PHARMACEUTICAL ANALYSIS GUIDE VOL. 1

Look inside to see how you can easily achieve

- Speed/Throughput
- Sensitivity
- Resolution
- Robustness

IMPROVE YOUR BIOANALYTICAL ASSAYS TODAY

DMPK – ADME/TOX – PDM – PK

phenomenex®
. . . breaking with tradition℠

www.phenomenex.com/Pharma

guarantee

If Phenomenex products in this brochure do not provide at least an equivalent separation as compared to other products of the same phase and dimensions, return the product with comparative data within 45 days for a FULL REFUND.

A consistent, reliable product proudly manufactured at Phenomenex headquarters in Torrance, CA USA

Meeting Laboratory Demands

Bioanalytical work is a race against time. Chemists are always looking for ways to increase sample throughput and reduce analysis time, while optimizing separation performance and decreasing unwanted matrix effects. Take a quick look at our solutions for ways you can improve your bioanalytical analysis, today.

Sample Prep Solutions

UHPLC/HPLC Solutions

Other Resources

Ordering Information

Reduce or Completely Eliminate Unwanted Matrix Effects

Select the Appropriate Sample Prep Technique for Your Key Requirements

See p. 21 for ordering information.

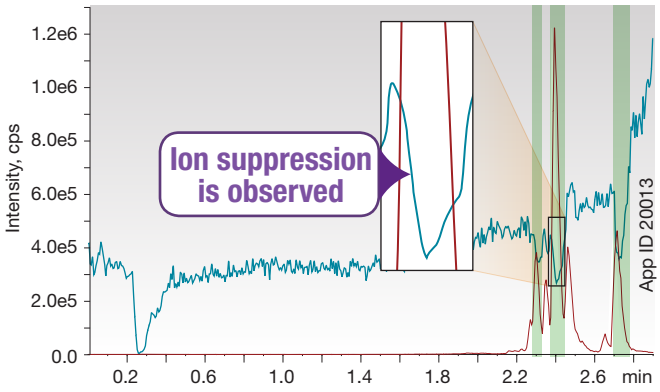
For more information, please visit
www.phenomenex.com/SamplePrep

Phree™ Phospholipid Removal Solutions

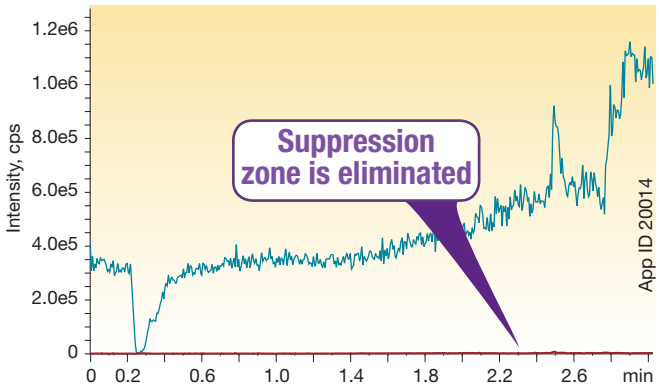
Reduce Ion Suppression

The presence of phospholipids in plasma samples produces zones of ion suppression that correlate exactly with the phospholipid elution profile when analyzed via mass spectrometer (MS).

Protein Precipitated Plasma



Phree Extracted Plasma



Suppression zone

Phospholipids *m/z 184-184*

Amoxapine *m/z 314-271*

Amoxapine was infused post-column to establish an ion suppression/enhancement profile with both protein precipitated plasma (left) and Phree extracted plasma (right), showing that Phree can successfully reduce ion suppression.

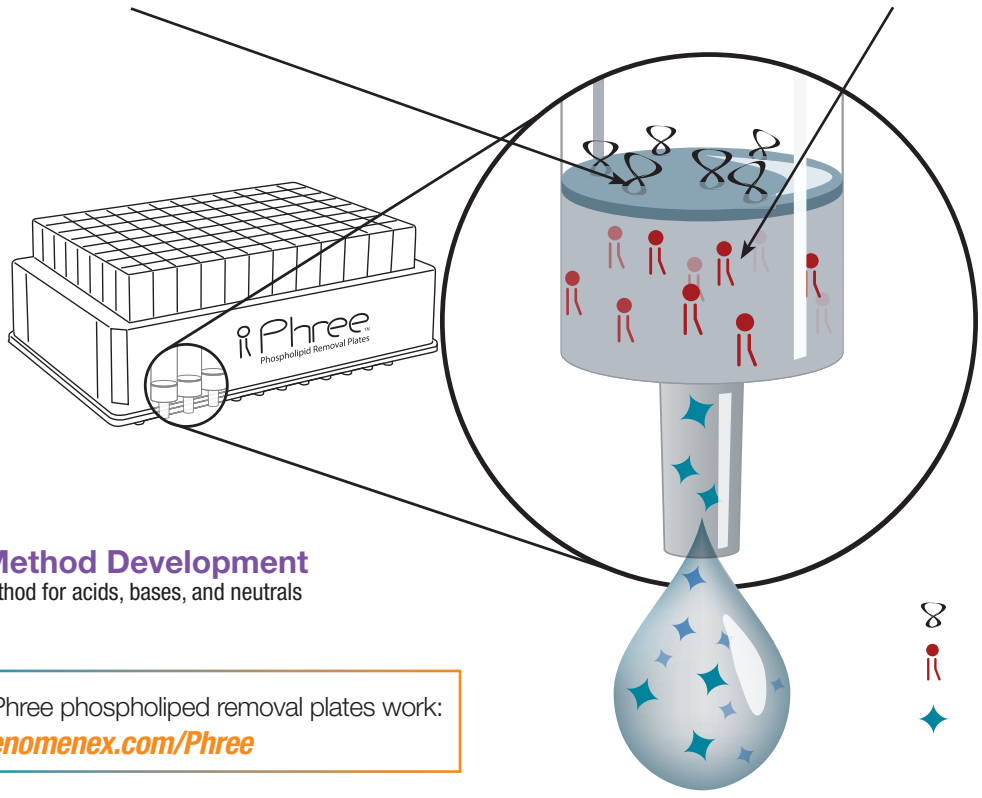
How Phree Works: Three Big Advantages

1 Remove Proteins

Solvent Shielding Technology™ prevents dripping of organic solvent, allowing for protein precipitation within the Phree Phospholipid Removal Product.

2 Eliminate Phospholipids

The Phree sorbent selectively removes phospholipids from precipitated plasma samples.



3 No Method Development

One method for acids, bases, and neutrals

See how Phree phospholiped removal plates work:
www.phenomenex.com/Phree

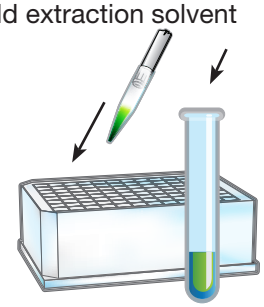
Much Faster, Easier, and More Reliable than Liquid-Liquid Extraction

novum™ simplified liquid extraction
PATENT PENDING

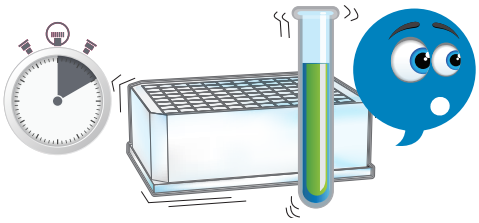
Novum SLE will instantly increase your throughput by eliminating time consuming steps and reducing the risk of analyte loss. Novum SLE simplifies the liquid-liquid extraction process and provides consistent recoveries from sample to sample. Never worry about analyte loss due to incomplete manual separation of liquid phases or the formation of emulsions.

Traditional LLE

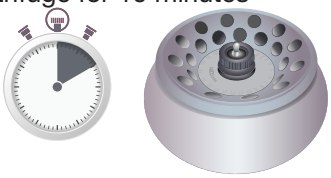
1. Dilute sample 1:1 with buffer or water and add extraction solvent



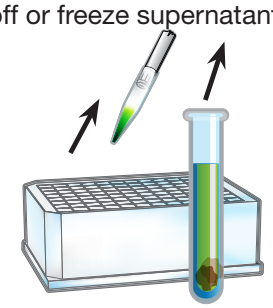
2. Mix for 10 minutes



3. Centrifuge for 10 minutes



4. Pour off or freeze supernatant



Novum Simplified

1. Dilute sample 1:1 with buffer or water and load onto Novum SLE sorbent using 2-15 secnods of vacuum

2. Wait 5 minutes

3. Apply elution solvent and allow to elute via gravity. Complete elution with 10 seconds of vacuum.

Stop worrying about analyte loss due to emulsions. **Trust Your Results!**

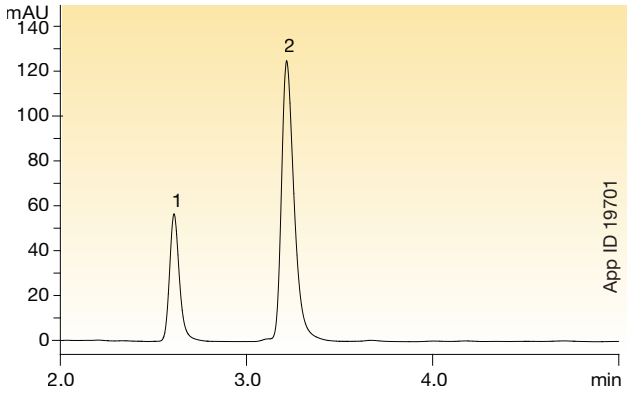
Watch “An Introduction to Simplified Liquid Extraction”
www.phenomenex.com/SLE

strata-X

Maximize Clean Up and Improve Recovery using SPE

In addition to SPE providing a greater absolute percent recovery by two-fold over LLE, the Strata-X sorbent procedure shows less variability between cartridges, with a mean % RSD of 10 % while the LLE procedure produced more variability with a mean % RSD of 3 times as much, at 35 %. According to the % RSD values for SPE and LLE, SPE is more precise and reproducible than LLE for the extraction of pharmaceutical compounds.

Cleaner Targeted Analytes after SPE Extraction from a Plasma Matrix



Column: Kinetex® 2.6 µm C18
Dimensions: 75 x 4.6 mm
Part No.: 00C-4462-E0
Mobile Phase: Water (adjusted to pH 3.3 with phosphoric acid)/ Methanol (63:37) Isocratic hold for 5 min
Flow Rate: 1.5 mL/min
Temperature: 30 °C
Detection: UV @ 254 nm
Sample: 1. Flurbiprofen (IS)
2. Diclofenac

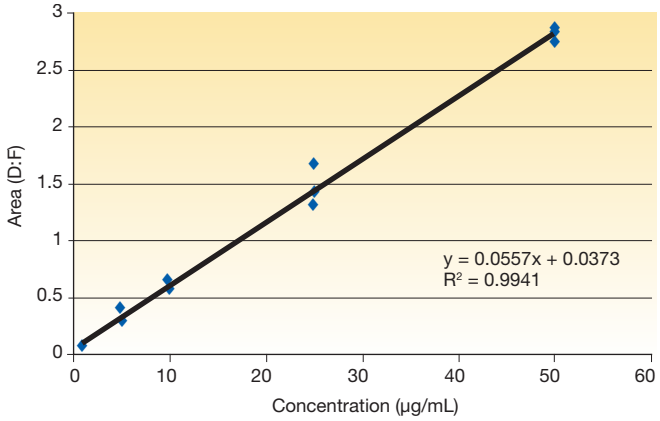
% Absolute Recovery for Diclofenac

	Spiked concentration	Diclofenac	Mean % RSD
SPE	15 µg/mL	86 % (n=4)	10
LLE	15 µg/mL	46 % (n=4)	35

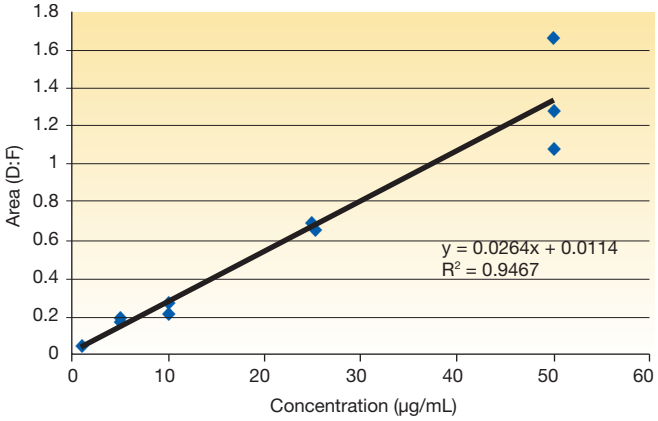
Diclofenac spiked plasma sample (50 µg/mL) after extraction with Strata-X. Flurbiprofen (IS) was added post-extraction at a concentration of 160 µg/mL. Note: the flurbiprofen was added post blow down, which is also post-extraction.

SPE is More Reproducible and Reliable Compared to LLE

Diclofenac Extracted Reference Curve: Solid Phase Extraction in Plasma Matrix

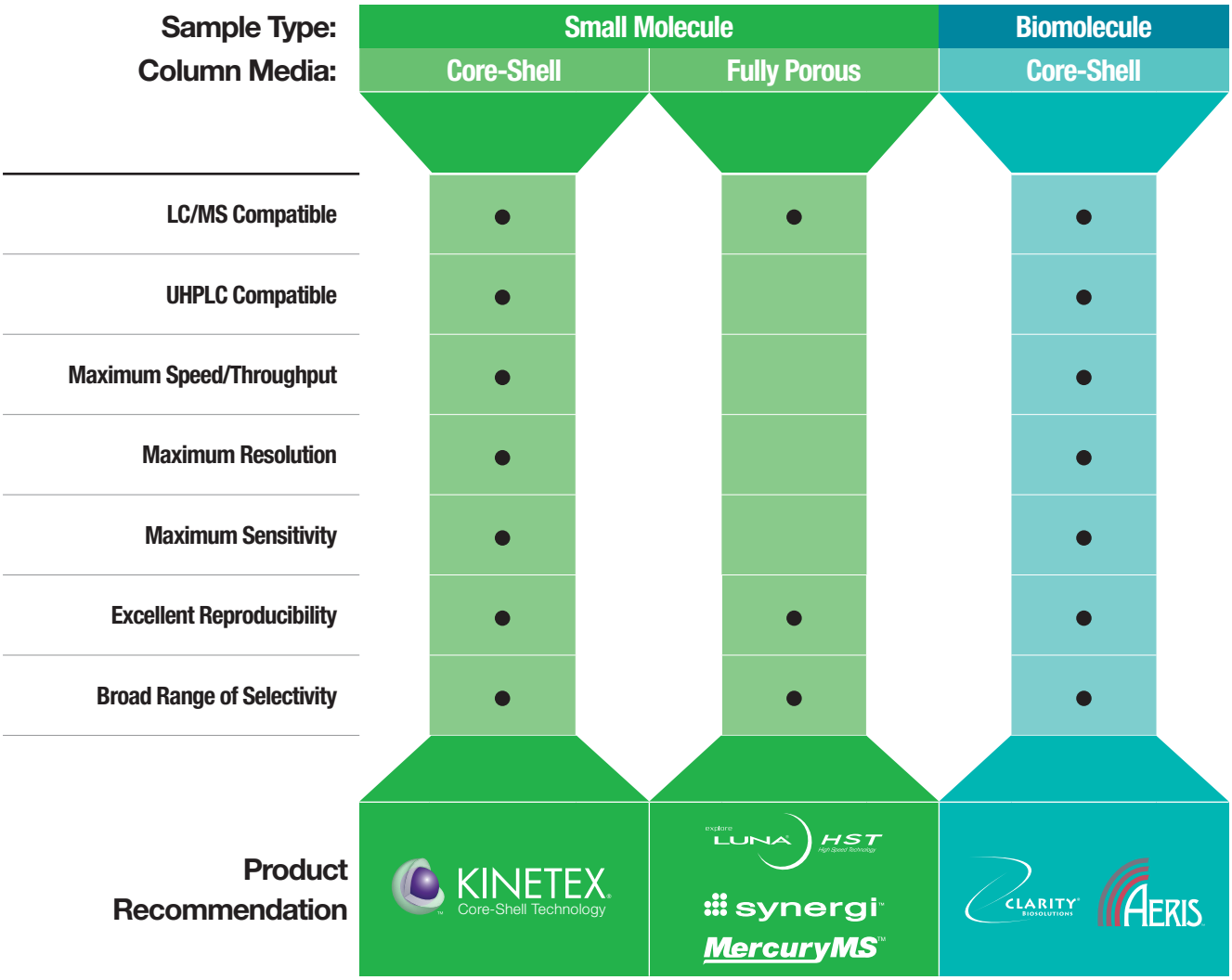


Diclofenac Extracted Reference Curve: Liquid-Liquid Extraction in Plasma Matrix



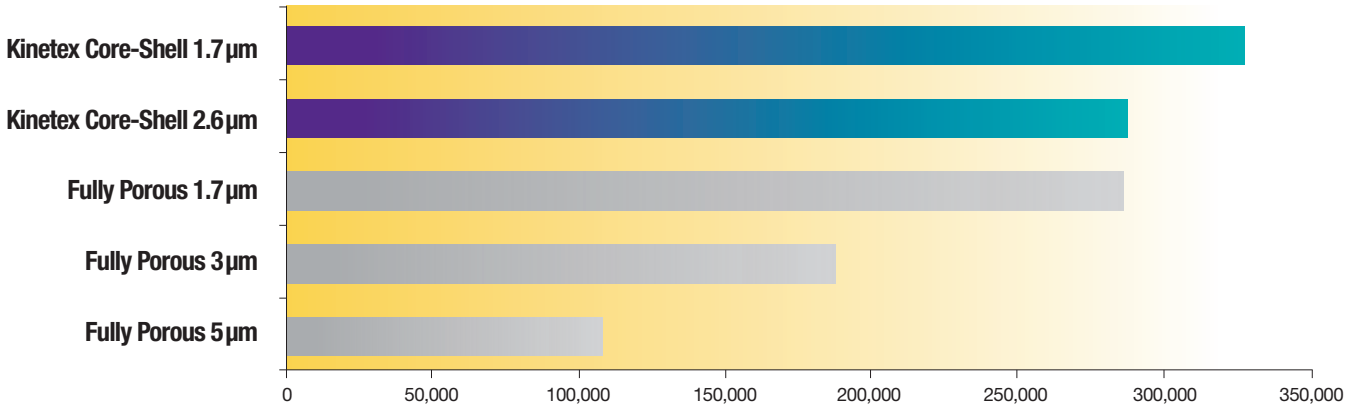
Develop SPE methods in under one minute:
www.phenomenex.com/MDTool

Method Development Flexibility for Your Bioanalytical Analysis



Core-Shell vs. Fully Porous Efficiency Levels (plates/m)

By switching from fully porous to core-shell, you will see an immediate increase in efficiency using the same particle size but without an increase in system backpressure.



These are the typical efficiencies seen on optimized HPLC/UHPLC instrumentation.

Easily Select Column Chemistry Based on Your Compound

Core-Shell

	Highly Polar	Acids	Bases	Neutrals	Aromatic	High pH
Kinetex® C18	●	●	●	●	●	
Kinetex XB-C18		●				
Kinetex C8				●		
Kinetex EVO C18	●		●			●
Kinetex Biphenyl	●		●	●	●	
Kinetex F5	●		●		●	
Kinetex Phenyl-Hexyl		●	●		●	
Kinetex HILIC	●					

Fully Porous

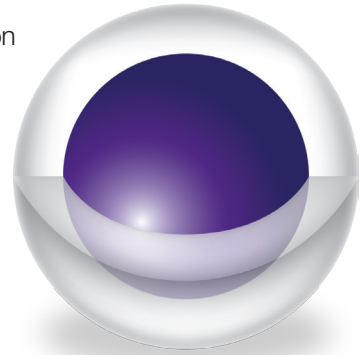
	Highly Polar	Acids	Bases	Neutrals	Aromatic	High pH
Synergi™ Hydro-RP (Polar-Endcapped C18)		●				
Synergi Polar-RP (Ether-Linked Phenyl)	●	●			●	
Synergi Fusion-RP (Polar Embedded C18)		●				
Synergi Max-RP (C12 with TMS Endcapping)		●		●		
Luna® C18(2)	●	●	●	●	●	

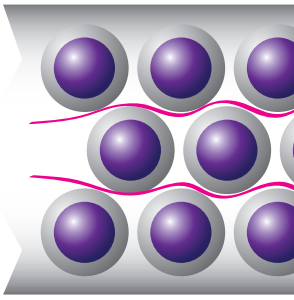
Instantly optimize your current method with Kinetex:
www.phenomenex.com/KinetexCalculator

Choosing The Best Core-Shell Platform for You is Easy!

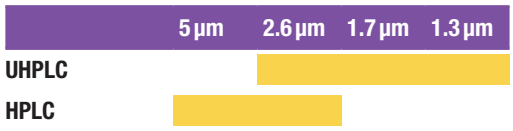
Core-Shell Technology

- 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





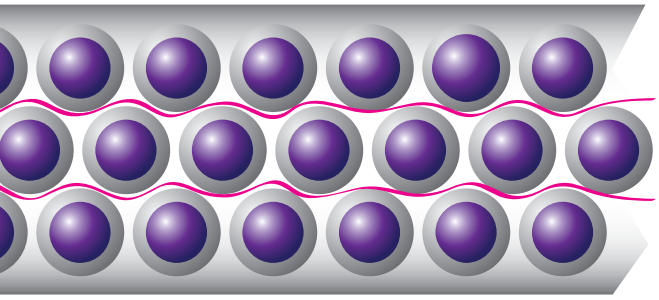
For Small Molecules

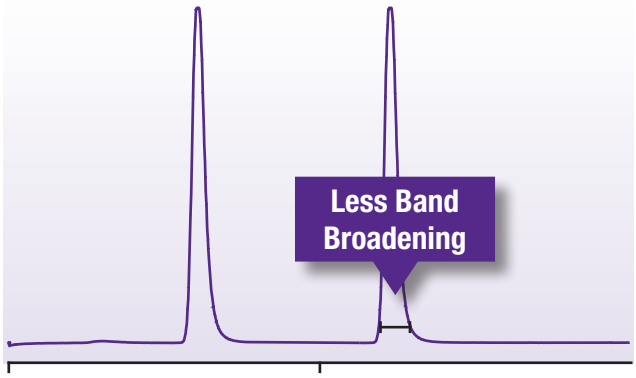


Phase	Best Use	pH Stability	Available Particle Size(s)			
Kinetex® EVO C18	Robust reversed phase methods even in alkaline conditions with improved peak shape for polar basic compounds	1 - 12	5 µm	2.6 µm	1.7 µm	
Kinetex C18	All purpose phase that offers the hydrophobic retention and methylene selectivity chromatographers expect from a C18 column	1.5 - 8.5*	5 µm	2.6 µm	1.7 µm	1.3 µm
Kinetex XB-C18	C18 phase with protective butyl side chains for improved peak shape for basic compounds under neutral and acidic conditions	1.5 - 8.5*	5 µm	2.6 µm	1.7 µm	
Kinetex C8	USP L7 phase that provides less hydrophobic and methylene selectivity than a C18	1.5 - 8.5*	5 µm	2.6 µm	1.7 µm	
Kinetex F5	Highly reproducible pentafluorophenyl propyl phase that offers a unique combination of polar, hydrophobic, aromatic, and shape selectivity	1.5 - 8.5*		2.6 µm	1.7 µm	
Kinetex Biphenyl	100% aqueous stable and allows for excellent reversed phase retention and enhanced polar and aromatic selectivity	1.5 - 8.5*	5 µm	2.6 µm	1.7 µm	
Kinetex Phenyl-Hexyl	Reversed phase chemistry that allows for greater retention and separation of aromatic hydrocarbons	1.5 - 8.5*	5 µm	2.6 µm	1.7 µm	
Kinetex HILIC	Unbonded silica phase for HILIC conditions to provide selectivity for polar compounds	2.0 - 7.5	5 µm	2.6 µm	1.7 µm	

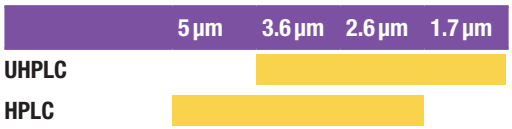
*pH stability under gradient conditions. pH stability is 1.5-10 under isocratic conditions.

Find more Small Molecules Solutions at:
www.phenomenex.com/Pharmaceutical





For Biomolecules/Macromolecules



Material	Phase	Best Use	pH Stability	Available Particle Size(s)			
For Peptides (≤ 10,000 Da)							
Aeris™ PEPTIDE	**XB-C18**	Excellent hydrophobicity and methylene selectivity for peptide and peptide mapping separations	1.5 - 9.0	5 µm	3.6 µm	2.6 µm	1.7 µm
For Proteins (> 10,000 Da)							
Aeris WIDEPORE	**XB-C18**	Maximum hydrophobicity and high temp stability for hydrophilic and PEGylated proteins	1.5 - 9.0		3.6 µm		
	XB-C8	Medium hydrophobicity and high temp stability for moderately hydrophobic proteins and glycosylated proteins	1.5 - 9.0		3.6 µm		
	C4	Lowest hydrophobicity for very large or very hydrophobic proteins	1.5 - 9.0		3.6 µm		
For Synthetic Oligonucleotides (DNA/RNA)							
Clarity® Oligo-MS™	**C18**	Rapid, high efficiency reversed phase LC/MS analysis for QC and characterization	1.5 - 8.5*			2.6 µm	1.7 µm

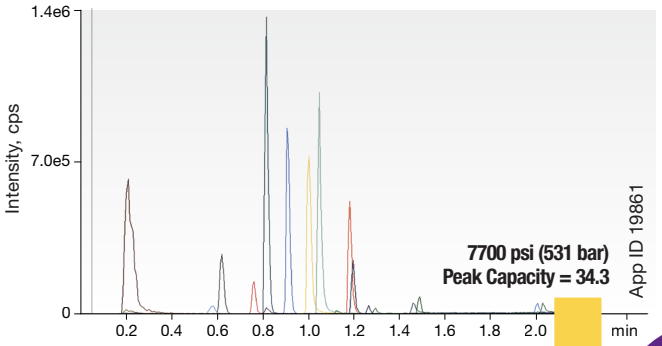
*pH stability under gradient conditions. pH stability is 1.5-10 under isocratic conditions.

Find more Biomolecules/Macromolecules Solutions at:
www.phenomenex.com/BioPharma

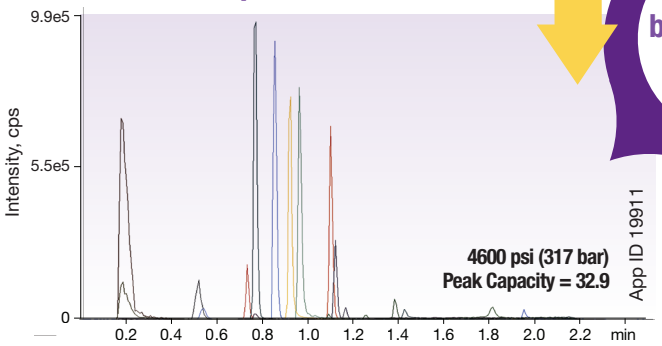
Core-Shell Columns Optimized for Speed, Resolution, and Sensitivity

Start by matching a Kinetex® 2.6µm column to the sub-2µm you're currently using. Then watch the pressure drop and you're options appear. In no time you'll have better peak capacities, sensitivities, and greater column performance.

Fully Porous 1.7µm C18 50 x 2.1mm



Kinetex 2.6µm C18 50 x 2.1mm



Lower backpressure gives you 2 options

Conditions are the same for all columns:

Column: Kinetex 2.6µm C18
Fully Porous 1.7µm C18

Dimensions: Kinetex: 50 x 2.1mm and 100 x 2.1mm
Fully Porous: 50 x 2.1mm

Mobile Phase: A: 0.1% Formic acid in Water
B: 0.1% Formic acid in Acetonitrile

Gradient:

Time (min)	% B
0.00	95
0.25	95
1.80	10
1.90	10
1.91	95
2.50	95

Flow Rate: 0.8, 0.8, 1.4, and 0.85mL/min

Temperature: 40 °C

Detection: MS

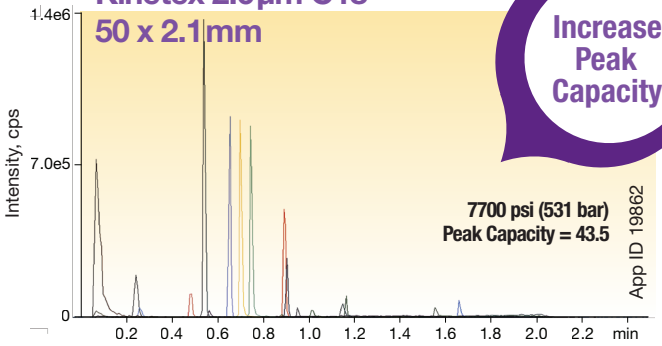
Backpressure: As noted

Sample:

1. Haloperidol
2. Diltiazem
3. Terfenadine
4. Cimetidine
5. Acetaminophen
6. Sulfathiazole
7. Pindolol
8. Quinidine
9. Acebutolol
10. Chlorpheniramine
11. Tripolidine
12. Prednisolone
13. Nortriptyline
14. 2-Hydroxy-5-methyl benzaldehyde
15. Hexanophenone

1. Increase the flow rate

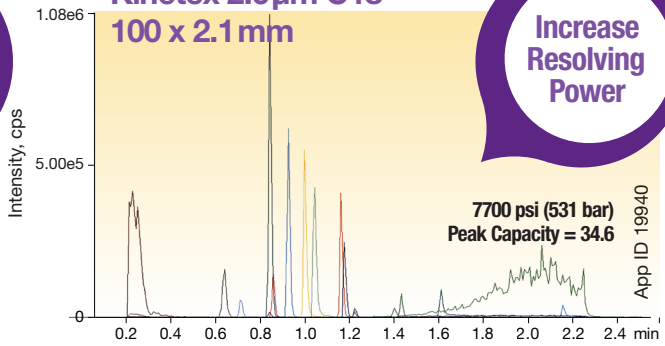
Kinetex 2.6µm C18 50 x 2.1mm



Increase Peak Capacity

2. Increase column length

Kinetex 2.6µm C18 100 x 2.1mm

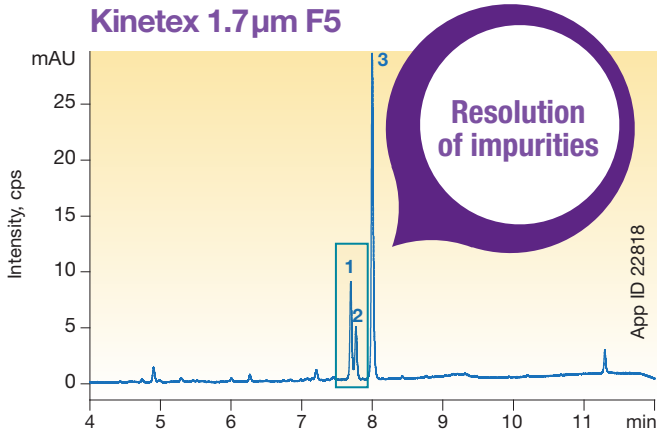


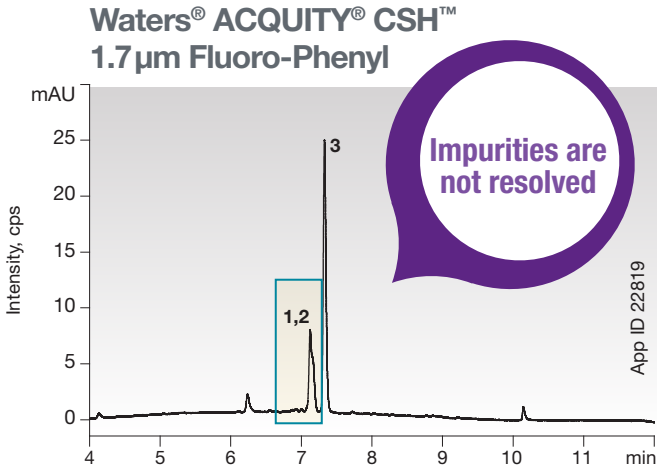
Increase Resolving Power

KINETEX® Core-Shell Technology

Higher Resolution for Your Most Challenging Impurity Analysis

Trace impurities of active pharmaceutical ingredients are incredibly important to identify and quantify. With the rapid performance value of core-shell technology combined with the versatility of a pentafluorophenyl, the Kinetex F5 is the precise alternative to other reversed phase columns that you need. Easily utilize the Kinetex F5 to get greater sensitivity, better resolution, and all in shorter analysis times.





Conditions for all columns:

Column: Kinetex 1.7 µm F5
ACQUITY CSH 1.7 µm Fluoro-Phenyl

Dimensions: 50 x 2.1 mm

Mobile Phase: A: 20 mM Potassium phosphate pH 2.3
B: Methanol

Gradient:

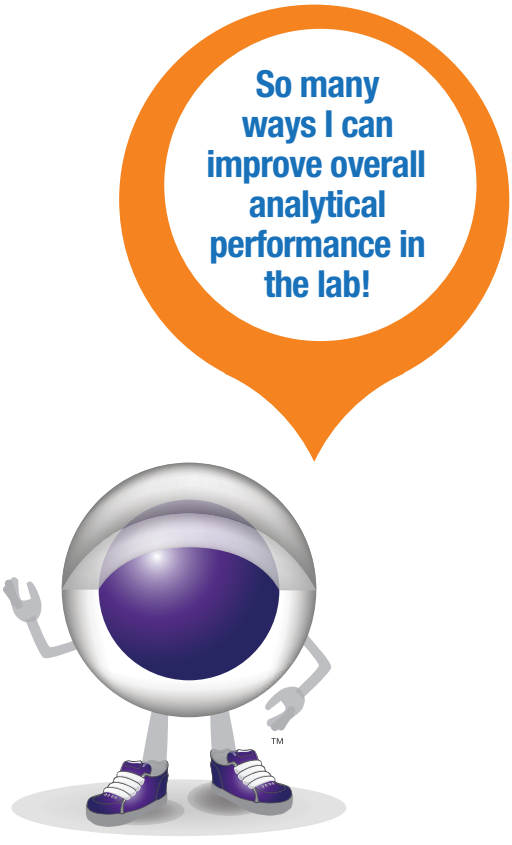
Time (min)	% B
0	5
10	95
10.01	5

Flow Rate: 0.3 mL/min

Temperature: Ambient

Detection: UV @ 254 nm

Sample:
1. Impurity 1
2. Impurity 2
3. Proprietary Active Pharmaceutical Ingredient

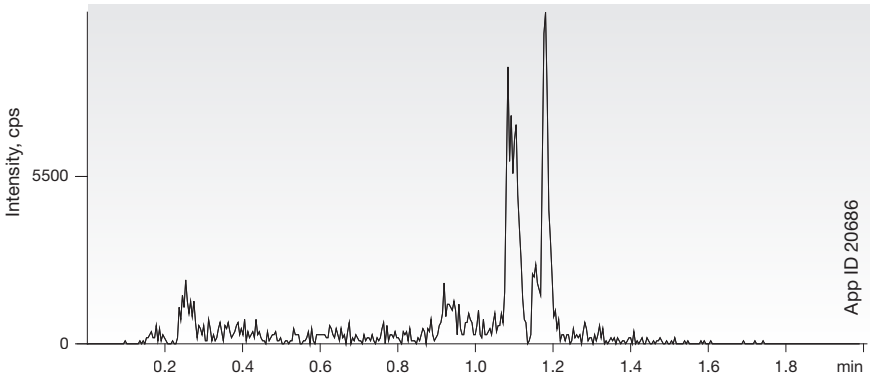


Comparative separations may not be representative of all applications.

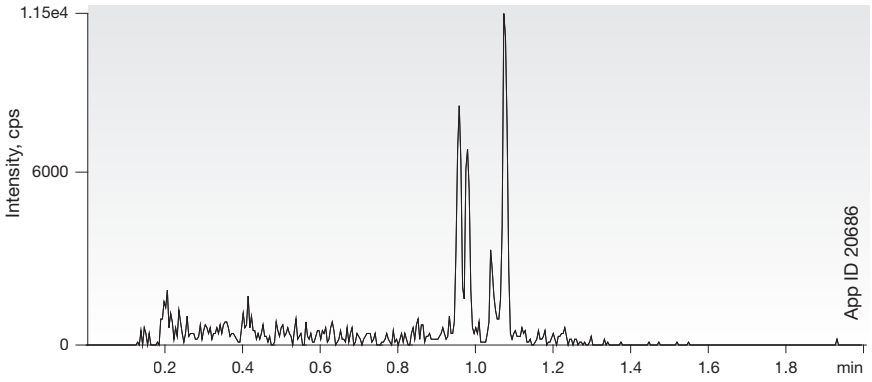
Higher Efficiencies for MS/MS Applications

The increased efficiency of the Kinetex® 1.7 µm allows you to use shorter columns for faster run times while keeping optimal performance. Now it's time for you to challenge your difficult separations with the superior efficiency and resolving power of a Kinetex 1.7 µm core-shell column.

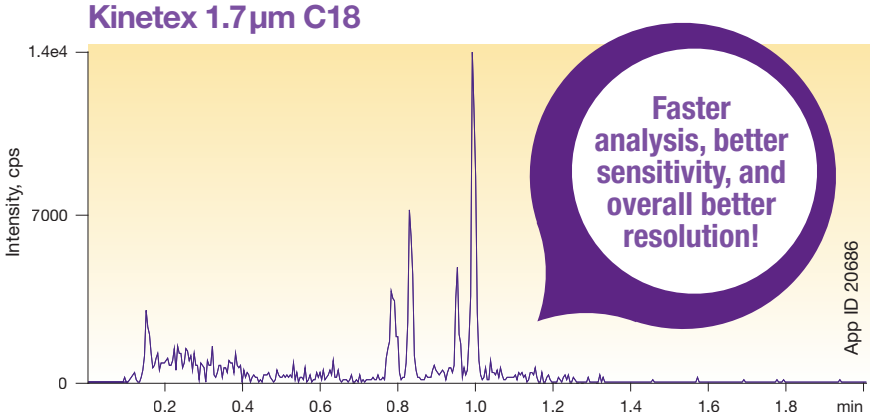
Fully Porous 3.5 µm C18



Advanced Materials Technology, Inc. Fused-Core® 2.7 µm C18



Kinetex 1.7 µm C18



Conditions are the same for all columns:

Column: Fully porous 3.5 µm C18 (50 x 2.1 mm
Fused-Core 2.7 µm C18 (50 x 2.1 mm
Kinetex 1.7 µm C18 (30 x 2.1 mm)

Mobile Phase: A: 10 mM Ammonium Formate
B: Acetonitrile

Gradient:

Time (min)	% B
0	5
2	100
2.1	5

Flow Rate: 0.7 mL/min

Temperature: 22 °C

Detection: MS/MS (AB SCIEX API 4000™)

Sample: Lorazepam glucoronide

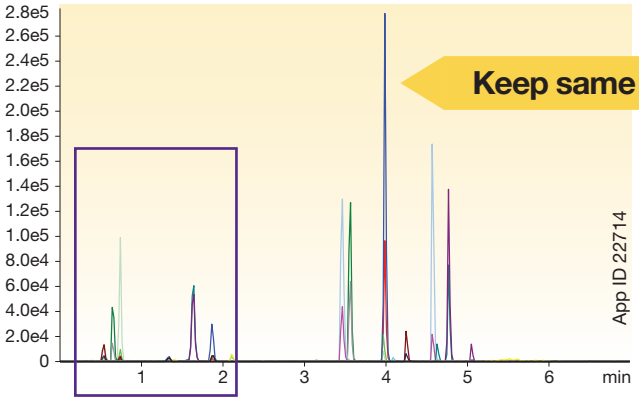
Comparative separations may not be representative of all applications.

KINETEX® Core-Shell Technology

Better Selectivities so LC/MS/MS Becomes Easier and More Accurate

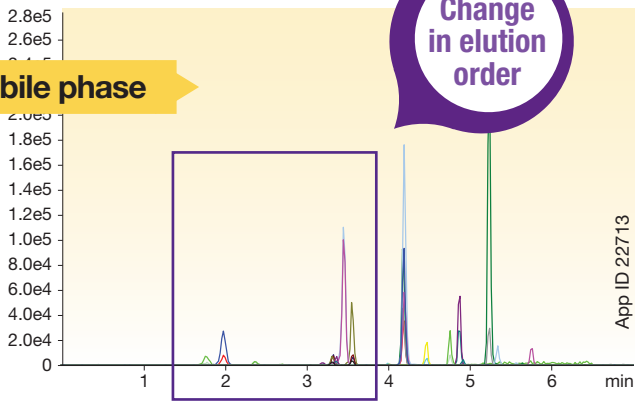
Two exceptional selectivities give you retention enhancement without performance loss. Use the multi-functional Kinetex Biphenyl or pH stable Kinetex EVO C18 to reach the desired solution for your method.

Kinetex 5µm C18



Keep same mobile phase

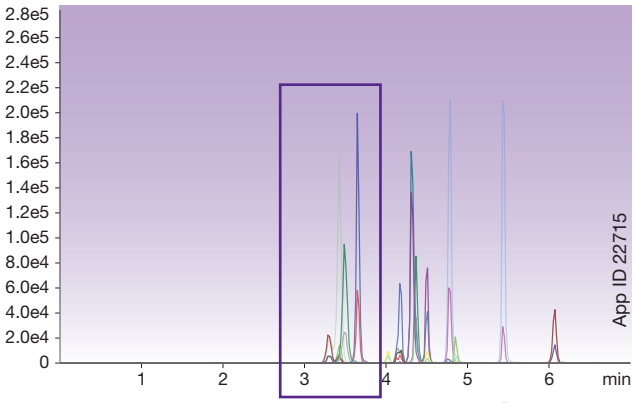
Kinetex 5µm Biphenyl



Change in elution order

Switch to high pH mobile phase

Kinetex 5µm EVO C18



Higher sensitivity for basic compounds

Conditions for all columns:

Column:	Kinetex 5µm C18 Kinetex 5µm Biphenyl Kinetex 5µm EVO C18
Dimensions:	50 x 2.1 mm
Mobile Phase:	A: 0.1 % Formic acid in Water B: 0.1 % Formic acid in Methanol
Mobile Phase:	A: 10 mM Ammonium Bicarbonate (pH 8.2) B: Methanol

Gradient:

Time (min)	% B
0	10
0.5	10
2	25
4.5	80
4.51	85
5.5	85
5.51	10
7	10

Flow Rate: 0.5 mL/min
Temperature: Ambient
Detection: MS/MS (AB SCIEX API 4000™)
Sample: Opiates Mix

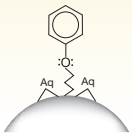
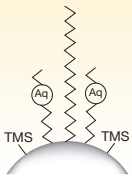
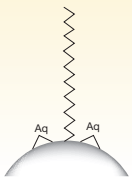
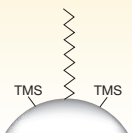
HST
High Speed Technology

Greater Resolution with High Speed Technology (HST)

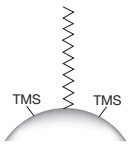
High Speed Technology (HST) 2.5 µm columns deliver high-performance chromatographic selectivity and faster analysis times with optimized shorter dimensions. HST columns can be used on your current standard HPLC systems to deliver higher resolution separations.

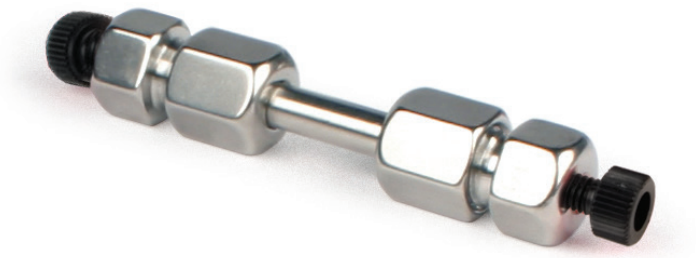
HST Selectivities Available

synergi™

Phases	
Ligand	**Description**
Synergi Polar-RP	
	(100 % Aqueous Stable) This ether linked phenyl column is polar end-capped and offers high cation retention capabilities to improve retention for ionized bases.
Synergi Fusion-RP	
	(100 % Aqueous Stable) A low ligand density polar embedded C18, this unique phase contributes to hydrogen bonding and donating. It provides balanced selectivity for acids and bases.
Synergi Hydro-RP	
	(100 % Aqueous Stable) Polar endcapped C18 column that provides very high hydrophobic interactions and hydrogen donating capabilities make this column ideal for retaining polar bases.
Synergi Max-RP	
	Densely bonded C12 contributes a lot of hydrophobic retention and steric based selectivity. Combined characteristics of the base silica and the bonded phase will also provide hydrogen bonding benefits.

explore LUNA®

Phases	
Ligand	**Description**
Luna C18(2)	
	C18 phase is densely bonded to provide high hydrophobic retention and discriminating steric selectivity. High endcapping reduces electrostatic based selectivity to a minimum.



When would I use HST columns versus MercuryMS cartridges?

- HST columns provide higher efficiencies and resolution compared to MercuryMS
- MercuryMS provides ultra-high-throughput with the shorter 10 mm and 20 mm lengths in a convenient cartridge format

Achieve Higher Throughput with MercuryMS

MercuryMS cartridges are engineered to provide superior performance to meet the demands of today's high-throughput environment. Synergi™ 2.5µm silica provides efficiencies required when shortening run times. Utilizing the unique phase characteristics of Synergi Fusion-RP, Max-RP, Hydro-RP, and Polar-RP provides ultimate compound selectivity with up to 60% reduction in analysis time. Synergi 2.5µm materials are slurry packed into the MercuryMS cartridges, providing resolution and peak shapes equivalent to what was once only found in analytical columns.

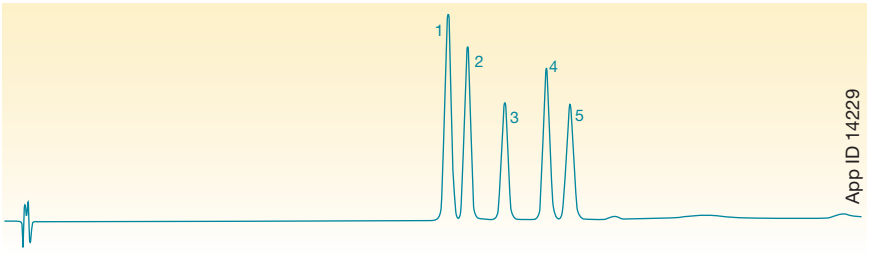
MercuryMS Cartridge System

Direct Connect Cartridge Holder

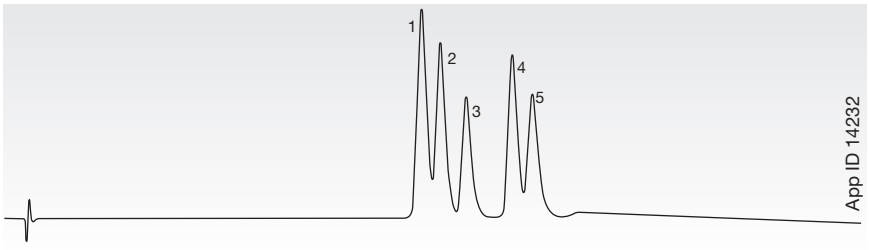
Standard Holder

Performance Comparison of LC/MS Cartridges

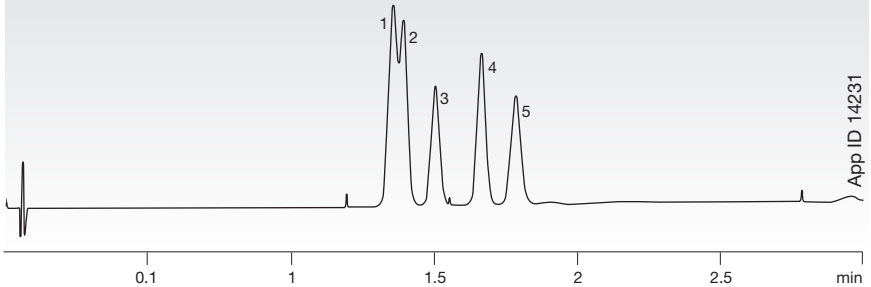
Phenomenex
Synergi 2.5µm Max-RP



Waters®
XTerra® 2.5µm MS C18



Agilent® Technologies
ZORBAX® 3.5µm SB C18



Conditions for all columns:

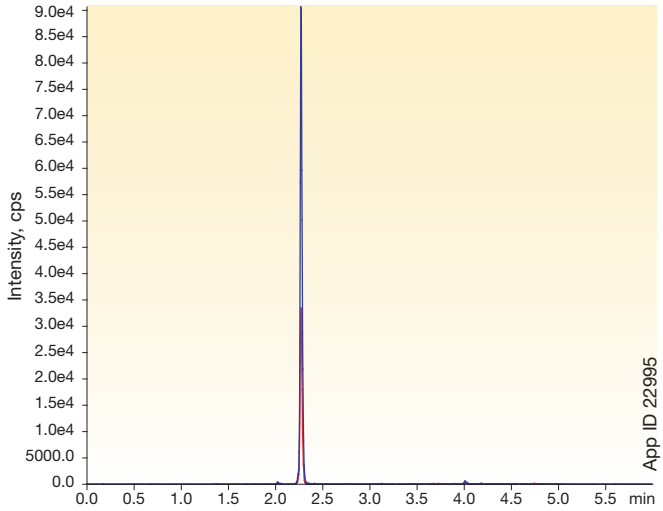
Cartridges:	Synergi 2.5µm Max-RP Waters XTerra 2.5µm C18 MS Agilent Technologies ZORBAX 3.5µm SB-C18
Dimensions:	20 x 4.0mm MercuryMS Cartridge (Synergi Max-RP) 20 x 4.6mm (XTerra) 15 x 4.6mm (ZORBAX)
Mobile Phase:	A: Water with 0.1% Formic acid B: Acetonitrile with 0.1% Formic acid
Gradient:	A/B (85:15) to A/B (15:85) in 5 minutes
Flow Rate:	3mL/min
Temperature:	22°C
Detection:	UV @ 210 nm (XTerra & ZORBAX) UV @ 254 nm (MercuryMS)
Sample:	1. Desmethyldiazepam 2. Oxazepam 3. Lorazepam 4. Temazepam 5. Diazepam (Valium)

Comparative separations may not be representative of all applications.

More Robust Peptide Analysis

Experience superior sensitivity, ultra-high efficiency, and sharper peak shapes with Aeris™ and Kinetex® EVO C18 core-shell UHPLC/HPLC columns.

Extraction of Goserelin from Serum



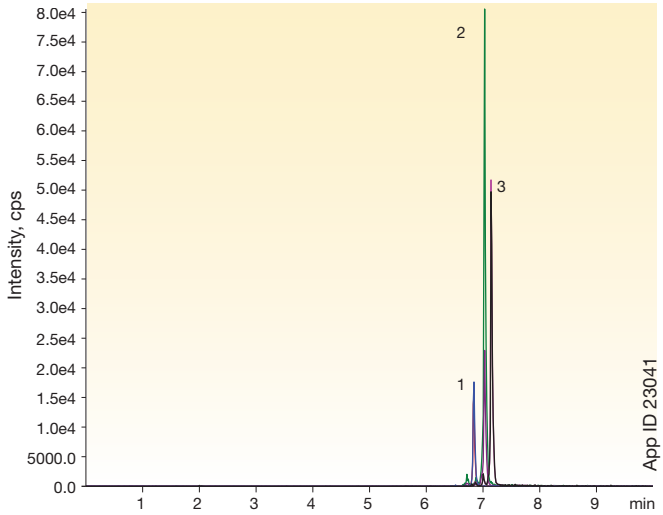
Column: Aeris WIDEPORE 3.6 µm XB-C18
Dimensions: 50 x 2.1 mm
Part No.: 00B-4482-AN
Mobile Phase: A: 0.1 % Formic acid in Water
B: 0.1 % Formic acid in Methanol

Gradient:

Time (min)	% B
0	10
3	95
4	95
4.01	10
6	10

Flow Rate: 0.6 mL/min
Temperature: Ambient
Detection: MS/MS Triple Quad™ API 4500™ (SCIEX), ESI+

Amyloid ß Peptides



Column: Kinetex 2.6 µm EVO C18
Dimensions: 100 x 3.0 mm
Part No.: 00D-4725-Y0
Mobile Phase: A: 0.3 % NH_4OH in Water
B: Acetonitrile/0.3% NH_4OH in Water (90:10)

Gradient:

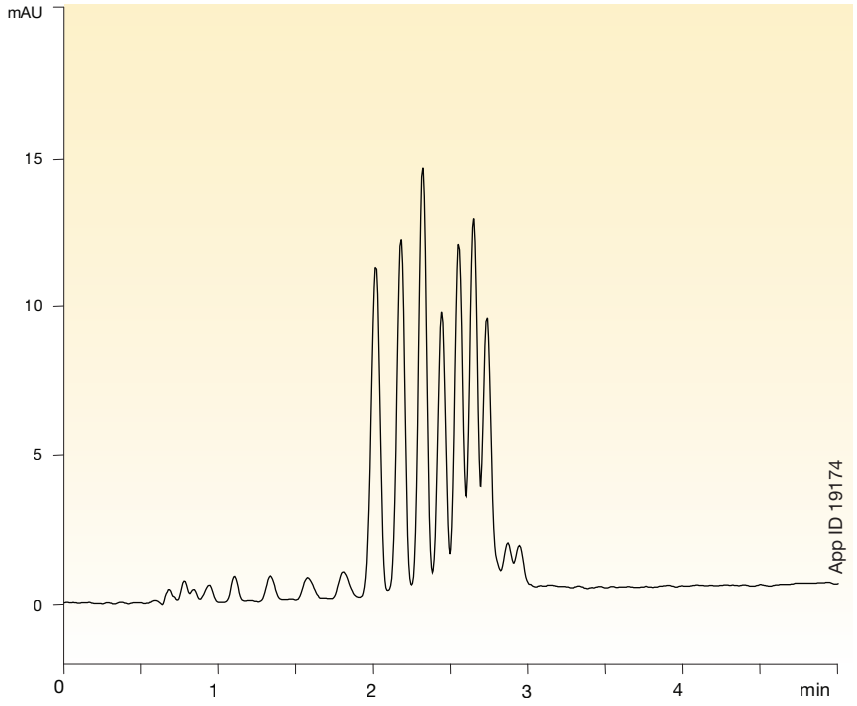
Time (min)	% B
0	5
1	5
6.5	45
7.5	45
8	5
11	5

Flow Rate: 0.3 mL/min
Temperature: Ambient
Detection: MS/MS (AB SCIEX API 5000™, ESI+)
Sample: 1. Amyloid β-38
2. Amyloid β-40
3. Amyloid β-42

Faster Oligonucleotide Analysis

Speed up your oligonucleotide analysis with Clarity® Oligo-MS core-shell UHPLC/HPLC columns while maintaining adequate resolution for challenging oligo separations. This higher throughput allows you to run more oligo samples per day on any HPLC or UHPLC system.

Oligo(dT)12-18 Primer Separation in Under 5 Minutes



Column: Clarity 2.6 µm Oligo-MS
Dimensions: 50 x 2.1 mm
Part No.: 00B-4479-AN
Mobile Phase: A: 4 mM TEA/ 200 mM HFIP
B: Acetonitrile

Gradient:

Time (min)	% B
0	0
5	30

Flow Rate: 0.3 mL/min
Temperature: Ambient
Detection: UV @ 254 nm

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Sample Prep Solutions

High-Throughput 96-Well Plate Sample Processing

96-Well Plate

96-Well Plate Manifold
Part No.: AH0-8950

Phree™ Phospholipid Removal Products			
Part No.	**Description**	**Unit**	**Price**
8E-S133-TGB	Phree Phospholipid Removal 96-Well Plates	2/pk	

Novum™ 96-Well Plate			
Part No.	**Description**	**Unit**	**Price**
8E-S138-FGA	Novum SLE MINI 96-Well Plate	1/pk	
8E-S138-5GA	Novum SLE MAX 96-Well Plate	1/pk	

Strata™-X Polymer-Based Sorbents 96-Well Plates (2/box)						
Phase	**10 mg**	**Price**	**30 mg**	**Price**	**60 mg**	**Price**
Strata-X-AW	8E-S038-AGB		8E-S038-TGB		8E-S038-UGB	
Strata-X-A	8E-S123-AGB		8E-S123-TGB		8E-S123-UGB	
Strata-X	8E-S100-AGB		8E-S100-TGB		8E-S100-UGB	
Strata-X-C	8E-S029-AGB		8E-S029-TGB		8E-S029-UGB	
Strata-X-CW	8E-S035-AGB		8E-S035-TGB		8E-S035-UGB	
Strata-XL-AW	–		8E-S051-TGB		–	
Strata-XL-A	–		8E-S053-TGB		–	
Strata-XL	–		8E-S043-TGB		–	
Strata-XL-C	–		8E-S044-TGB		–	
Strata-XL-CW	–		8E-S052-TGB		–	

96-Well Plate Accessories			
Part No.	**Description**	**Unit**	**Price**
Collection Plates (deep well, polypropylene)			
AH0-7192	96-Well Collection Plate, 350 µL/well	50/pk	
AH0-7193	96-Well Collection Plate, 1 mL/well	50/pk	
AH0-7194	96-Well Collection Plate, 2 mL/well	50/pk	
AH0-8635	96-Well Collection Plate, 2 mL/well Square/Round-Conical	50/pk	
AH0-8636	96-Well Collection Plate, 2 mL/well Round/Round, 8 mm	50/pk	
AH0-7279	96-Well Collection Plate, 1 mL/well Round, 7 mm	50/pk	
Sealing Mats			
AH0-8597	Sealing Mats, Pierceable, 96-Square Well, Silicone	50/pk	
AH0-8598	Sealing Mats, Pre-Slit, 96-Square Well, Silicone	50/pk	
AH0-8631	Sealing Mats, Pierceable, 96-Round Well 7 mm, Silicone	50/pk	
AH0-8632	Sealing Mats, Pre-Slit, 96-Round Well 7 mm, Silicone	50/pk	
AH0-8633	Sealing Mats, Pierceable, 96-Round Well 8 mm, Silicone	50/pk	
AH0-8634	Sealing Mats, Pre-Slit, 96-Round Well 8 mm, Silicone	50/pk	
AH0-7362	Sealing Tape Pad	10/pk	

guarantee

If Phenomenex products in this brochure do not provide at least an equivalent separation as compared to other products of the same phase and dimensions, return the product with comparative data within 45 days for a FULL REFUND.

Core-Shell Small Molecule Solutions

Kinetex® 1.3 µm Minibore Columns (mm)		
Phases	**30 x 2.1**	**50 x 2.1**
C18	00A-4515-AN	00B-4515-AN

Kinetex 1.7 µm Minibore Columns (mm)					SecurityGuard ULTRA Cartridges‡
Phases	**30 x 2.1**	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**3/pk**
EVO C18	—	00B-4726-AN	00D-4726-AN	00F-4726-AN	AJ0-9298
F5	—	00B-4722-AN	00D-4722-AN	00F-4722-AN	AJ0-9322
Biphenyl	—	00B-4628-AN	00D-4628-AN	00F-4628-AN	AJ0-9209
XB-C18	00A-4498-AN	00B-4498-AN	00D-4498-AN	00F-4498-AN	AJ0-8782
C18	00A-4475-AN	00B-4475-AN	00D-4475-AN	00F-4475-AN	AJ0-8782
C8	00A-4499-AN	00B-4499-AN	00D-4499-AN	00F-4499-AN	AJ0-8784
HILIC	00A-4474-AN	00B-4474-AN	00D-4474-AN	—	AJ0-8786
Phenyl-Hexyl	—	00B-4500-AN	00D-4500-AN	00F-4500-AN	AJ0-8788
					for 2.1 mm ID

Kinetex 2.6 µm Minibore Columns (mm)						SecurityGuard™ ULTRA Cartridges‡
Phases	**30 x 2.1**	**50 x 2.1**	**75 x 2.1**	**100 x 2.1**	**150 x 2.1**	**3/pk**
EVO C18	00A-4725-AN	00B-4725-AN	—	00D-4725-AN	00F-4725-AN	AJ0-9298
F5	00A-4723-AN	00B-4723-AN	—	00D-4723-AN	00F-4723-AN	AJ0-9322
Biphenyl	00A-4622-AN	00B-4622-AN	—	00D-4622-AN	00F-4622-AN	AJ0-9209
XB-C18	00A-4496-AN	00B-4496-AN	00C-4496-AN	00D-4496-AN	00F-4496-AN	AJ0-8782
C18	00A-4462-AN	00B-4462-AN	00C-4462-AN	00D-4462-AN	00F-4462-AN	AJ0-8782
C8	00A-4497-AN	00B-4497-AN	00C-4497-AN	00D-4497-AN	00F-4497-AN	AJ0-8784
HILIC	00A-4461-AN	00B-4461-AN	00C-4461-AN	00D-4461-AN	00F-4461-AN	AJ0-8786
Phenyl-Hexyl	00A-4495-AN	00B-4495-AN	00C-4495-AN	00D-4495-AN	00F-4495-AN	AJ0-8788
						for 2.1 mm ID

Kinetex 5 µm Minibore Columns (mm)					SecurityGuard™ ULTRA Cartridges‡
Phases	**30 x 2.1**	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**3/pk**
EVO C18	00A-4633-AN	00B-4633-AN	00D-4633-AN	00F-4633-AN	AJ0-9298
Biphenyl	00A-4627-AN	00B-4627-AN	00D-4627-AN	—	AJ0-9209
XB-C18	00A-4605-AN	00B-4605-AN	00D-4605-AN	—	AJ0-8782
C18	00A-4601-AN	00B-4601-AN	00D-4601-AN	00F-4601-AN	AJ0-8782
C8	—	00B-4608-AN	00D-4608-AN	—	AJ0-8784
Phenyl-Hexyl	—	00B-4603-AN	00D-4603-AN	—	AJ0-8788
					for 2.1 mm ID

‡ SecurityGuard ULTRA Cartridges required holder, Part No.: AJ0-9000.

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SecurityGuard™

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View more column dimensions (3.0mm and 4.6mm ID are available) at ***www.phenomenex.com/Kinetex***

Fully Porous Fast LC Solutions

Luna® 2.5 µm High Speed Technology (HST) Columns (mm)					
Phase	**30 x 2.0**	**50 x 2.0**	**100 x 2.0**	**50 x 3.0**	**100 x 3.0**
C18(2)-HST	00A-4446-B0	00B-4446-B0	00D-4446-B0	00B-4446-Y0	00D-4446-Y0

Synergi™ 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

Synergi 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	—	00M-4372-B0-CE	00M-4372-D0-CE	—	00M-4372-D0
Hydro-RP	00N-4387-B0-CE	00N-4387-D0-CE	00M-4387-B0-CE	—	00M-4387-B0	—
Polar-RP	00N-4371-B0-CE	00N-4371-D0-CE	00M-4371-B0-CE	—	00M-4371-B0	—
Fusion-RP	00N-4423-B0-CE	00N-4423-D0-CE	00M-4423-B0-CE	00M-4423-D0-CE	00M-4423-B0	00M-4423-D0

MercuryMS™ Cartridge Holders

Direct-Connect Cartridge Holders		
Part No.	**Description**	**Price**
CH0-7187	10 mm direct-connect holder	
CH0-7188	20 mm direct-connect holder	

Standard Cartridge Holders		
Part No.	**Description**	**Price**
CH0-5846	10 mm standard holder	
CH0-5845	20 mm standard holder	

Direct Connect Cartridge Holder

Standard Holder

Core-Shell Biomolecule Solutions

Aeris™ PEPTIDE 1.7 µm Minibore Columns (mm)				SecurityGuard™ ULTRA Cartridges*
Phases	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**3/pk**
XB-C18	00B-4506-AN	00D-4506-AN	00F-4506-AN	AJ0-8948 for 2.1 mm ID

Aeris PEPTIDE 2.6 µm Minibore Columns (mm)					SecurityGuard ULTRA Cartridges*
Phases	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**250 x 2.1**	**3/pk**
XB-C18	00B-4505-AN	00D-4505-AN	00F-4505-AN	00G-4505-AN	AJ0-8948 for 2.1 mm ID

Aeris PEPTIDE 3.6 µm Minibore Columns (mm)					SecurityGuard ULTRA Cartridges*
Phases	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**250 x 2.1**	**3/pk**
XB-C18	00B-4507-AN	00D-4507-AN	00F-4507-AN	00G-4507-AN	AJ0-8948 for 2.1 mm ID

Aeris WIDEPORE 3.6 µm Minibore Columns (mm)					SecurityGuard ULTRA Cartridges*
Phases	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**250 x 2.1**	**3/pk**
XB-C18	00B-4482-AN	00D-4482-AN	00F-4482-AN	00G-4482-AN	AJ0-8783
XB-C8	00B-4481-AN	00D-4481-AN	00F-4481-AN	00G-4481-AN	AJ0-8785
C4	00B-4486-AN	00D-4486-AN	00F-4486-AN	00G-4486-AN	AJ0-8899 for 2.1 mm ID

Clarity® Oligo™-MS Minibore Columns (mm)				SecurityGuard ULTRA Cartridges*
Phases	**50 x 2.1**	**100 x 2.1**	**150 x 2.1**	**3/pk**
1.7 µm Oligo-MS C18	00B-4480-AN	00D-4480-AN	00F-4480-AN	AJ0-9068
2.6 µm Oligo-MS C18	00B-4479-AN	00D-4479-AN	00F-4479-AN	AJ0-9068 for 2.1 mm ID

* SecurityGuard ULTRA Cartridges required holder, Part No.: AJ0-9000.

VOL. 1
PHARMACEUTICAL ANALYSIS GUIDE

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