03B-2090-KO
10 ⁴ Å	5K-500 K	00H-0645-KO	00K-0645-KO	00H-0645-PO	00K-0645-PO	03B-2090-KO
10 ⁵ Å	10K-1,000 K	00H-0646-KO	00K-0646-KO	00H-0646-PO	00K-0646-PO	03B-2090-KO
10 ⁶ Å	60K-10,000 K	00H-0647-KO	00K-0647-KO	00H-0647-PO	00K-0647-PO	03B-2090-KO
		300 x 7.8	600 x 7.8	300 x 21.2	—	50 x 7.8
Mixed Beds		—				
Linear(2)	100-10,000 K	00H-3260-KO	00K-3260-KO	00H-3260-PO	—	03B-2090-KO



All other column dimensions available. Phenogel columns are routinely shipped in THF. However, columns are also available in commonly used solvents such as Toluene and Chloroform as well as DMF, NMP, and other solvents. Refer to the chart above for the additional charge for these shipping solvents. Please specify shipping solvent when ordering.

Axia™ Packed Preparative HPLC

Preparative HPLC

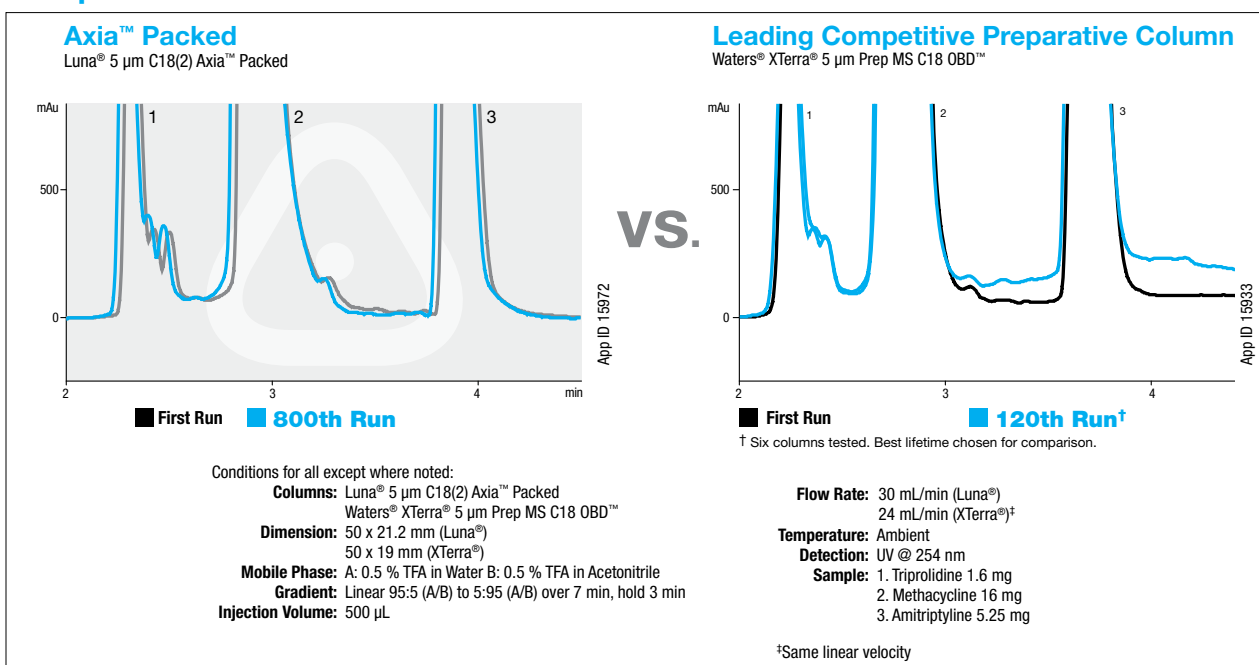
U.S. Patent No. 7, 674, 383

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.



Compare Lifetime



Axia™ Packed Preparative HPLC

Preparative HPLC

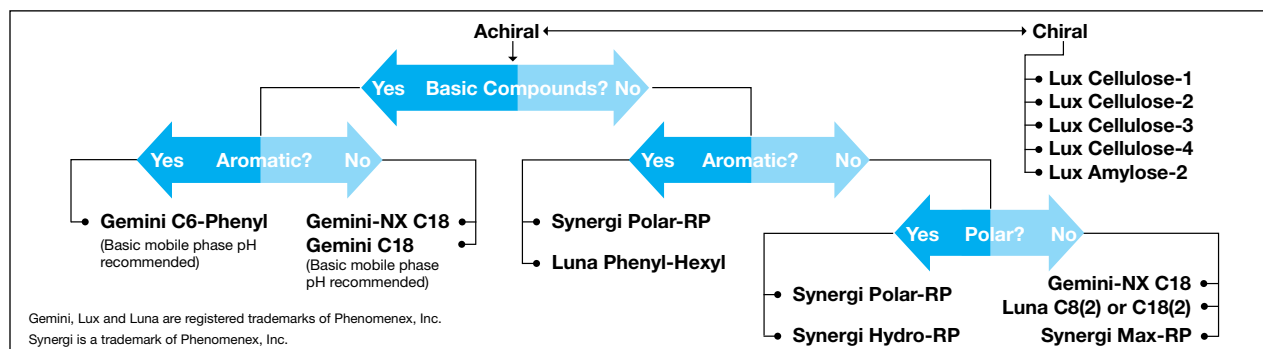
U.S. Patent No. 7, 674, 383

Selectivity Options

Stationary Phase Selectivity

With high surface areas, Phenomenex media—Gemini®-NX 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.

Column Selection Tree



pH-LC™

In reversed phase chromatography, compounds retain better when neutral. With the advent of pH stable (1-12) media such as Gemini-NX C18, Gemini C18 and C6-Phenyl, 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.

pH Selectivity

Low pH

Column: Luna® 5 µm C18(2)
Axia™ Packed

Dimensions: 50 x 21.2 mm

Part No.: 00B-4252-P0-AX

Mobile Phase: A: 0.5 % TFA in Water
B: 0.5 % TFA in Acetonitrile

Gradient: Linear 95:5 (A/B) to 5:95 (A/B) over 7 min, hold 3 min

Injection Volume: 500 µL

Flow Rate: 30 mL/min

Detection: UV @ 254 nm

Sample: 1. Triprolidine 1.6 mg
2. Methacycline 16 mg
3. Amitriptyline 5.25 mg

Luna® 5 µm C18(2)
Axia™ Packed

App ID 15928

High pH

Columns: Gemini® 10 µm C18
Axia™ Packed

Dimensions: 50 x 21.2 mm

Part No.: 00B-4436-P0-AX

Mobile Phase: A: 95:5 50 mM Ammonium Bicarbonate, pH 10.0 / Acetonitrile
B: 5:95 50 mM Ammonium Bicarbonate, pH 10.0 / Acetonitrile

Gradient: 7 min 100 % A to 100 % B over 7 min, equilibrate for 3 min

Injection Volume: 500 µL

Flow Rate: 30 mL/min

Detection: UV @ 254 nm

Sample: 1. Triprolidine 1.6 mg
2. Methacycline 16 mg
3. Amitriptyline 5.25 mg

Gemini® 10 µm C18
Axia™ Packed

App ID 15973

Increase Sample Load

30 mg load

pH 2.0

App ID 17725

Increase pH for basic compounds

Low pH

Column: Luna® 5 µm C18(2)
Axia™ Packed

Dimensions: 50 x 21.2 mm

Part No.: 00B-4252-P0-AX

Mobile Phase: A: 0.5 % TFA in Water, pH 2.0
B: Acetonitrile

Gradient: 95:5 to 5:95 (A/B) over 4 minutes

Temperature: Ambient

Flow Rate: 30 mL/min

Detection: UV @ 254 nm

Sample: 1. Propranolol
2. Diphenhydramine

30 mg load

pH 10.0

App ID 17726

Baseline Resolution for Higher Purity

High pH

Column: Gemini® 5µm C18
Axia™ Packed

Dimensions: 50 x 21.2 mm

Part No.: 00B-4435-P0-AX

Mobile Phase: A: 50 mM Ammonium Bicarbonate, pH 10.0
B: Acetonitrile

Gradient: 95:5 to 5:95 (A/B) over 5 minutes

Temperature: Ambient

Flow Rate: 30 mL/min

Detection: UV @ 254 nm

Sample: 1. Propranolol
2. Diphenhydramine

60 mg load

App ID 17727

Axia™ Packed Preparative HPLC

Preparative HPLC

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

Axia Packed Columns

Ordering Information

Phases	Part No.
50 x 21.2 mm	
Gemini 5 µm C18	00B-4435-P0-AX
Gemini 10 µm C18	00B-4436-P0-AX
Gemini-NX 5 µm C18	00B-4454-P0-AX
Gemini-NX 10 µm C18	00B-4455-P0-AX
Luna 5 µm C18(2)	00B-4252-P0-AX
Luna 10 µm C18(2)	00B-4253-P0-AX
Luna 5 µm C8(2)	00B-4249-P0-AX
Luna 10 µm C8(2)	00B-4250-P0-AX
Luna 5 µm CN	00B-4255-P0-AX
Luna 5 µm PFP(2)	00B-4448-P0-AX
Luna 5 µm Phenyl-Hexyl	00B-4257-P0-AX
Luna 5 µm HILIC	00B-4450-P0-AX
Luna 5 µm Silica(2)	00B-4274-P0-AX
Synergi 4 µm Fusion-RP	00B-4424-P0-AX
Synergi 4 µm Max-RP	00B-4337-P0-AX
Synergi 4 µm Hydro-RP	00B-4375-P0-AX
Synergi 4 µm Polar-RP	00B-4336-P0-AX
75 x 21.2 mm	
Gemini 5 µm C18	00C-4435-P0-AX
Gemini-NX 5 µm C18	00C-4454-P0-AX
Luna 5 µm C18(2)	00C-4252-P0-AX
100 x 21.2 mm	
Gemini 5 µm C18	00D-4435-P0-AX
Gemini 10 µm C18	00D-4436-P0-AX
Gemini 5 µm C6-Phenyl	00D-4444-P0-AX
Gemini-NX 5 µm C18	00D-4454-P0-AX
Gemini-NX 10 µm C18	00D-4455-P0-AX
Jupiter 10 µm C18	00D-4455-P0-AX
Jupiter 10 µm C4	00D-4168-P0-AX
Jupiter 10 µm Proteo	00D-4397-P0-AX
Luna 5 µm C18(2)	00D-4252-P0-AX
Luna 10 µm C18(2)	00D-4253-P0-AX
Luna 5 µm C8(2)	00D-4249-P0-AX
Luna 10 µm C5	00D-4092-P0-AX
Luna 5 µm PFP(2)	00D-4448-P0-AX
Luna 5 µm Phenyl-Hexyl	00D-4257-P0-AX
Luna 5 µm NH ₂	00D-4378-P0-AX
Luna 5 µm HILIC	00D-4450-P0-AX
Luna 5 µm Silica (2)	00D-4274-P0-AX
Lux 5 µm Amylose-2	00D-4472-P0-AX
Lux 5 µm Cellulose-1	00D-4459-P0-AX
Lux 5 µm Cellulose-2	00D-4457-P0-AX
Synergi 4 µm Fusion-RP	00D-4424-P0-AX
Synergi 4 µm Max-RP	00D-4337-P0-AX
Synergi 10 µm Max-RP	00D-4350-P0-AX
Synergi 4 µm Hydro-RP	00D-4375-P0-AX
Synergi 4 µm Polar-RP	00D-4336-P0-AX
150 x 21.2 mm	
Gemini 5 µm C18	00F-4435-P0-AX
Gemini 10 µm C18	00F-4436-P0-AX
Gemini 5 µm C6-Phenyl	00F-4444-P0-AX
Gemini-NX 5 µm C18	00F-4454-P0-AX
Gemini-NX 10 µm C18	00F-4455-P0-AX
Luna 5 µm C18(2)	00F-4252-P0-AX
Luna 10 µm C18(2)	00F-4253-P0-AX
Luna 5 µm C8(2)	00F-4249-P0-AX
Luna 10 µm C8(2)	00F-4250-P0-AX
Luna 5 µm CN	00F-4255-P0-AX
Luna 5 µm NH ₂	00F-4378-P0-AX
Luna 5 µm PFP(2)	00F-4448-P0-AX
Luna 5 µm Phenyl-Hexyl	00F-4257-P0-AX
Luna 5 µm HILIC	00F-4450-P0-AX
Luna 5 µm Silica(2)	00F-4274-P0-AX

Phases	Part No.
150 x 21.2 mm (cont'd)	
Lux 5 µm Amylose-2	00F-4472-P0-AX
Lux 5 µm Cellulose-1	00F-4459-P0-AX
Lux 5 µm Cellulose-2	00F-4457-P0-AX
Synergi 4 µm Max-RP	00F-4337-P0-AX
Synergi 4 µm Hydro-RP	00F-4375-P0-AX
Synergi 4 µm Polar-RP	00F-4336-P0-AX
Synergi 4 µm Fusion-RP	00F-4424-P0-AX
250 x 21.2 mm	
Gemini 5 µm C18	00G-4435-P0-AX
Gemini 10 µm C18	00G-4436-P0-AX
Gemini 5 µm C6-Phenyl	00G-4444-P0-AX
Gemini-NX 5 µm C18	00G-4454-P0-AX
Gemini-NX 10 µm C18	00G-4455-P0-AX
Jupiter 10 µm C4	00G-4168-P0-AX
Jupiter 4 µm Proteo	00G-4396-P0-AX
Jupiter 10 µm Proteo	00G-4397-P0-AX
Luna 5 µm C18(2)	00G-4252-P0-AX
Luna 10 µm C18(2)	00G-4253-P0-AX
Luna 5 µm C8(2)	00G-4249-P0-AX
Luna 10 µm C8(2)	00G-4250-P0-AX
Luna 10 µm C5	00G-4092-P0-AX
Luna 5 µm CN	00G-4255-P0-AX
Luna 5 µm NH ₂	00G-4378-P0-AX
Luna 5 µm PFP(2)	00G-4448-P0-AX
Luna 5 µm Phenyl-Hexyl	00G-4257-P0-AX
Luna 5 µm Silica(2)	00G-4274-P0-AX
Luna 10 µm Silica(2)	00G-4091-P0-AX
Lux 5 µm Amylose-2	00G-4472-P0-AX
Lux 5 µm Cellulose-1	00G-4459-P0-AX
Lux 5 µm Cellulose-2	00G-4457-P0-AX
Lux 5 µm Cellulose-3	00G-4493-P0-AX
Lux 5 µm Cellulose-4	00G-4491-P0-AX
Synergi 4 µm Max-RP	00G-4337-P0-AX
Synergi 4 µm Hydro-RP	00G-4375-P0-AX
Synergi 4 µm Polar-RP	00G-4336-P0-AX
Synergi 4 µm Fusion-RP	00G-4424-P0-AX

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

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



For additional sizes not displayed, please visit the individual product pages or contact your Phenomenex technical consultant or local distributor.

Axia™ Packed Preparative HPLC

Preparative HPLC

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

Ordering Information (cont'd)

Phases	Part No.
50 x 30 mm	
Gemini 5 µm C18	00B-4435-UO-AX
Gemini 10 µm C18	00B-4436-UO-AX
Gemini-NX 5 µm C18	00B-4454-UO-AX
Gemini-NX 10 µm C18	00B-4455-UO-AX
Luna 5 µm C18(2)	00B-4252-UO-AX
Luna 10 µm C18(2)	00B-4253-UO-AX
Luna 5 µm C8(2)	00B-4249-UO-AX
Luna 10 µm C8(2)	00B-4250-UO-AX
Luna 5 µm Phenyl-Hexyl	00B-4257-UO-AX
Luna 5 µm PFP(2)	00B-4448-UO-AX
Luna 5 µm Silica(2)	00B-4274-UO-AX
Synergi 4 µm Max-RP	00B-4337-UO-AX
Synergi 10 µm Max-RP	00B-4350-UO-AX
Synergi 4 µm Hydro-RP	00B-4375-UO-AX
Synergi 10 µm Hydro-RP	00B-4376-UO-AX
Synergi 4 µm Polar-RP	00B-4336-UO-AX
Synergi 10 µm Polar-RP	00B-4351-UO-AX
75 x 30 mm	
Gemini 5 µm C18	00C-4435-UO-AX
Gemini 5 µm C6-Phenyl	00C-4444-UO-AX
Gemini-NX 5 µm C18	00C-4454-UO-AX
Luna 5 µm C18(2)	00C-4252-UO-AX
Luna 10 µm C18(2)	00C-4253-UO-AX
Luna 5 µm C8(2)	00C-4249-UO-AX
Luna 5 µm Phenyl-Hexyl	00C-4257-UO-AX
Synergi 4 µm Max-RP	00C-4337-UO-AX
Synergi 4 µm Hydro-RP	00C-4375-UO-AX
Synergi 4 µm Polar-RP	00C-4336-UO-AX
100 x 30 mm	
Gemini 5 µm C18	00D-4435-UO-AX
Gemini 10 µm C18	00D-4436-UO-AX
Gemini 5 µm C6-Phenyl	00D-4444-UO-AX
Gemini-NX 5 µm C18	00D-4454-UO-AX
Gemini-NX 10 µm C18	00D-4455-UO-AX
Jupiter 10 µm C18	00D-4055-UO-AX
Jupiter 10 µm Proteo	00D-4397-UO-AX
Luna 5 µm C18(2)	00D-4252-UO-AX
Luna 10 µm C18(2)	00D-4253-UO-AX
Luna 5 µm C8(2)	00D-4249-UO-AX
Luna 5 µm CN	00D-4255-UO-AX
Luna 5 µm NH ₂	00D-4378-UO-AX
Luna 5 µm PFP(2)	00D-4448-UO-AX
Luna 5 µm Phenyl-Hexyl	00D-4257-UO-AX
Luna 5 µm Silica(2)	00D-4274-UO-AX
Lux 5 µm Amylose-2	00D-4472-UO-AX
Lux 5 µm Cellulose-1	00D-4459-UO-AX
Lux 5 µm Cellulose-2	00D-4457-UO-AX
Synergi 4 µm Max-RP	00D-4337-UO-AX
Synergi 10 µm Max-RP	00D-4350-UO-AX
Synergi 4 µm Hydro-RP	00D-4375-UO-AX
Synergi 4 µm Polar-RP	00D-4336-UO-AX
Synergi 10 µm Polar-RP	00D-4351-UO-AX
Synergi 4 µm Fusion-RP	00D-4424-UO-AX
Synergi 10 µm Fusion-RP	00D-4425-UO-AX



For additional sizes not displayed, please visit the individual product pages or contact your Phenomenex technical consultant or local distributor.

Phases	Part No.
150 x 30 mm	
Gemini 5 µm C18	00F-4435-UO-AX
Gemini 10 µm C18	00F-4436-UO-AX
Gemini-NX 5 µm C18	00F-4454-UO-AX
Gemini-NX 10 µm C18	00F-4455-UO-AX
Luna 5 µm C18(2)	00F-4252-UO-AX
Luna 10 µm C18(2)	00F-4253-UO-AX
Luna 5 µm NH ₂	00F-4378-UO-AX
Luna 5 µm PFP(2)	00F-4448-UO-AX
Lux 5 µm Amylose-2	00F-4472-UO-AX
Lux 5 µm Cellulose-1	00F-4459-UO-AX
Lux 5 µm Cellulose-2	00F-4457-UO-AX
Synergi 4 µm Polar-RP	00F-4336-UO-AX
250 x 30 mm	
Gemini 5 µm C18	00G-4435-UO-AX
Gemini 10 µm C18	00G-4436-UO-AX
Gemini-NX 5 µm C18	00G-4454-UO-AX
Gemini-NX 10 µm C18	00G-4455-UO-AX
Jupiter 10 µm C18	00G-4055-UO-AX
Jupiter 10 µm C4	00G-4168-UO-AX
Jupiter 4 µm Proteo	00G-4396-UO-AX
Jupiter 10 µm Proteo	00G-4397-UO-AX
Luna 5 µm C18(2)	00G-4252-UO-AX
Luna 10 µm C18(2)	00G-4253-UO-AX
Luna 5 µm C8(2)	00G-4249-UO-AX
Luna 10 µm C5	00G-4092-UO-AX
Luna 5 µm CN	00G-4255-UO-AX
Luna 5 µm NH ₂	00G-4378-UO-AX
Luna 5 µm PFP(2)	00G-4448-UO-AX
Luna 5 µm HILIC	00G-4450-UO-AX
Luna 5 µm Silica(2)	00G-4274-UO-AX
Lux 5 µm Amylose-2	00G-4472-UO-AX
Lux 5 µm Cellulose-1	00G-4459-UO-AX
Lux 5 µm Cellulose-2	00G-4457-UO-AX
Synergi 4 µm Polar-RP	00G-4336-UO-AX
50 x 50 mm	
Gemini 5 µm C18	00B-4435-V0-AX
Gemini 10 µm C18	00B-4436-V0-AX
Gemini-NX 5 µm C18	00B-4454-V0-AX
Gemini-NX 10 µm C18	00B-4455-V0-AX
Luna 5 µm C18(2)	00B-4252-V0-AX
Luna 10 µm C18(2)	00B-4253-V0-AX
Luna 10 µm Phenyl-Hexyl	00B-4285-V0-AX
100 x 50 mm	
Gemini 10 µm C18	00D-4436-V0-AX
Gemini-NX 10 µm C18	00D-4455-V0-AX
Luna 10 µm C18(2)	00D-4253-V0-AX
150 x 50 mm	
Gemini 10 µm C18	00F-4436-V0-AX
Gemini-NX 10 µm C18	00F-4455-V0-AX
Luna 5 µm PFP(2)	00F-4448-V0-AX
250 x 50 mm	
Gemini 10 µm C18	00G-4436-V0-AX
Gemini-NX 10 µm C18	00G-4455-V0-AX
Luna 10 µm C18(2)	00G-4253-V0-AX
Luna 15 µm C18(2)	00G-4273-V0-AX
Luna 10 µm C8(2)	00G-4250-V0-AX
Luna 15 µm C8(2)	00G-4272-V0-AX
Luna 10 µm C5	00G-4092-V0-AX
Luna 5 µm HILIC	00G-4450-V0-AX
Lux 5 µm Amylose-2	00G-4472-V0-AX
Lux 5 µm Cellulose-1	00G-4459-V0-AX
Lux 5 µm Cellulose-2	00G-4457-V0-AX