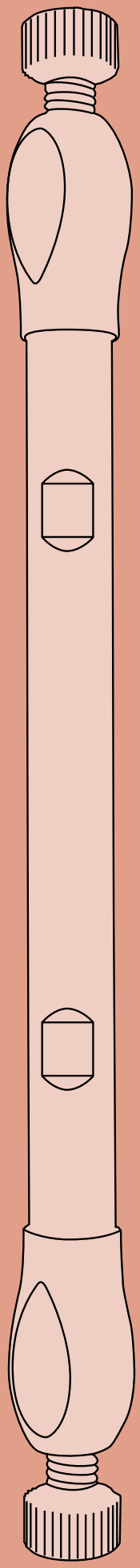

the ULTIMATE GUIDE to HPLC/UHPLC

Reversed Phase Selectivity

www.phenomenex.com/LC

phenomenex™

Follow this Step-by-Step Selectivity Guide

Contained within the following pages is an easy overview of the reversed phase HPLC/UHPLC options available to you. At a glance, you'll be able to quickly understand the differences between the columns available and select the right solution for your specific method and goals.

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STEP 2 Determine the Right Selectivity **6-8**

STEP 3 Choose the Right Column **9-27**

- Hydrocarbon Compounds **9-13**
- Isomers and Isobaric Compounds **14-15**
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- Aromatic or Ring Containing Compounds **18-19**
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  (High Productivity, High pH, High Aqueous, and Polar Compounds)

STEP 4

Learn About Your Column Selection **28-46**

Kinetex™ Core-Shell Technology
Performance gains on ANY LC system **28-32**

Gemini™ pH Flexibility
The standard for pH method development **32-33**

Synergi™ Reversed Phase Separations
Full range selectivity for challenging separations **35-36**

Luna™ Omega Thermally Modified Fully Porous
Performance gains with ultra-high efficiencies **37-39**

Luna™
One of the world's leading HPLC columns **40-41**

Biozen™
Oligonucleotide Analysis and Characterization **42**

SecurityGuard™
LC column protection **44-46**

STEP 5

Order Now **46-58**

Questions about how to select the correct column?

We've Got You Covered

Chat live with our technical gurus at:

Phenomenex.com/Chat

Available for UHPLC

Select the Right Solid Support

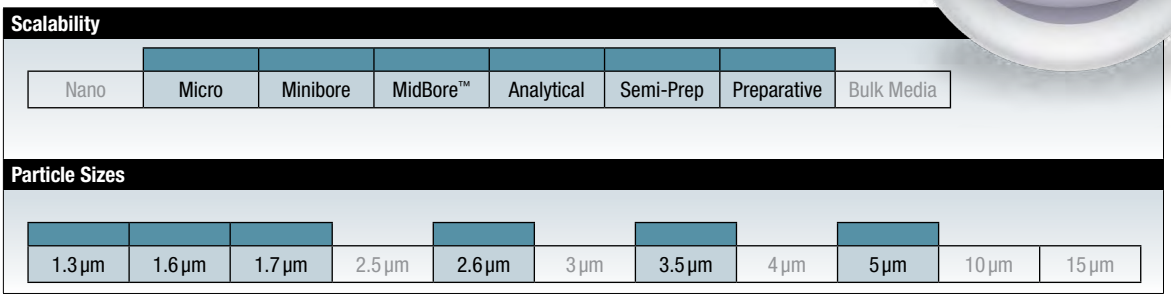
Phenomenex offers a full range of solid supports including core-shell, organo-silica fully porous and thermally modified fully porous. The morphology of the solid support has a significant impact on the resulting material characteristics and column performance.

Core-Shell and Organo-Silica Core-Shell

Unique solid silica core and porous shell that results in faster chromatography and higher efficiencies than conventional fully porous particles.

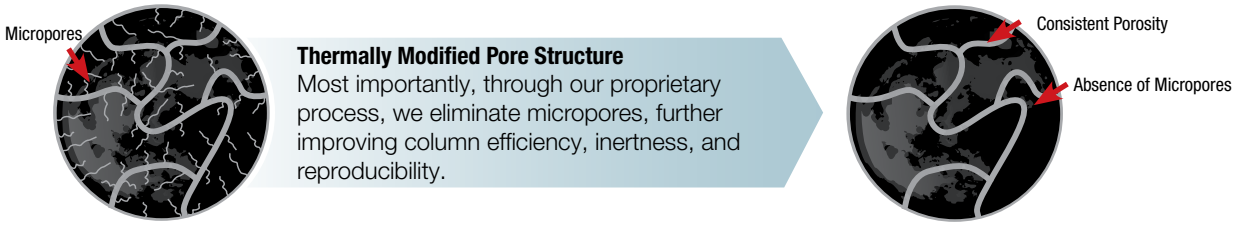
Well suited for:

- Performance gains on ANY LC system
- Easy system-to-system and lab-to-lab method transfer
- Methods where increased sensitivity is required
- Significantly improving the productivity of older, established methods



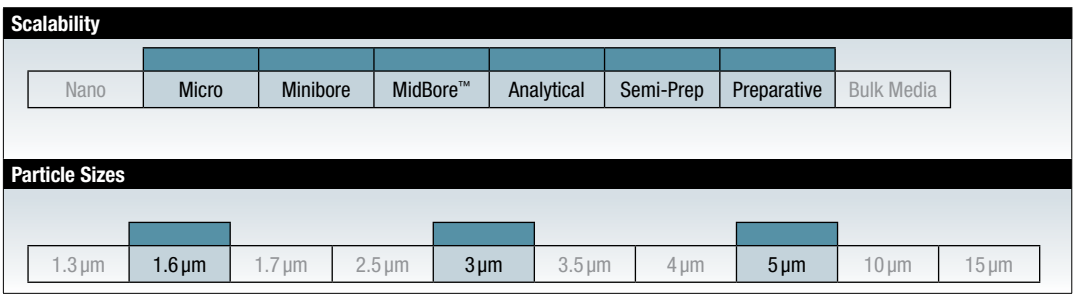
Fully Porous – Thermally Modified Silica

Unique high efficiency and extremely robust fully porous silica that offers astounding performance and inertness alongside versatile selectivities.



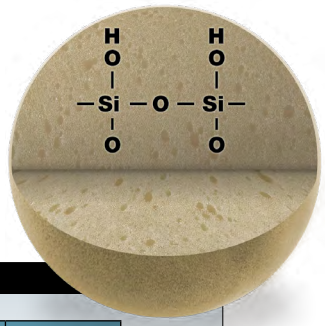
Well suited for:

- Outstanding UHPLC, HPLC, and Preparative HPLC performance and efficiencies
- Greater separation muscle
- Better peak shape through an inert foundation
- Extreme ruggedness and dependability



Fully Porous – Traditional Silica

Fully porous silica particles have higher surface area and provide excellent mechanical strength across a wide range of particle sizes and column dimensions.



Well suited for:

- Seamless scale-up from analytical to a preparative or process application
- Direct column equivalent to those used in established Pharmacopeia methods

Scalability

Nano	Micro	Capillary	Minibore	MidBore™	Analytical	Semi-Prep	Preparative	Bulk Media

Particle Sizes

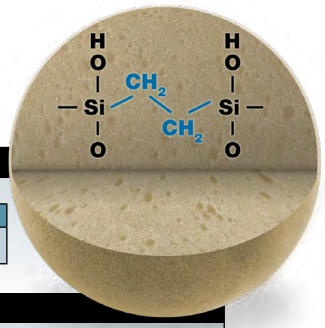
1.3 µm	1.6 µm	1.7 µm	2.5 µm	2.6 µm	3 µm	3.5 µm	4 µm	5 µm	10 µm	15 µm

Fully Porous – Organo-Silica

Organic groups are grafted into the layers of the silica particle making it more resistant to silica dissolution at higher pHs.

Well suited for:

- Extended column lifetime for methods run at pH extremes
- Premier bulk material product allowing for caustic washes for repeat use



Scalability

Nano	Micro	Minibore	MidBore	Analytical	Semi-Prep	Preparative	Bulk Media

Particle Sizes

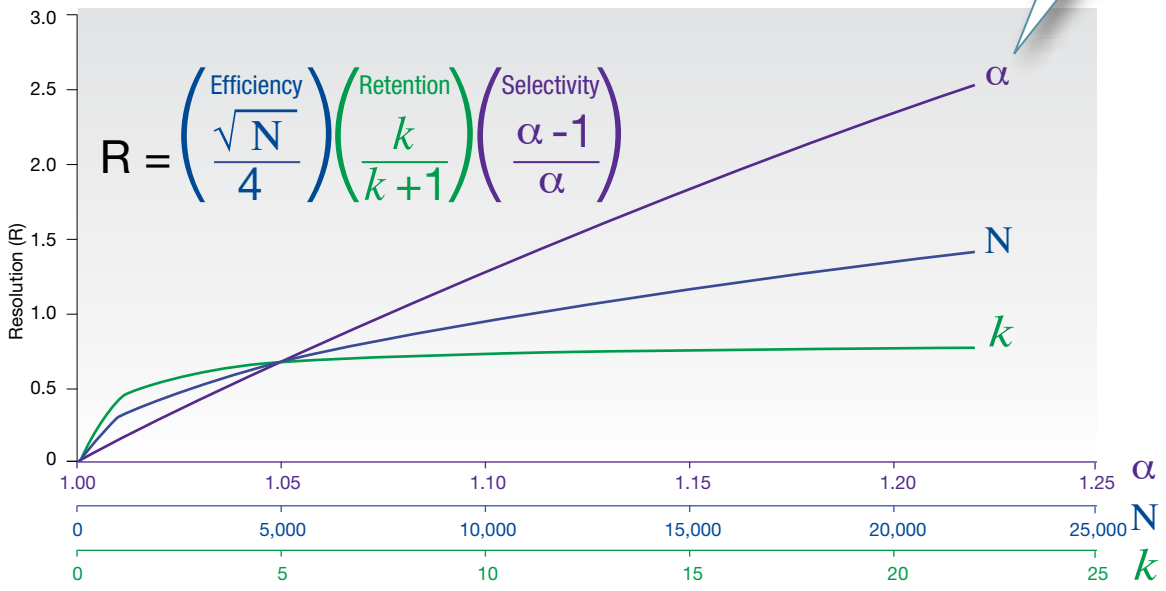
1.3 µm	1.6 µm	1.7 µm	2.5 µm	2.6 µm	3 µm	3.5 µm	4 µm	5 µm	10 µm	15 µm

The Importance of Selectivity

Selectivity (α) has the greatest impact on changing resolution (R), as compared to efficiency (N) and retention (*k*), and the easiest way to change your chromatographic results is to change your column phase. Phenomenex develops a wide breadth of phase chemistries across multiple solid supports for easier and faster method development and optimization.

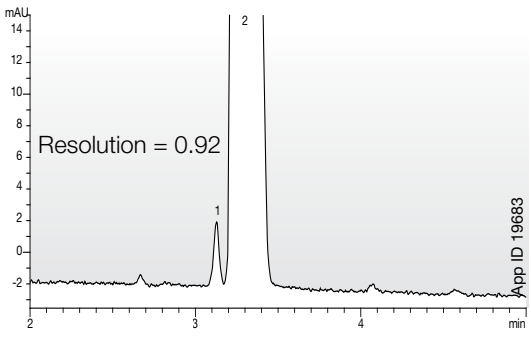
Selectivity is the most important parameter for increasing resolution. Use the selectivity profiles (pp. 8-27) to the find the right phase for your sample.

The Impact of Selectivity on Resolution



Change Your Selectivity, Dramatically Change Your Results

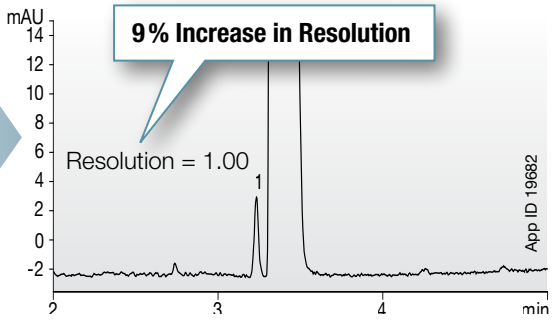
Gemini™ 5 µm NX-C18



Conditions same for all columns:
Columns: as noted
Dimensions: 150 x 4.6 mm
Mobile Phase: A: 20 mM Potassium phosphate, pH 2.5
B: Acetonitrile
Gradient: A/B (75:25) to (15:85) in 15 minutes
Flow Rate: 1.5 mL/min
Temperature: Ambient
Detection: UV (ambient)
Sample: 1. Impurity A
2. Oxymetazoline

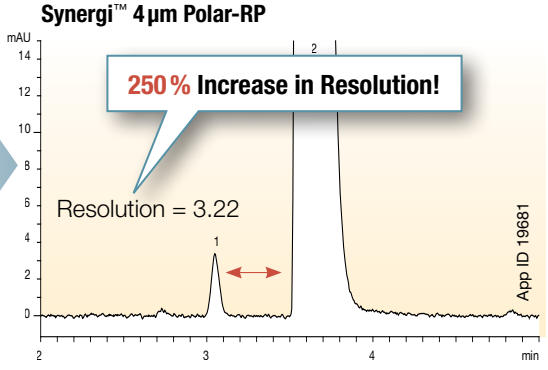
Option 1:
Increase Efficiency
(5 µm to 3 µm particle)

Gemini 3 µm NX-C18



Option 2:
Change Selectivity
(C18 to ether-linked phenyl)

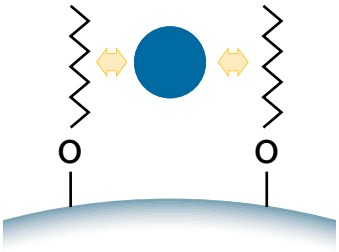
Synergi™ 4 µm Polar-RP



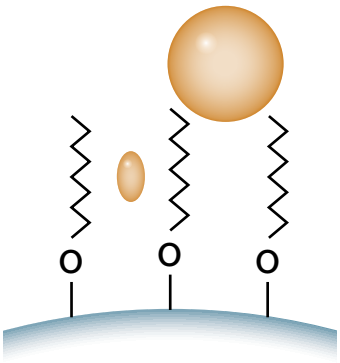
Characterizing Selectivity

In this guide we've utilized the hydrophobic subtraction model which includes six different parameters to characterize the selectivity of our HPLC and UHPLC columns. Though hydrophobicity is a dominant retention mechanism in reversed phase chromatography, selectivity is strongly influenced by the other parameters described below.

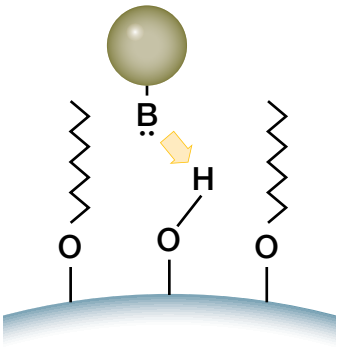
6 Parameters Influencing Selectivity



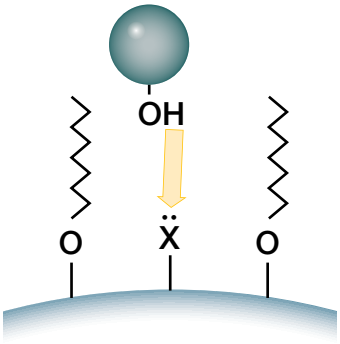
Hydrophobicity
These interactions occur with all analytes. They are always present and are dominant for neutral compounds.



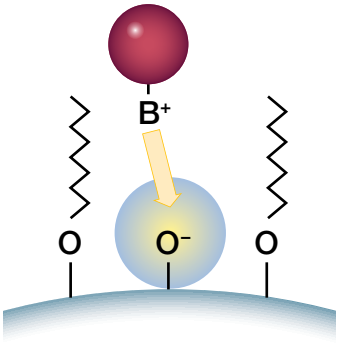
Steric Influences
A measurement of the accessibility of solutes to the stationary phase. Structural differences between compounds can lead to different retention characteristics due to shape selectivity.



Hydrogen Bond (H-bond) Donating Capacity
This interaction can be attributed to an exposed silanol or an intentionally added polar functional group. Phenomenex employs the latter technique to create phases that have the ability to hydrogen bond with proton accepting groups like weak bases (amines and amides).



Hydrogen Bond (H-bond) Accepting Capacity
Like the hydrogen bond donating capacity parameter, Phenomenex engineers phases that have the ability to hydrogen bond and interact with proton donating acidic groups such as carboxylic acids or alcohols.



Cation Selectivity at pH 7.0
At neutral pH, residual silanols on the silica surface will be largely ionized, increasing the cation exchange component of selectivity.

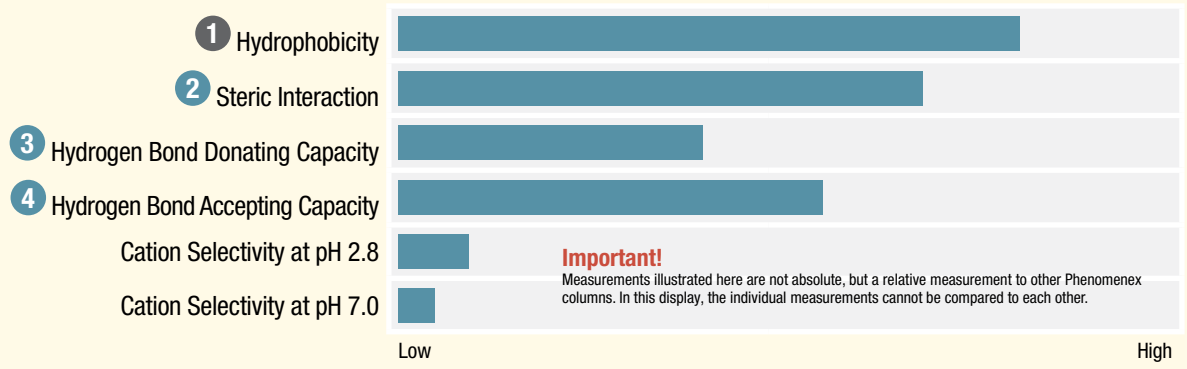
Cation Selectivity at pH 2.8
At low pH, most residual silanols are neutral and the cation exchange component will be reduced.

Turn to the next page to see how we've developed unique selectivity profiles for our columns based on these parameters.

Column Selectivity Profiles

Measurements of the parameters described on page 7 were independently derived at a third party laboratory to develop unique selectivity profiles for each of our Kinetex™, Gemini™, Luna™, Synergi™, and Luna Omega phases. These profiles were developed so that chromatographers would have a dependable approach for comparing the Phenomenex phases and identifying which phase(s) would provide the best selectivity for their analytes.

Example: Luna C18(2)



Important!
Measurements illustrated here are not absolute, but a relative measurement to other Phenomenex columns. In this display, the individual measurements cannot be compared to each other.

Do you need...

1 Maximum retention?

- High **hydrophobicity** values indicate strong retention characteristics for any carbon containing analyte
- Example: Synergi Hydro-RP, Luna C18(2), and Luna Omega C18

2 Separation of isobaric/isomeric compounds?

- Stationary phases with high **steric interaction** values are best suited for the analysis of isomers and/or isobaric compounds
- Example: Luna C8(2), Synergi Max-RP, Kinetex F5, and Luna PFP(2)

3 Retention and/or separation of polar, nitrogen containing compounds?

- Bonded phases with high **hydrogen bond donating capacity** may help increase retention and selectivity of bases such as amines and amides
- Example: Synergi Hydro-RP, Gemini C18, Synergi Max-RP, and Luna C18(2)

4 Retention and/or separation of polar compounds containing alcohol or carboxylic acid groups?

- Bonded phases with high **hydrogen bond accepting capacity** will preferentially interact with oxygen containing compounds, such as phenols and carboxylic acids, and may offer increased retention and selectivity
- Example: Kinetex Biphenyl, Kinetex XB-C18, and Luna Omega Polar C18

5 Improved peak shape or better retention for charged bases?

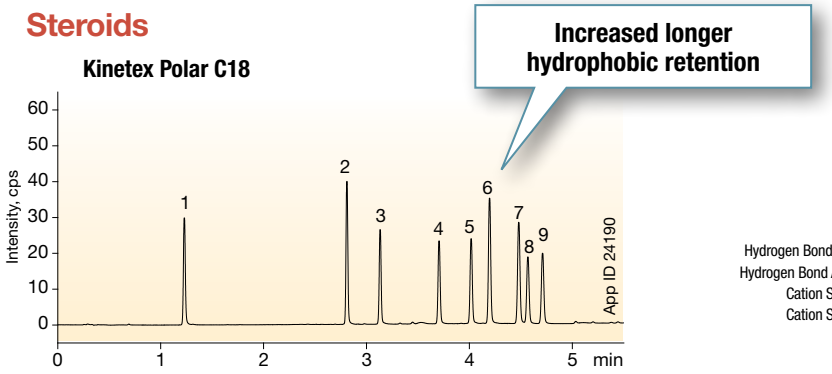
- Bonded phases with **high cation selectivity** values at low or neutral pH will show higher retention for ionized bases, but may show broad peaks
- Columns that have **low cation selectivity** values at low or neutral pH will have less interaction and less retention for charged bases, but may have very good peak shape
- **High cation selectivity** phases: Kinetex Biphenyl, Kinetex F5, and Luna Omega Polar C18
- **Low cation selectivity** phases: Gemini C6-Phenyl, Luna C18(2), and Luna Omega PS C18

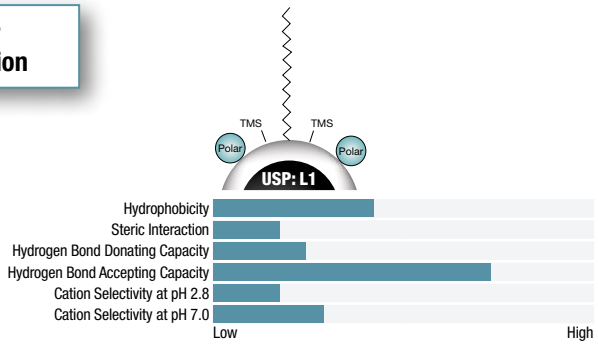
Hydrocarbon Compounds

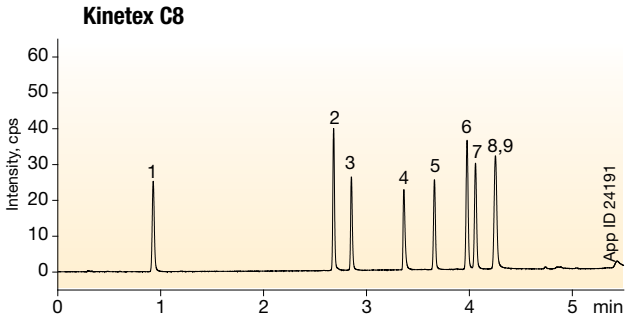
How Much Retention is Enough?

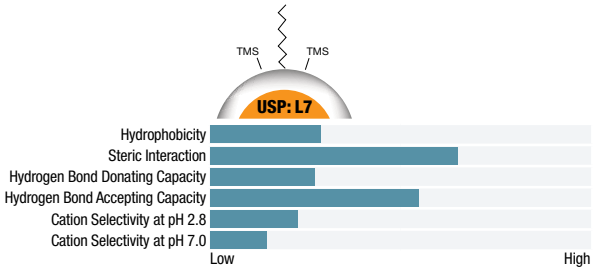
Selecting the most appropriate liquid chromatography column for your unique hydrocarbon, or hydrophobic compound is easy! Simply compare the varying degrees of hydrophobicity that are offered within the Phenomenex portfolio of reversed phase columns to determine how much or how little retention you require. An increase in column hydrophobicity typically provides increased retention of hydrophobic compounds. For example, the more hydrophobic Kinetex™ Polar C18 chemistry provides a longer retention time which successfully separates a panel of 9 steroids while the less hydrophobic Kinetex C8 column displays coelution of two steroid compounds.

Steroids









Conditions for all columns:

Columns: Kinetex 2.6 µm Polar C18
Kinetex 2.6 µm C8
Dimension: 50 x 4.6 mm
Mobile Phase: A: Water
B: Acetonitrile

Gradient:

Time (min)	% B
0	10
6	70
6.5	70
6.51	10
10	10

Flow Rate: 1.85 mL/min
Temperature: Ambient
Detection: UV @ 220 nm
Sample: 1. Caffeine
2. Estriol
3. Hydrocortisone
4. Corticosterone
5. 11-alpha-Hydroxyprogesterone
6. Beta-Estradiol
7. 11-alpha-Ketoprogesterone
8. Esterone
9. 17-alpha-Hydroxyprogesterone

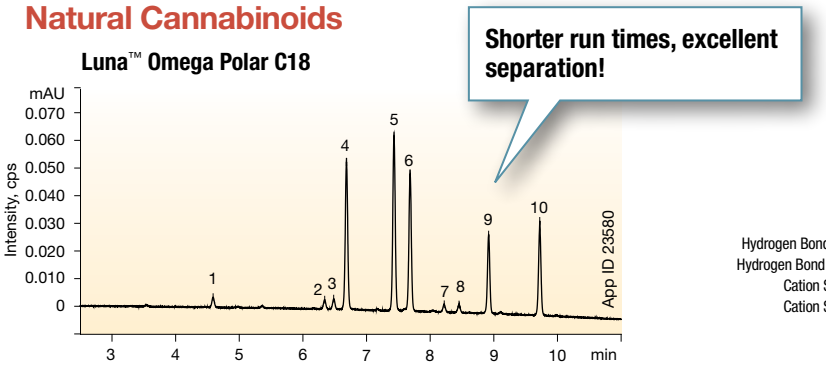
Hydrocarbon Compounds

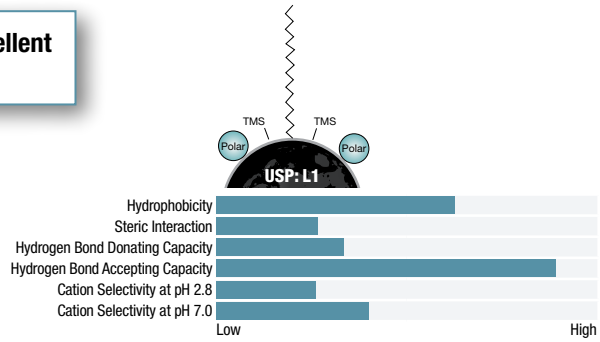
A Traditional C18 May Not Always Be the Best Option

A traditional C18 phase is typically recommended as the first choice for the separation of hydrocarbon, or hydrophobic compounds. However, in some cases, less hydrophobicity paired with a different selectivity may be required to successfully achieve the separation of your hydrophobic compounds as well as to shorten run times. With so many C18 phases to choose from, it is important to note the hydrophobic properties of each phase. For example, the more hydrophobic Luna Omega C18 chemistry provides a longer retention time for 10 cannabinoids while the less hydrophobic Luna Omega Polar C18, which contains a polar modified surface, provides less retention and therefore a shorter run time, without negatively affecting the overall separation of the analytes.

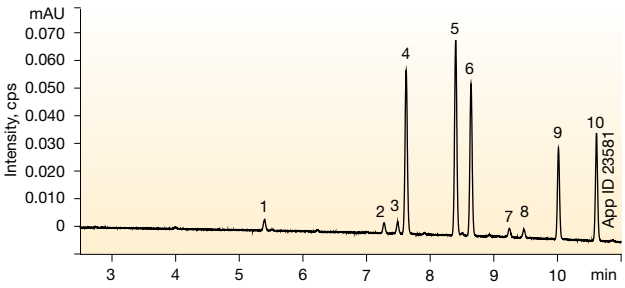
Natural Cannabinoids

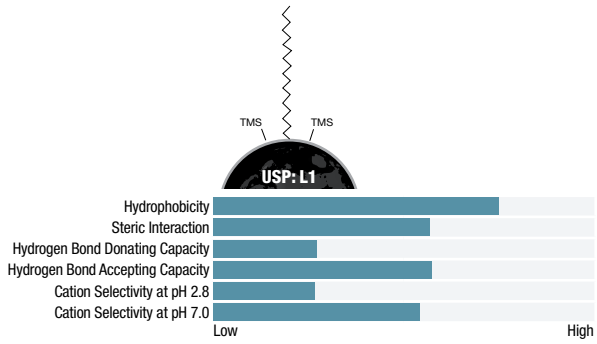
Luna™ Omega Polar C18





Luna Omega C18





Conditions for all columns:

Columns: Luna Omega 1.6 µm Polar C18
Luna Omega 1.6 µm C18

Dimension: 100 x 2.1 mm

Mobile Phase: A: 20 mM Ammonium Formate pH 3.2
B: Acetonitrile

Gradient:

Time (min)	% B
0	60
12	95
13	95
13.01	60
15	60

Flow Rate: 0.4 mL/min

Temperature: 40 °C

Detection: UV @ 256 nm

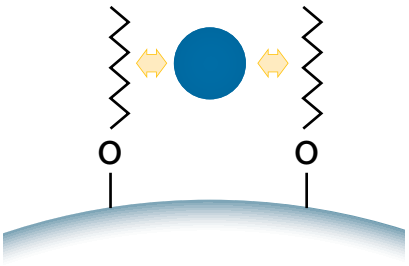
Sample:
1. CBDV
2. Cannabidiol
3. CBG
4. Cannabidolic Acid
5. CBG-A
6. Cannabinol
7. Delta-9-THC
8. Delta-8-THC
9. CBC
10. THCA-A

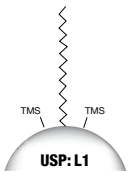
Column Portfolio:
Hydrocarbon Compounds

Find the right amount of hydrophobicity for your separations. Our large assortment of HPLC and UHPLC columns that are best suited for the analysis of hydrocarbon compounds are listed in order of hydrophobicity with the highest hydrophobicity columns at the top of the list.

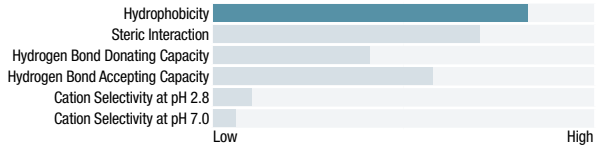
Hydrophobicity

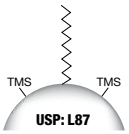
High column hydrophobicity values indicate greater retention of carbon-containing analytes.



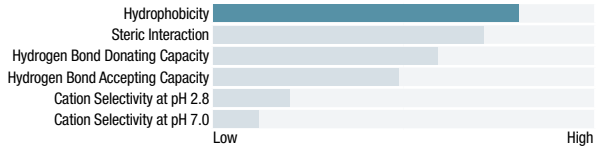


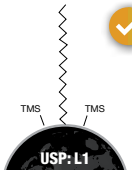
Luna™ C18(2)



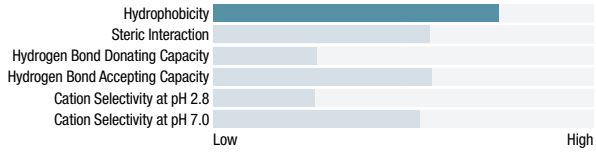


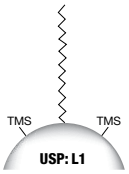
Synergi Max-RP



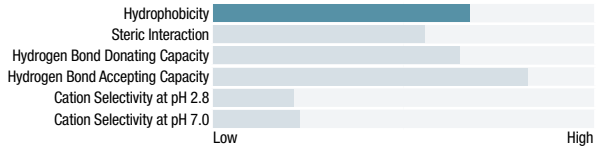


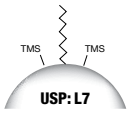
Luna Omega C18



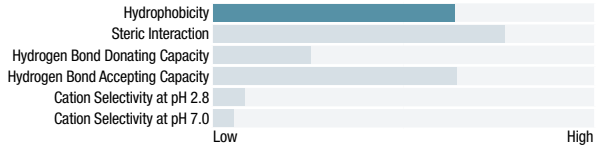


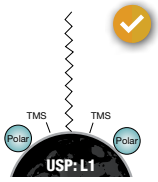
Gemini™ C18



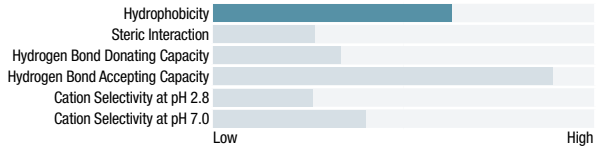


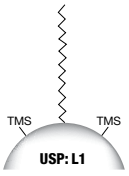
Luna C8(2)



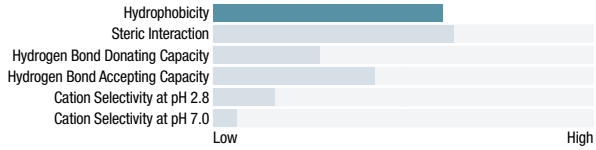


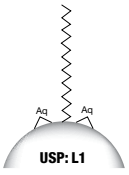
Luna Omega Polar C18



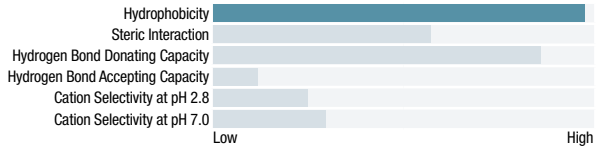


Gemini NX-C18





Synergi™ Hydro-RP



Available for UHPLC

Find Ordering Information on Pages 46-58!

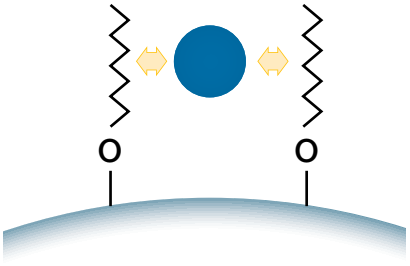
See more

Column Portfolio *(cont'd)*:
Hydrocarbon Compounds

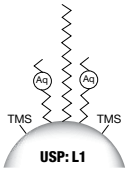
Find the right amount of hydrophobicity for your separations. Our large assortment of HPLC and UHPLC columns that are best suited for the analysis of hydrocarbon compounds are listed in order of hydrophobicity with the highest hydrophobicity columns at the top of the list.

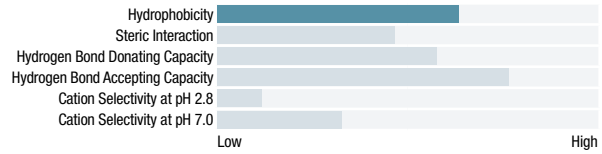
Hydrophobicity

High column hydrophobicity values indicate greater retention of carbon-containing analytes.

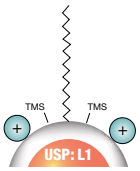


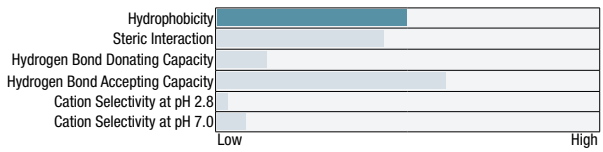
Synergi Fusion-RP



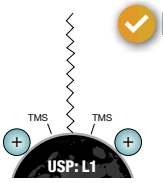


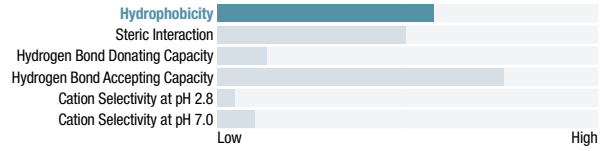
Kinetex PS C18



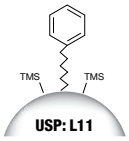


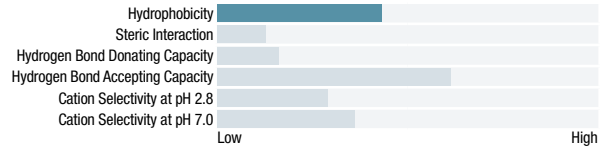
Luna™ Omega PS C18



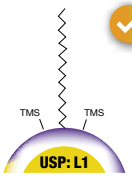


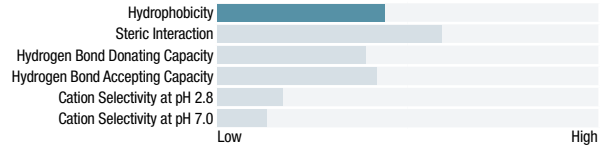
Luna Phenyl-Hexyl





Kinetex™ EVO C18





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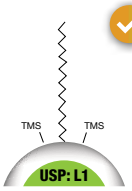
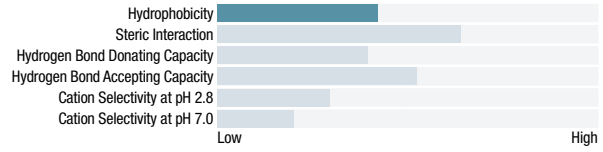
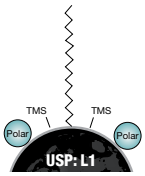
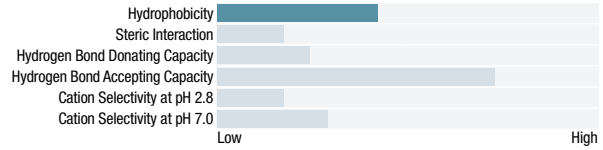


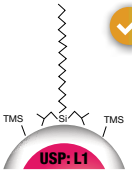


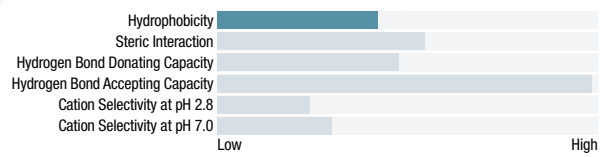
Kinetex Polar C18



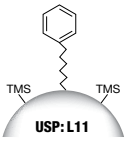


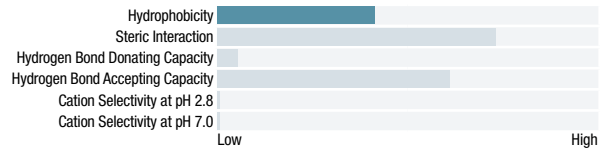
Kinetex XB-C18





Gemini™ C6-Phenyl





Available for UHPLC

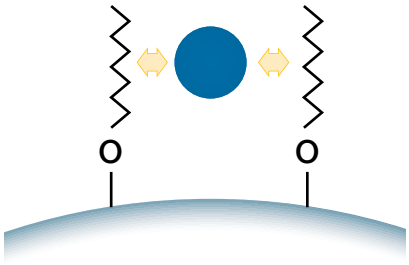
Find Ordering Information on Pages 46-58!

See more

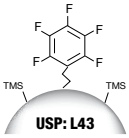
Column Portfolio *(cont'd)*: Hydrocarbon Compounds

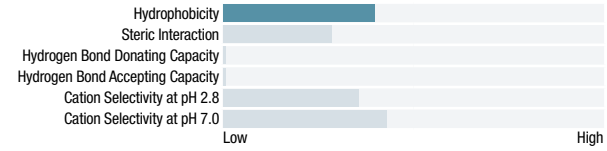
Lower Hydrophobicity

Recommended for extremely hydrophobic compounds that may be retained too tightly on traditional C18 phases.

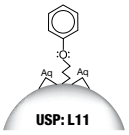


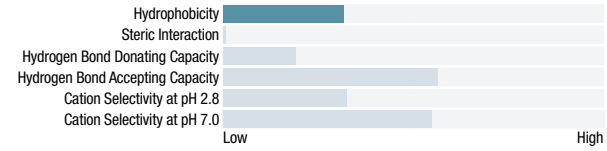
Luna PFP(2)



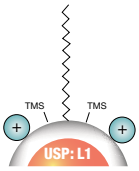


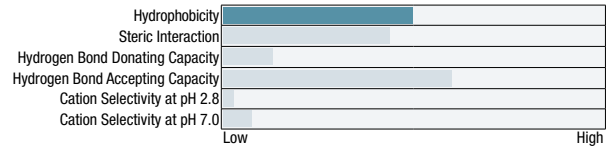
Synergi™ Polar-RP



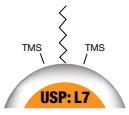


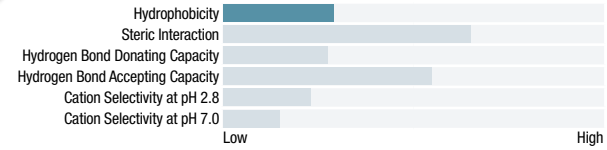
Kinetex PS C18



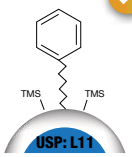


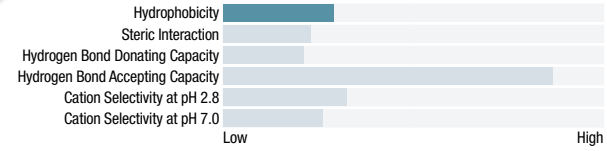
Kinetex C8



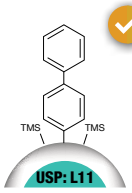


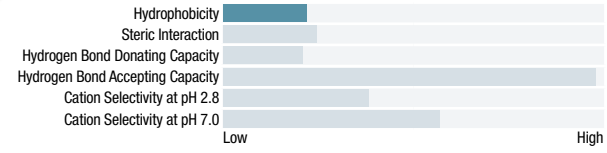
Kinetex Phenyl-Hexyl



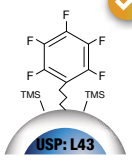


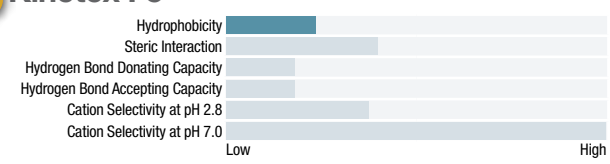
Kinetex Biphenyl



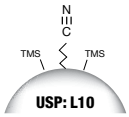


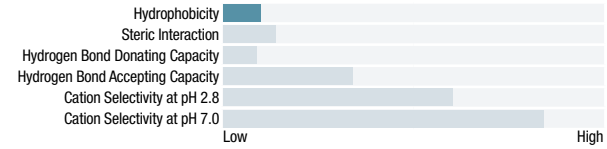
Kinetex F5





Luna CN





Available for UHPLC

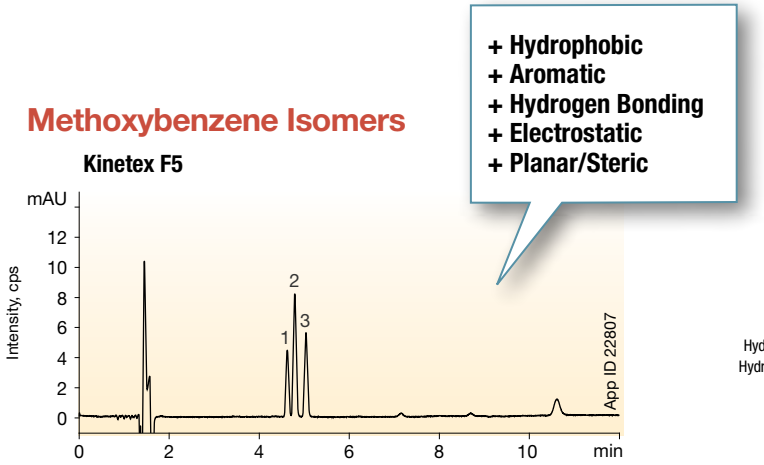
Find Ordering Information on Pages 46-58!

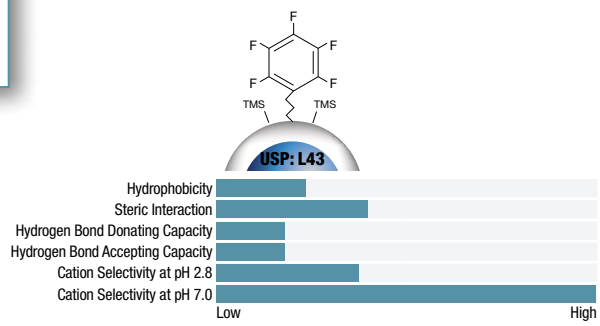
Isomers and Isobaric Compounds

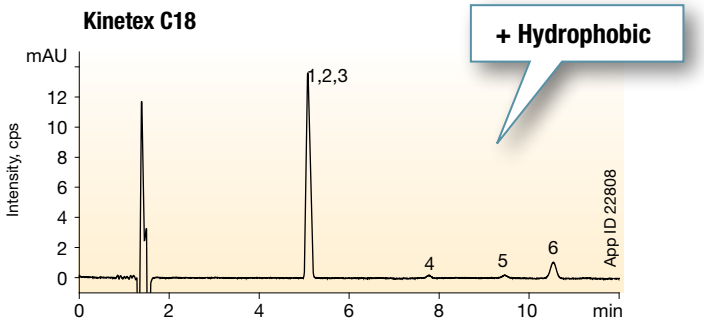
Take Advantage of Multiple Interactive Mechanisms

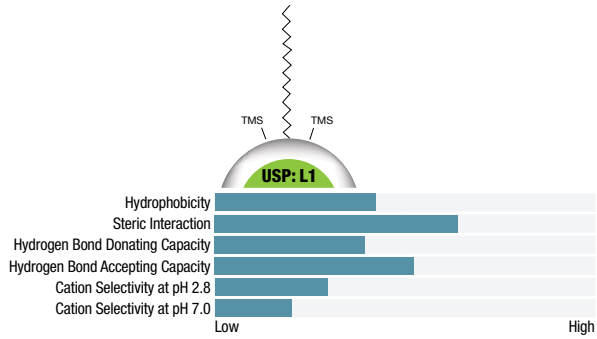
The multiple interactive mechanisms of the Kinetex™ F5 (pentafluorophenyl) column successfully separate methoxybenzene isomers, while the Kinetex C18 column, which has minimal bonding interactions, cannot separate the methoxybenzene isomers. This demonstrates that columns that rely primarily on hydrophobic interactions may not be the first choice for the separation of isomeric compounds and a column with multiple interactive mechanisms may be required.

Methoxybenzene Isomers









Conditions for all columns:
Column: Kinetex 2.6 µm F5
Kinetex 2.6 µm C18
Dimensions: 150 x 4.6 mm
Mobile Phase: A: 0.1 % TFA in Water
B: Acetonitrile
Isocratic: A/B (65:35)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: 1. 1,2,3-Trimethoxybenzene
2. 1,2-Dimethoxybenzene
3. 1,2,4-Trimethoxybenzene
4. 1,4-Dimethoxybenzene
5. Methoxybenzene
6. 1,3-Dimethoxybenzene

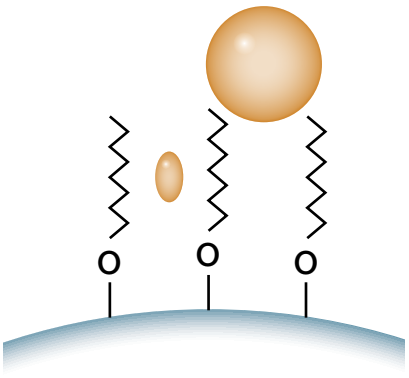
See more

Column Portfolio:
Isomers and Isobaric Compounds

Phenomenex has developed HPLC and UHPLC columns for the successful high resolution separation of compounds based on size and shape. These columns have either high column steric interaction values or multiple interaction mechanisms which are best suited for the analysis of isomers and isobaric compounds.

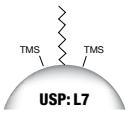
Steric Interactions

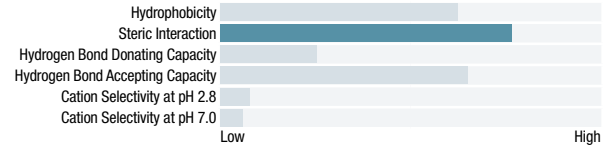
High column steric interaction values are best suited for the analysis of analytes that require separation based on size and shape differences.



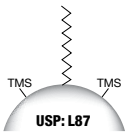
Identify Differences in Shape Selectivity

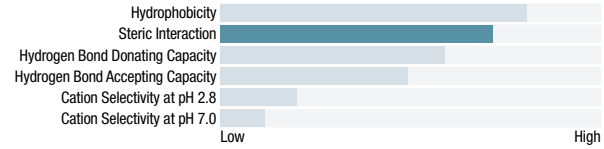
Luna™ C8(2)





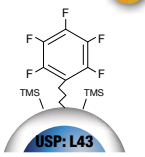
Synergi™ Max-RP

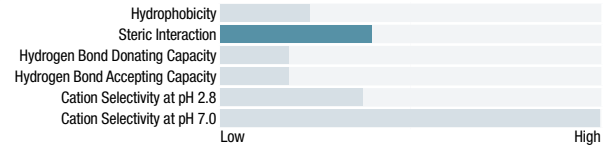




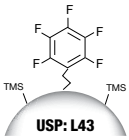
Positional Isomers - Polar/Neutral Functionalities

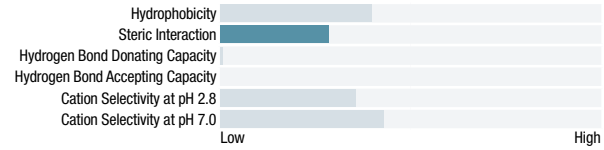
Kinetex™ F5





Luna PFP(2)





Available for UHPLC

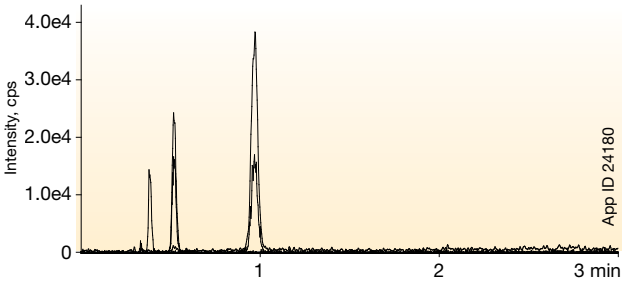
Find Ordering Information on Pages 46-58!

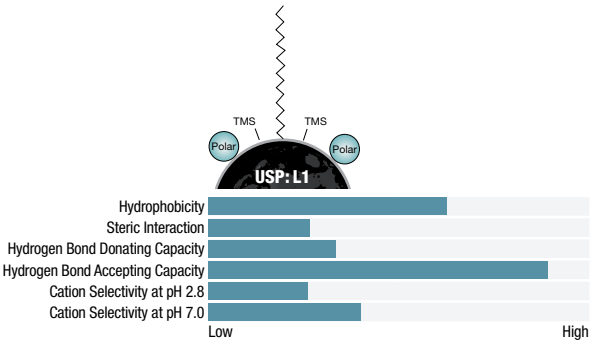
Hydroxyl- or Amine-Containing Compounds

Utilizing Hydrogen Bond Capacity to Increase Retention

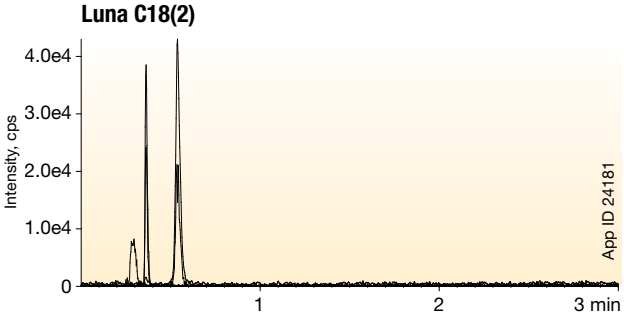
Compounds that contain hydroxyl groups, amines, or the combination of those two types of functional groups, typically display the ability to interact with LC stationary phases through hydrogen bonding. This interaction can take place at the silica surface with silanols, endcapping or other functional groups. Additionally, hydrogen bond interactions can take place between these analyte groups and any corresponding polar groups on or within the stationary phase. By utilizing a column selectivity that contains a combined hydrophobic and hydrogen bond capacity, one can gain greater improvement in resolution versus just focusing on manipulation of hydrophobic retention. This can be especially true when analyzing compounds that are very polar in nature.

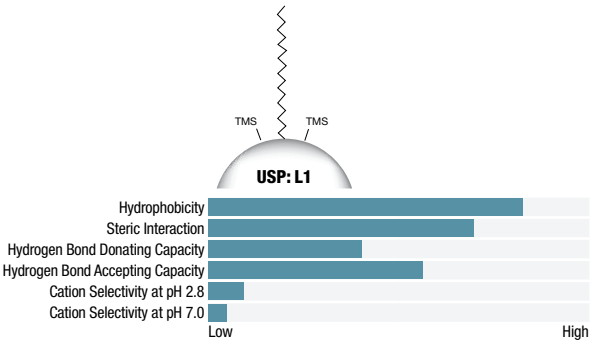
Luna™ Omega Polar C18





Luna C18(2)





Conditions for all columns:

Column: Luna Omega 3 µm Polar C18
Luna 3 µm C18(2)
Dimensions: 50 x 2.1 mm
Mobile Phase: A: Water with 0.1 % Formic Acid
B: Methanol with 0.1 % Formic Acid

Gradient:

Time (min)	% B
0	5
3	100

Flow Rate: 0.7 mL/min
Temperature: 22 °C
Detection: MS/MS (SCIEX® API 4000™)
Sample: 1. Metanephrine
2. Normetanephrine
3. 3-Methoxytyramine

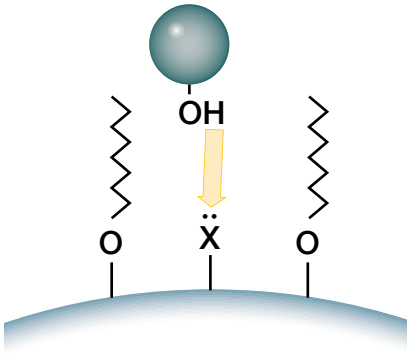
See more

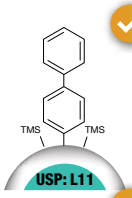
Column Portfolio:
Hydroxyl- or Amine- Containing Compounds

Our HPLC and UHPLC column recommendations for the analysis of hydroxyl- or amine-containing compounds are listed by hydrogen bond accepting capacity (below) and aromaticity (pg. 18).

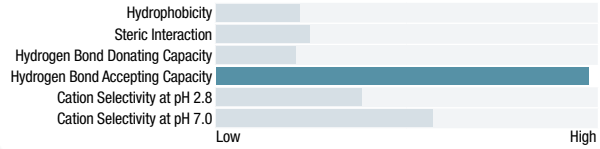
Hydrogen Bond Accepting Capacity

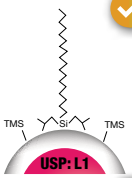
Hydrogen bond accepting groups on the silica surface interact with hydrogen bond donating functionalities on analytes.



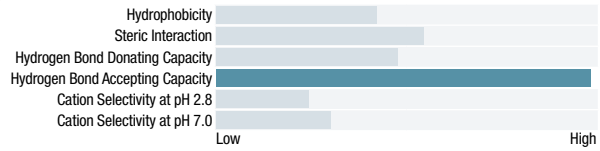


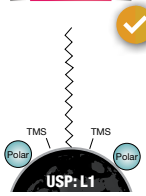
Kinetex™ Biphenyl



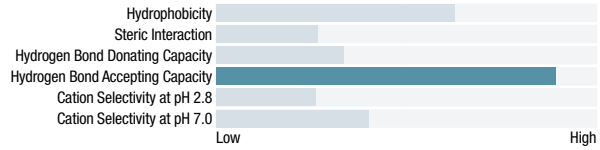


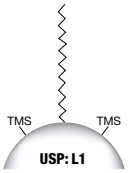
Kinetex XB-C18



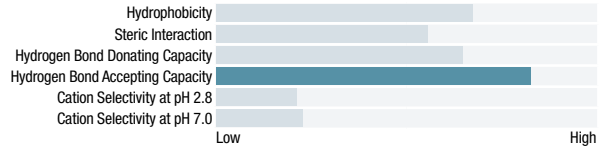


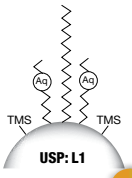
Luna™ Omega Polar C18



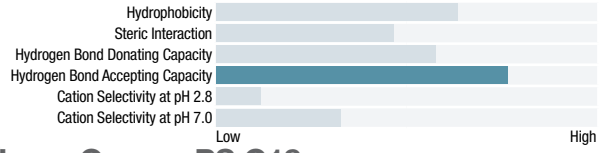


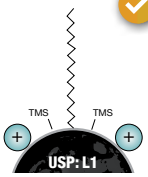
Gemini™ C18



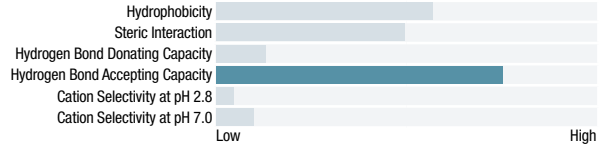


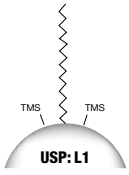
Synergi™ Fusion-RP



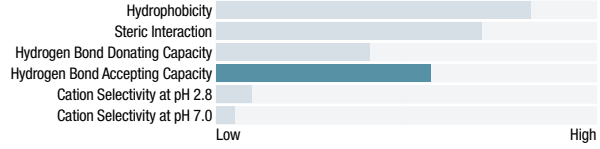


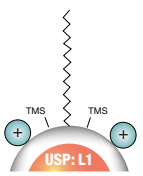
Luna Omega PS C18



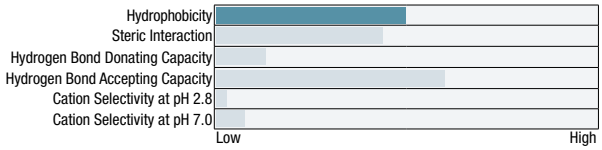


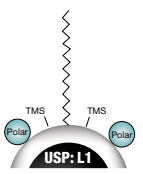
Luna C18(2)



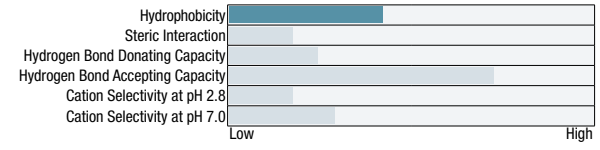


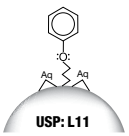
Kinetex PS C18



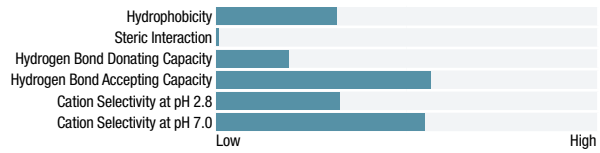


Kinetex Polar C18





Synergi™ Polar-RP



Available for UHPLC

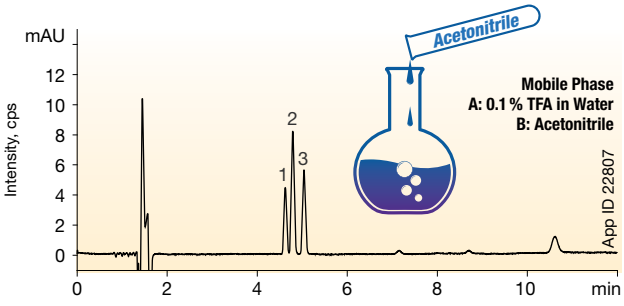
Find Ordering Information on Pages 46-58!

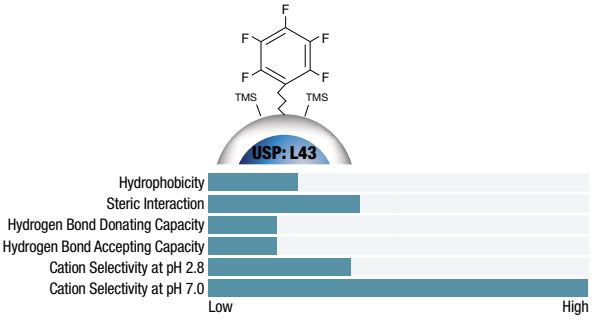
Aromatic or Ring Containing Compounds

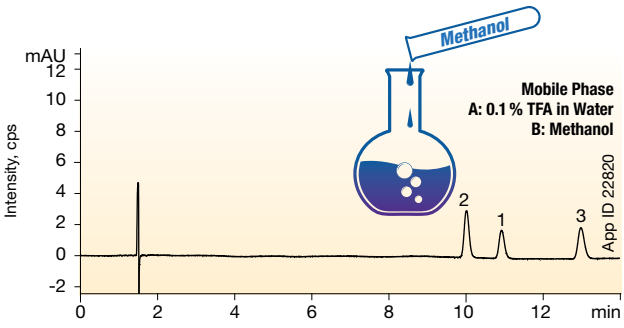
Depending on Pi-Pi Stacking Interactions to Gain Greater Retention and Resolution

Every industry in the world that uses chromatography has most likely at some point analyzed compounds that contain carbon based ring structures. While these rings increase the hydrophobicity of a compound, they also provide a source of pi electrons which can directly interact with the pi electrons found within a stationary phase. While these aromatic, pi-pi interactions are not as strong as hydrophobic interactions, they can represent an easy way to increase retention and resolution. When choosing a mobile phase to use with aromatic stationary phases that contain a phenyl group, it's incredibly useful to keep in mind that acetonitrile disrupts pi-pi interactions, while methanol helps to promote them.

Methoxybenzene Isomers







Conditions for all columns:
Column: Kinetex 2.6 µm F5
Dimensions: 150 x 4.6 mm
Part No.: 00F-4723-E0
Mobile Phase: as noted
Isocratic: A/B (65:35)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: 1. 1,2,3-Trimethoxybenzene
2. 1,2-Dimethoxybenzene
3. 1,2,4-Trimethoxybenzene

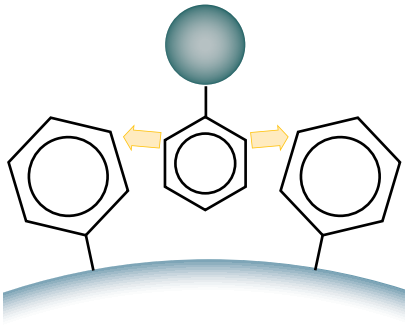
See more

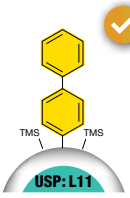
Complete Portfolio:
Aromatic or Ring Containing Compounds

Our selection of HPLC and UHPLC columns that promote pi-pi interactions are listed by aromaticity.

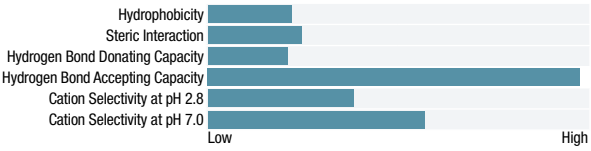
Aromaticity

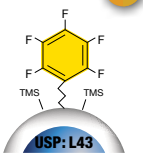
Column chemistries that contain ring structures interact with aromatic or ring containing compounds via pi-pi interactions (π stacking)



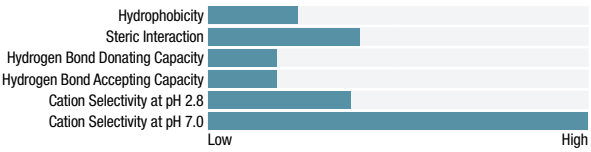


Kinetex™ Biphenyl

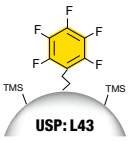


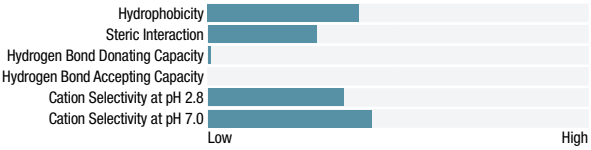


Kinetex F5

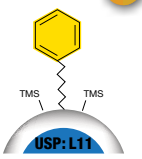


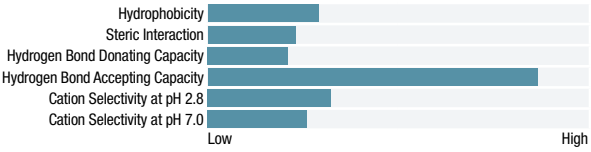
Luna™ PFP(2)



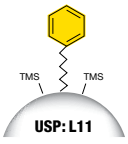


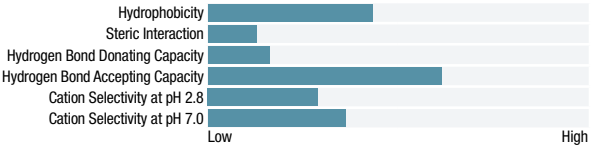
Kinetex Phenyl-Hexyl



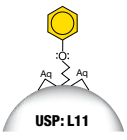


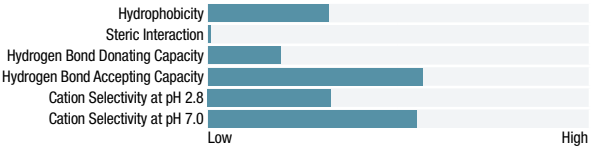
Luna Phenyl-Hexyl





Synergi™ Polar-RP





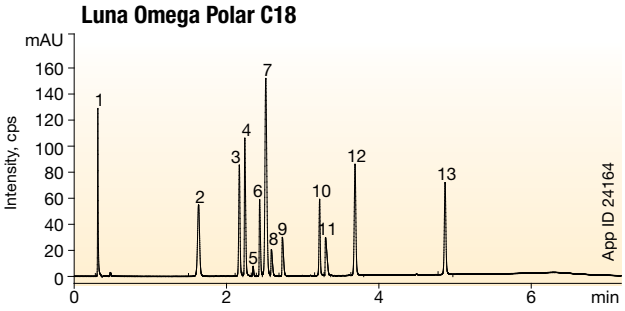
Available for UHPLC

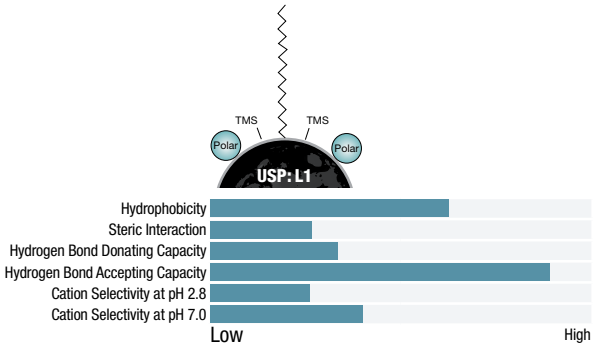
Find Ordering Information on Pages 46-58!

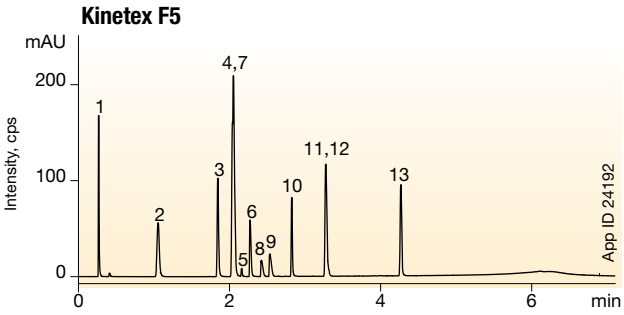
Non-ionized Bases and Oxygen- or Halogen-Containing Compounds

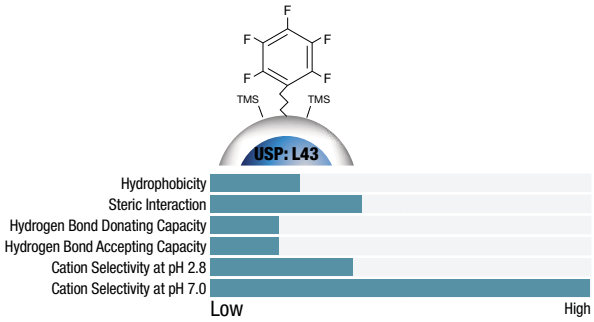
Hydrogen Bond Donating Capacity and Its Effect on Retention

Liquid chromatography columns with high hydrogen bond donating capacity provide higher retention of non-ionized bases and oxygen- or halogen-compounds while lower hydrogen bond donating capacity columns will result in less retention. For example, the higher hydrogen bond donating capacity of the Luna™ Omega Polar C18 column provides longer retention times which successfully separates a suite of 8 acidic, basic, and neutral compounds while the lower hydrogen bond donating capacity of the Kinetex™ F5 column has less retention and displays coelution of several compounds.









Conditions for all columns:

Column: Luna Omega 3 µm Polar C18
Kinetex 2.6 µm F5

Dimensions: 50 x 4.6 mm

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

Gradient:

Time (min)	% B
0	5
0.5	5
5.5	95
7.51	5
10	5

Flow Rate: 1.85 mL/min

Temperature: Ambient

Detection: UV @ 254 nm

Sample:
1. Pyridine
2. Acetaminophen
3. Sulfathiozole
4. Quinidine
5. Quinidine Impurity
6. Acebutolol
7. Phenol
8. Chlorpheniramine
9. Triprolidine
10. Prednisolone
11. Nortriptyline
12. 5MSA
13. Hexanophenone

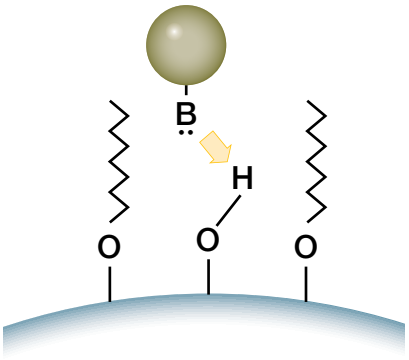
See more

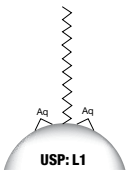
Column Portfolio: Non-ionized Bases and Oxygen- or Halogen-Containing Compounds

We recommend the following columns for the separation of non-ionized bases and oxygen- or halogen-containing compounds. Use the charts below to compare the hydrogen bond donating capacity, keeping in mind that a higher hydrogen bond donating capacity will result in greater retention of non-ionized bases and oxygen- or halogen-containing compounds.

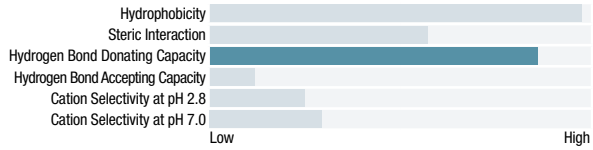
Hydrogen Bond Donating Capacity

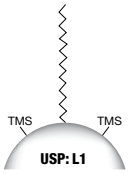
Hydrogen bond donating groups on the silica surface interact with accessible functionalities containing a lone pair of electrons.



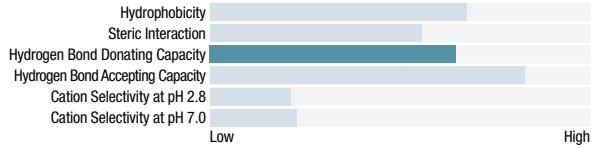


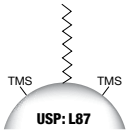
Synergi™ Hydro-RP



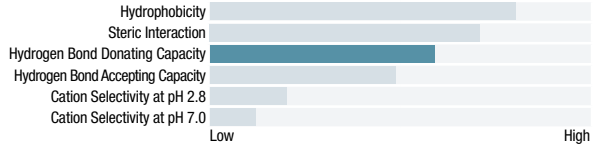


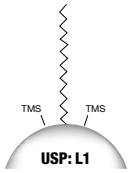
Gemini™ C18



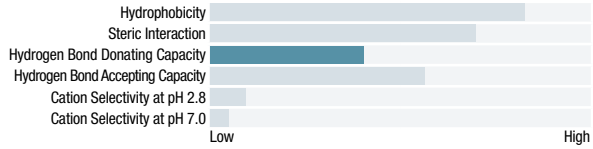


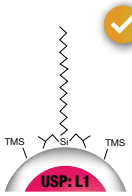
Synergi Max-RP



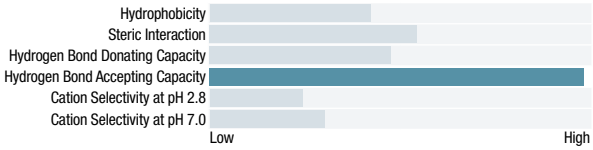


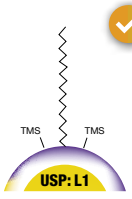
Luna™ C18(2)



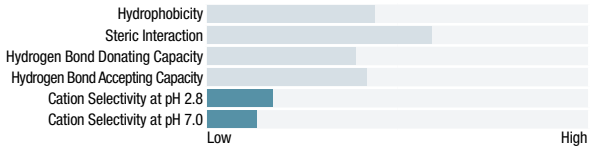


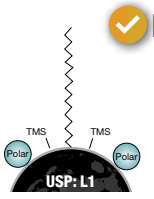
Kinetex™ XB-C18



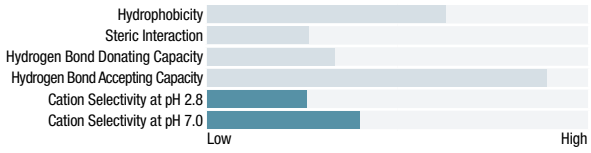


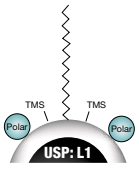
Kinetex EVO C18



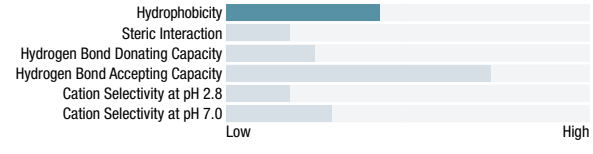


Luna Omega Polar C18





Kinetex Polar C18



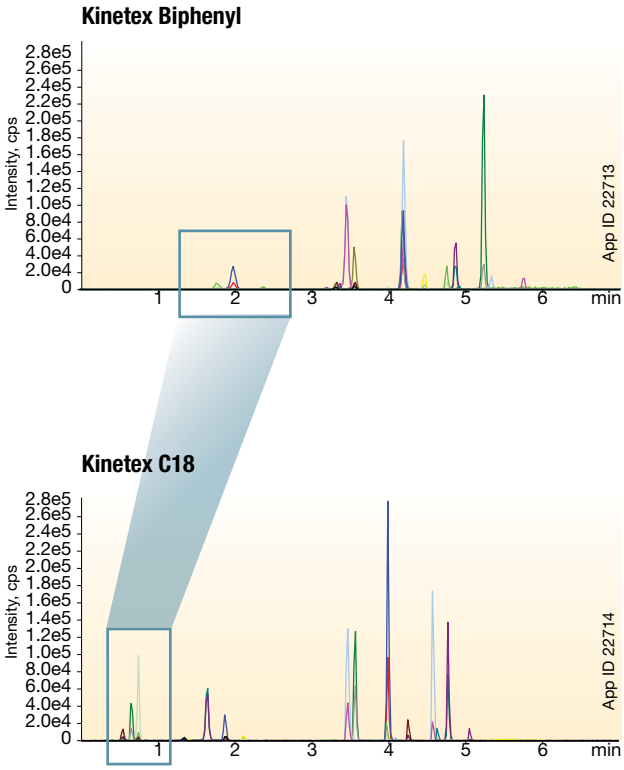
Available for UHPLC

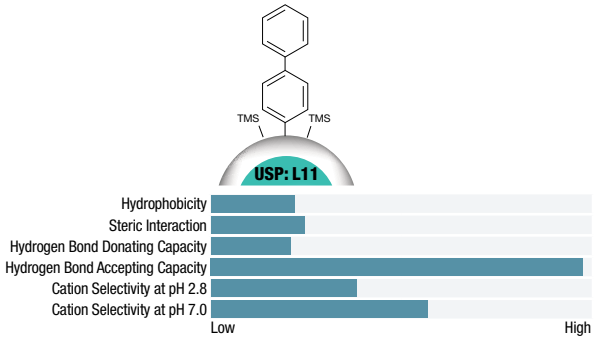
Find Ordering Information on Pages 46-58!

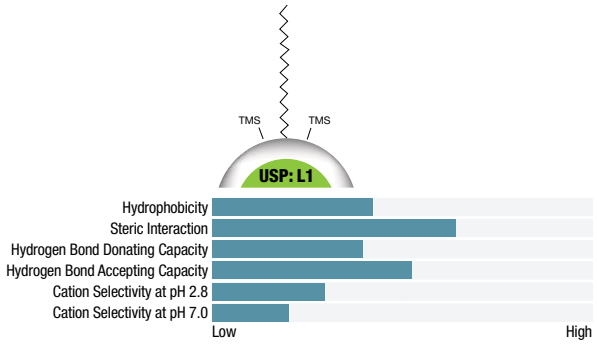
Polar Basic Compounds

Utilize the Cationic Selectivity of Your Column

A liquid chromatography column's cation selectivity can determine its affinity for ionized bases. High column cation selectivity will provide higher affinity or longer retention of ionized bases while lower column cation selectivity will result in less retention of ionized bases, but may have very good peak shapes. For example, the higher cation selectivity properties of the Kinetex™ Biphenyl column provide longer retention of opiates as compared to the Kinetex C18 column which has a lower cation selectivity rating. This can be extremely helpful when needing to move compounds away from early suppression regions.







Conditions for all columns:

Column: Kinetex 5 µm Biphenyl
Kinetex 5 µm C18
Dimensions: 50 x 2.1 mm
Mobile Phase: A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in 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: 40 °C
Detection: MS/MS (SCIEX® API 4000™)
Sample:
1. Meprobamate
2. Normepiridine
3. Mepiridine
4. Carisprodol
5. Tramadol
6. Hydromorphone
7. Morphine
8. Codeine
9. Hydrocodone
10. Oxymorphone
11. Methadone
12. Oxycodone
13. 6-MAM
14. Norbuprenorphine
15. Buprenorphine

See more

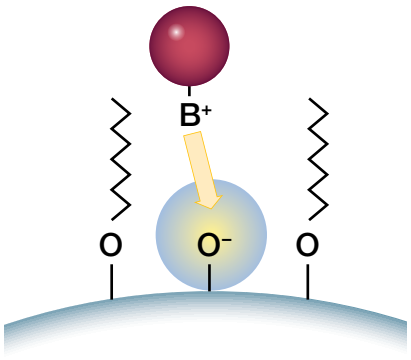
Column Portfolio:
Analysis of Polar Basic Compounds

Columns with high column cation selectivity values will show higher retention for ionized bases while columns with low column cation selectivity values will have less interaction and retention for ionized bases, but may have very good peak shape for bases. We've organized our recommendations for polar basic compounds by increased retention and improved peak shape.

Cation Selectivity

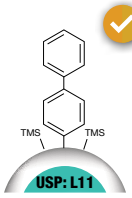
High column cation selectivity values will show higher retention for ionized bases.

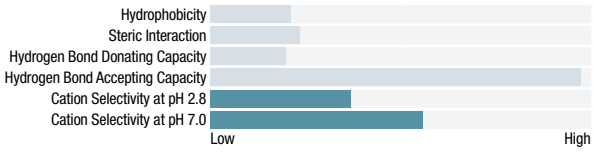
Low column cation selectivity values will have less interaction and retention for ionized bases, but may have very good peak shape.



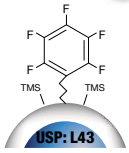
Increased Retention of Polar Bases

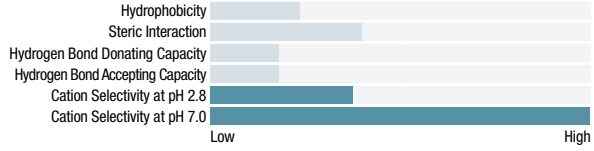
Kinetex™ Biphenyl



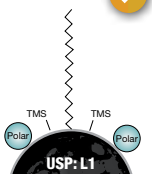


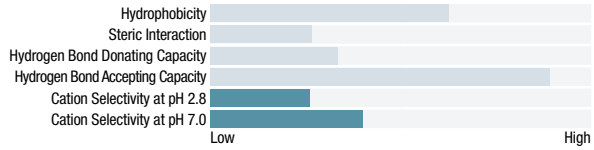
Kinetex F5





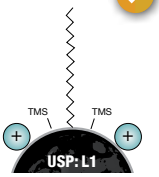
Luna™ Omega Polar C18

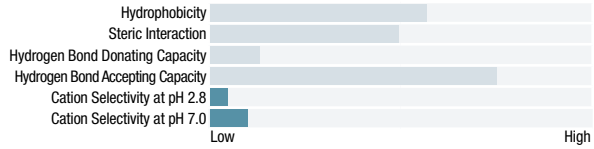




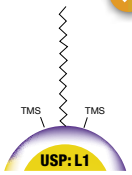
Improved Peak Shape for Bases

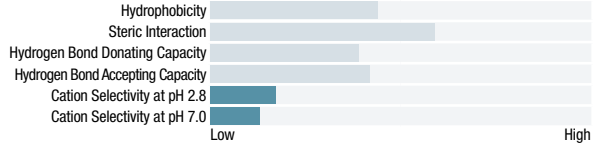
Luna Omega PS C18



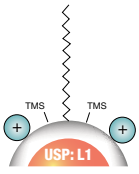


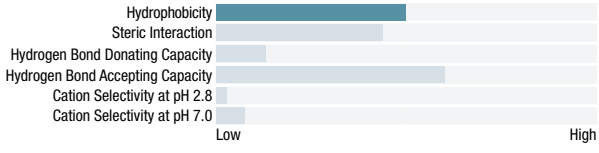
Kinetex EVO C18



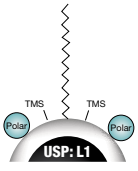


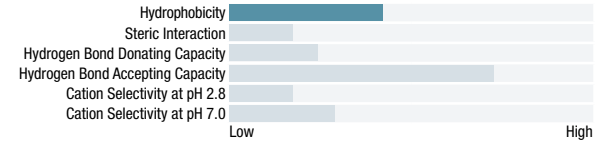
Kinetex PS C18





Kinetex Polar C18





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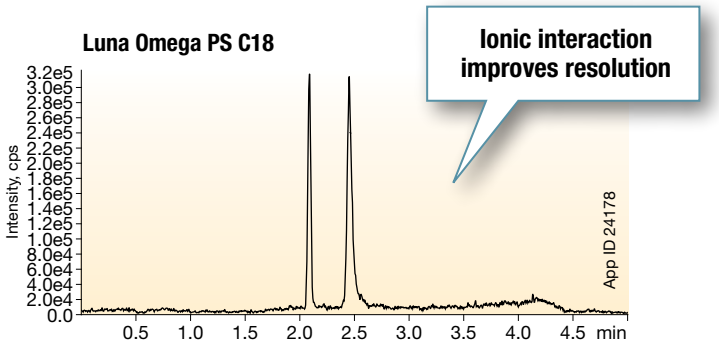
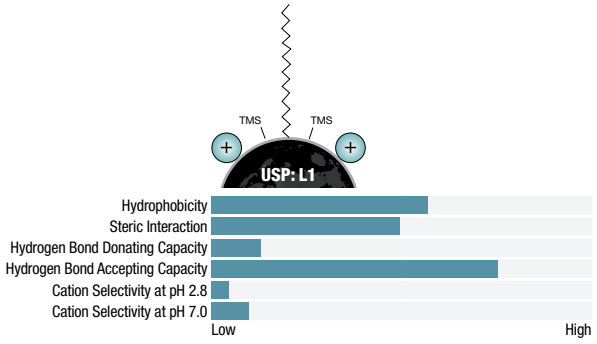
Find Ordering Information on Pages 46-58!

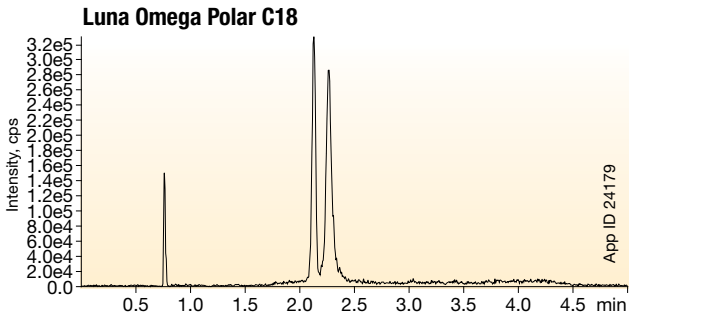
Polar Acidic Compounds

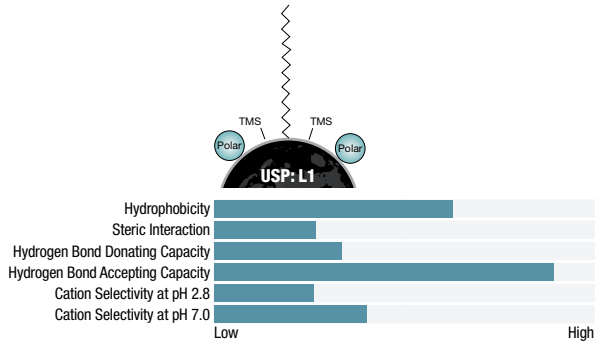
Think Positively

Charged polar groups on the surface of a particle or within the column's key functional group can play a large role in the separation of polar acidic compounds. Chemistries such as Luna™ Omega PS C18 have been fine-tuned to provide a mixed mode selectivity that includes positively charged groups on the silica's surface. These groups increase the retention of polar acidic compounds, resulting in improved separation power as compared to chemistries that do not contain these properties.









Conditions for all columns:

Column: Luna Omega 5 µm PS C18
Luna Omega 5 µm Polar C18
Dimensions: 50 x 2.1 mm
Mobile Phase: A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in Acetonitrile

Gradient:	**Time (min)**	**% B**
	0	0
	3	90

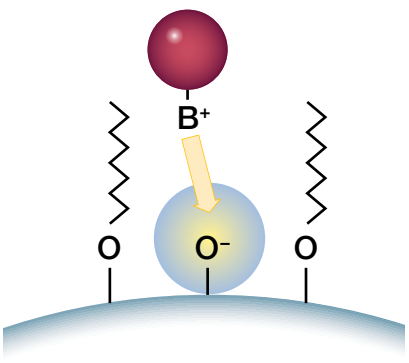
Flow Rate: 0.7 mL/min
Temperature: Ambient
Detection: MS/MS (SCIEX® API 4000™)
Sample: 1. MMA
2. Succinic acid

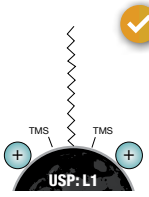
Complete Portfolio: Analysis of Polar Acidic Compounds

Phenomenex has optimized the silica surface (in the case of Luna Omega PS C18) as well as functional groups (Kinetex™ F5) to provide various interaction mechanisms for the successful separation of polar acidic compounds.

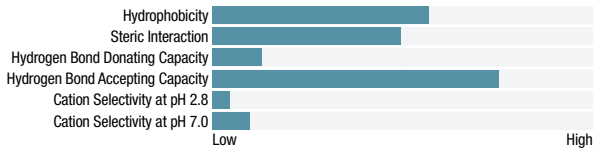
Positive Functionality

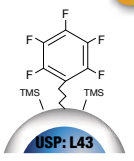
Positive groups on the silica surface or in the column's functional group interact with polar acidic compounds, increasing the retention time.



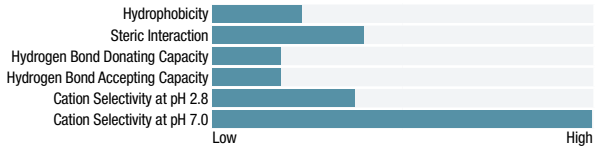


Luna Omega PS C18





Kinetex F5



Available for UHPLC

Find Ordering Information on Pages 46-58!

The Right Column:
Quick Selection Guide

Both the solid support and the bonded phase should be taken into consideration when selecting the most appropriate reversed phase HPLC or UHPLC column. Though the chart below depicts several similar bonded ligand types, no two columns are the same. View the selectivity profiles of each phase, pages 28-38, to see how each column can provide you with a truly different selectivity.

Variety of Selectivities and Solid Supports for RP-HPLC Methods

	Core-Shell	Fully Porous - Thermally Modified Silica	Fully Porous Silica	Fully Porous
C18 with nonpolar endcapping	Kinetex C18 Kinetex XB-C18	Luna Omega C18	Luna C18(2)	
C18 with di-isobutyl side chains	Kinetex XB-C18			
C18 with organo-silica	Kinetex EVO C18			Gemini C18 Gemini NX-C18
C18 with polar modified surface	Kinetex Polar C18	Luna Omega Polar C18		Gemini C18
C18 with polar embedded groups			Synergi Fusion-RP	
C18 with polar endcapping			Synergi Hydro-RP	
C18 with positive ionic groups	Kinetex PS C18	Luna Omega PS C18		
C12 with nonpolar endcapping			Synergi Max-RP	
C8 with nonpolar endcapping	Kinetex C8		Luna C8(2)	
C5 with nonpolar endcapping			Luna C5	
Phenyl with ether linkage and polar endcapping			Synergi Polar-RP	
Phenyl with nonpolar endcapping	Kinetex Biphenyl Kinetex Phenyl-Hexyl		Luna Phenyl-Hexyl	Gemini C6-Phenyl
PFP	Kinetex F5		Luna PFP(2)	
CN			Luna CN	

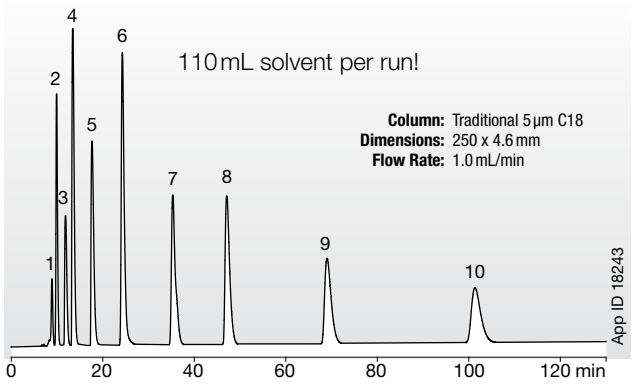
Core-Shell for Proteins/Peptides
Aeris WIDEPORE and Aeris PEPTIDE columns were specifically developed for the analysis of biomolecules. Find more information on these exclusive 3.6 µm and 1.7 µm core-shell particles in XB-C18, XB-C8, and XB-C4 phases at **www.phenomenex.com/aeris**

Column Recommendations for Special Cases

Based on experience and customer feedback, we've found that particular solid support/selectivity combinations work very well for specific application types. We recommend the following columns as starting points for those applications outlined below. The selectivity profiles located in the specific product pages can also be utilized to identify a suitable column based on analyte characteristics.

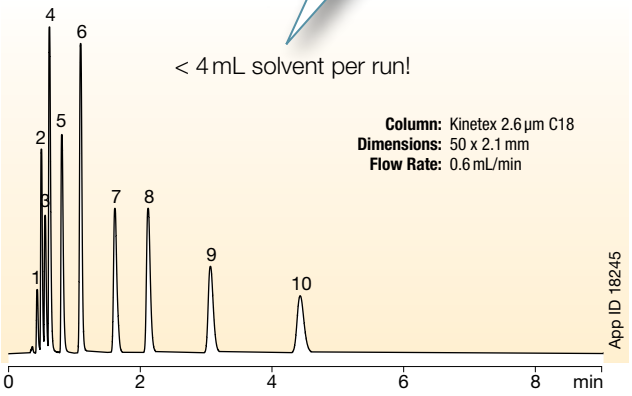
High Productivity

Recommended Columns: Kinetex™ (all phases)



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

96% Decrease in solvent consumption and 95% decrease in run time



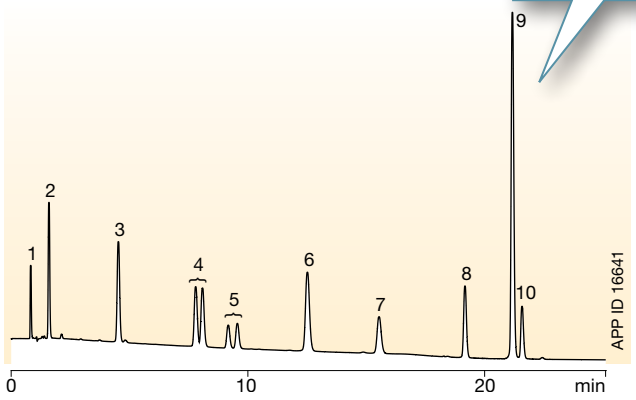
Sample:
1. Tianeptine
2. Desmethyldoxepin
3. Protriptyline
4. Desipramine
5. Imipramine
6. Amoxapine
7. Doxepin
8. Nortriptyline
9. Amitriptyline
10. Clomipramine

Conditions same for both columns except where noted. Comparative separations may not be representative of all applications.

High pH

Recommended Columns: Gemini™ (all phases)

Polar bases are neutral at pH 10.5, eliminating secondary ionic interactions



Polar Bases (Beta Blockers) at High pH

Column: Gemini 5 µm NX-C18
Dimensions: 150 x 4.6 mm
Mobile Phase: A: 10 mM Ammonium Bicarbonate pH 10.5
B: Acetonitrile
Gradient: A/B (85:15) to (70:30) in 15 min
to (50:50) in 5 min, Hold for 5 min
Flow Rate: 1.5 mL/min
Temperature: Ambient
Detection: UV @ 230 nm
Sample:
1. Bisoprolol Contaminant
2. Sotalol
3. Atenolol
4. Labetolol (Diastereoisomeric Pair)
5. Nadolol (Diastereoisomeric Pair)
6. Pindolol
7. Metoprolol
8. Bisoprolol
9. Propranolol
10. Alprenalol

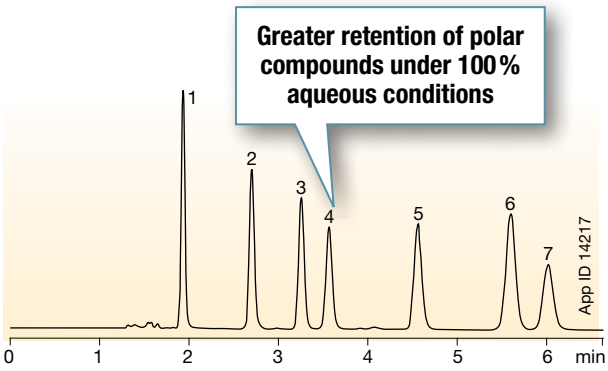
Kinetex EVO C18 is also an excellent choice for high pH work with its combined core-shell performance and excellent particle robustness.

See more

High Aqueous

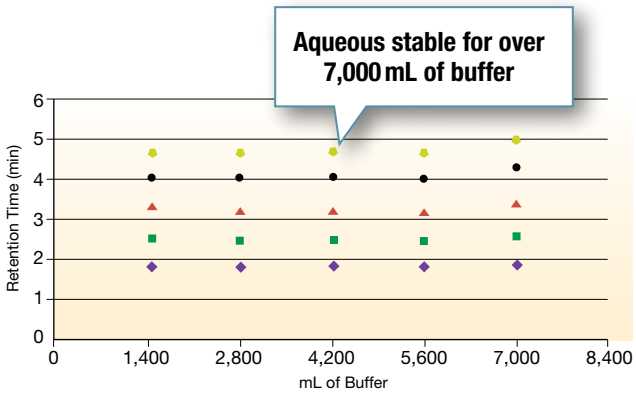
Recommended Columns: Luna™ Omega Polar C18, Luna Omega PS C18, Kinetex™ Polar C18, Synergi™ Hydro-RP, Synergi Polar-RP, and Synergi Fusion-RP,

Catecholamines



Column: Synergi 4 µm Hydro-RP
Dimensions: 150 x 4.6 mm
Part No.: 00F-4375-E0
Mobile Phase: 20 mM Potassium phosphate, pH 2.5
Flow Rate: 1.0 mL/min
Temperature: 22 °C
Detection: UV @ 210 nm
Sample: 1. Norepinephrine
2. Epinephrine
3. 6-Hydroxydopamine
4. Normetanephrine
5. Dopamine
6. L-DOPA
7. Epinine

Aqueous Stability

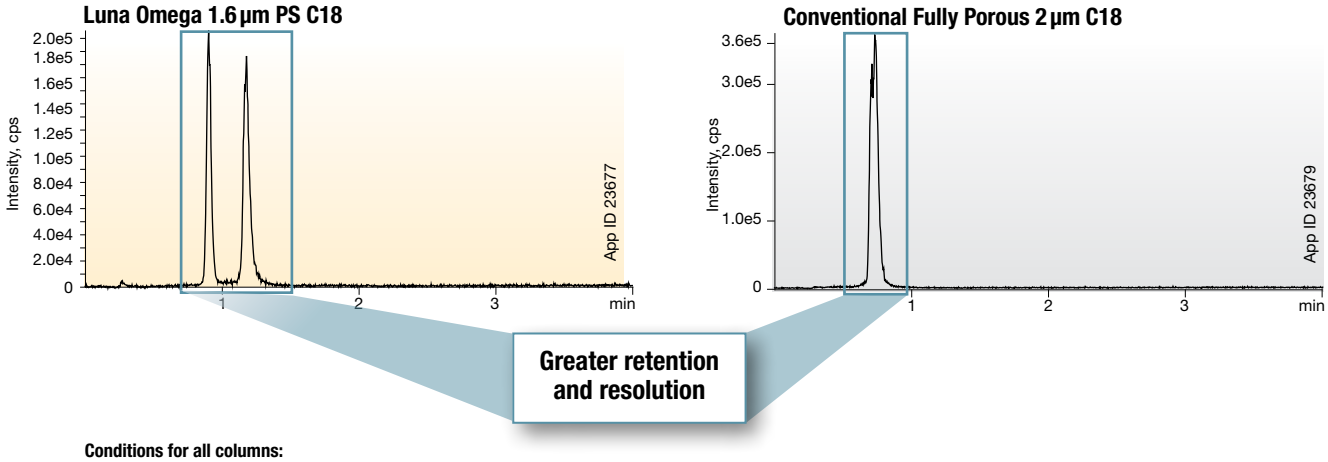


Column: Synergi 4 µm Hydro-RP
Dimensions: 150 x 4.6 mm
Part No.: 00F-4375-E0
Mobile Phase: 20 mM Potassium phosphate, pH 2.5
Flow Rate: 1.0 mL/min
Temperature: 35 °C
Detection: UV @ 210 nm
Injection: 5 µL
Sample: 1. Norepinephrine (0.8 mg/mL)
2. Epinephrine (0.5 mg/mL)
3. Normetanephrine (0.6 mg/mL)
4. Dopamine (0.4 mg/mL)
5. L-DOPA (0.3 mg/mL)

Higher Retention and Resolution for Polar Compounds

Recommended Columns: Luna Omega Polar C18, Luna Omega PS C18, and Kinetex Polar C18

MMA and Succinic Acid



Conditions for all columns:
Columns: Luna Omega 1.6 µm PS C18
Conventional Fully Porous 2 µm C18
Dimension: 50 x 2.1 mm
Mobile Phase: A: Water with 0.1 % Formic Acid
B: Acetonitrile with 0.1 % Formic Acid

Gradient: Time (min)	% B
0	0
5	50
5.1	0
7	0

Flow Rate: 0.5 mL/min
Temperature: 22 °C
Detection: MS/MS (SCIEX® API 4000™)
Sample: 1. Succinic acid
2. MMA

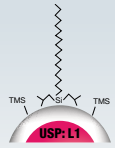
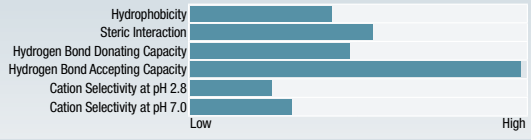
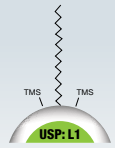
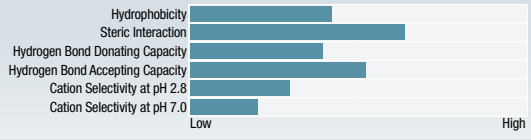
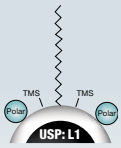
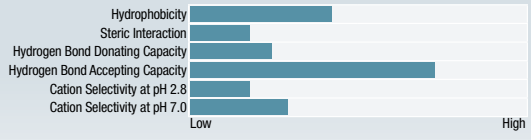
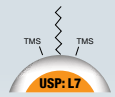
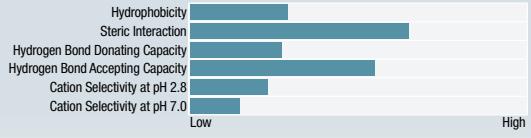
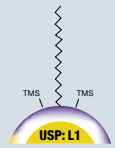
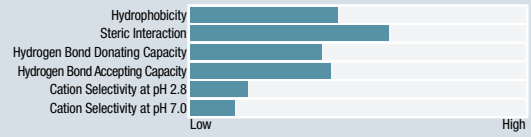
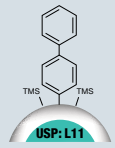
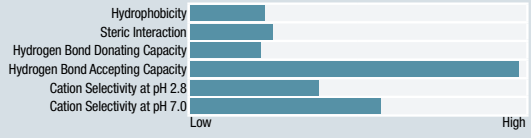
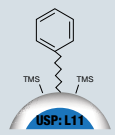
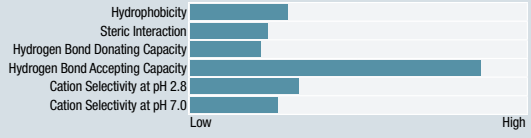
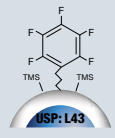
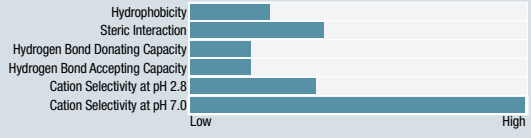
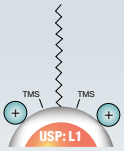
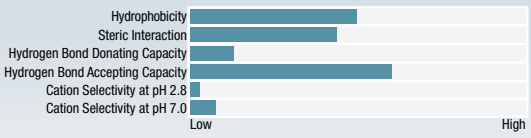
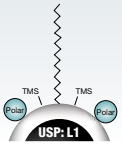
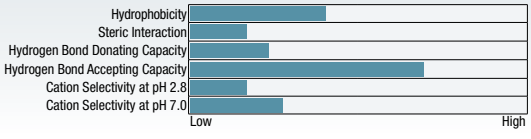
Comparative separations may not be representative of all applications.

Performance Gains on ANY LC System

KINETEX™ Core-Shell Technology

Kinetex core-shell particles were engineered to make improved results, increased productivity, easy transferrability, and cost savings accessible to everyone. You can leverage the power of Kinetex 5 µm to improve 5 and 3 µm methods. Use Kinetex 2.6 µm as a versatile upgrade for both HPLC and UHPLC methods and get the most performance out of your UHPLC with Kinetex 1.3 µm and 1.7 µm.

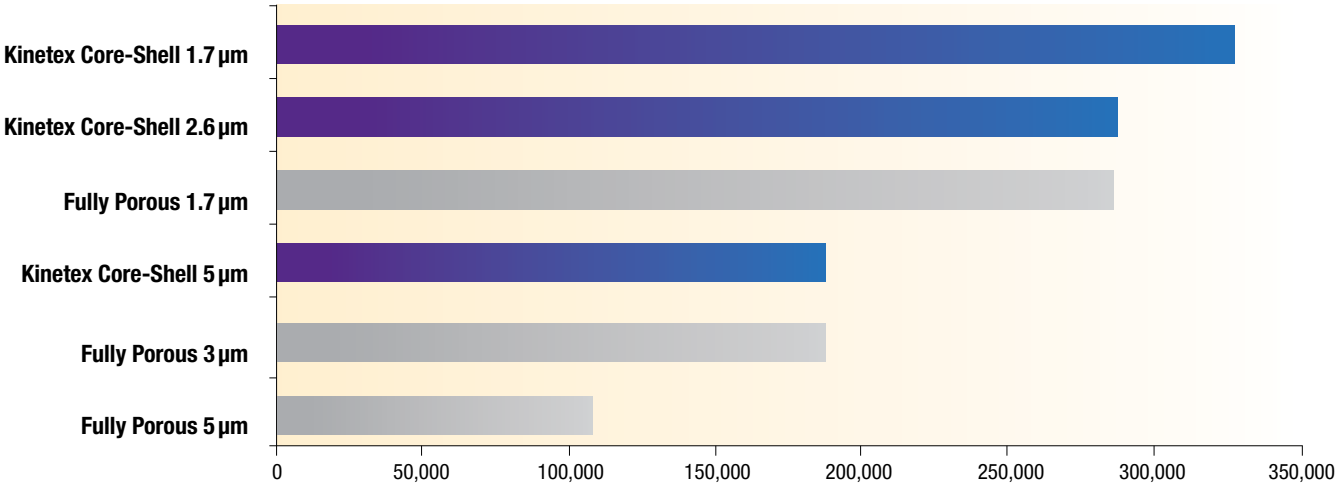
Phases

Ligand	Description	Selectivity Profile
	**Kinetex XB-C18** Di-isobutyl side chains differentiate this C18 column. Low ligand density and an inactive surface make this column a great hydrogen acceptor. This phase will demonstrate improved peak shape for basic compounds and increased retention of acids.	
	**Kinetex C18** Very well balanced column providing some selectivity through steric, hydrogen, and cationic pathways. This is a great starting point for ultra-high efficiency separations.	
	**Kinetex Polar C18** Combined C18 and polar modified surface that provide polar and non-polar retention alongside 100 % aqueous stability.	
	**Kinetex C8** Brings the benefits of core-shell technology to USP L7 methods. The phase will provide moderate hydrophobicity and good steric and hydrogen donating selectivity.	
	**Kinetex EVO C18** Novel pH 1-12 stable C18 that delivers robust methods and improved peak shape for bases.	
	**Kinetex Biphenyl** 100% aqueous stable reversed phase chemistry with hydrophobic, aromatic, and enhanced polar selectivity.	
	**Kinetex Phenyl-Hexyl** Aromatic and moderate hydrophobic selectivity result in the great retention and separation of aromatic hydrocarbons.	
	**Kinetex F5** This pentafluorophenyl propyl column provides a very high degree of steric selectivity to separate structural isomers. The electronegative fluorine groups offer high selectivity for cationic compounds.	
	**Kinetex PS C18** A multi-modal C18 column with a unique positive surface modification that displays improved peak shape for basic compounds.	
	**Kinetex Polar C18** Combined C18 and polar modified surface that provide polar and non-polar retention alongside 100 % aqueous stability	

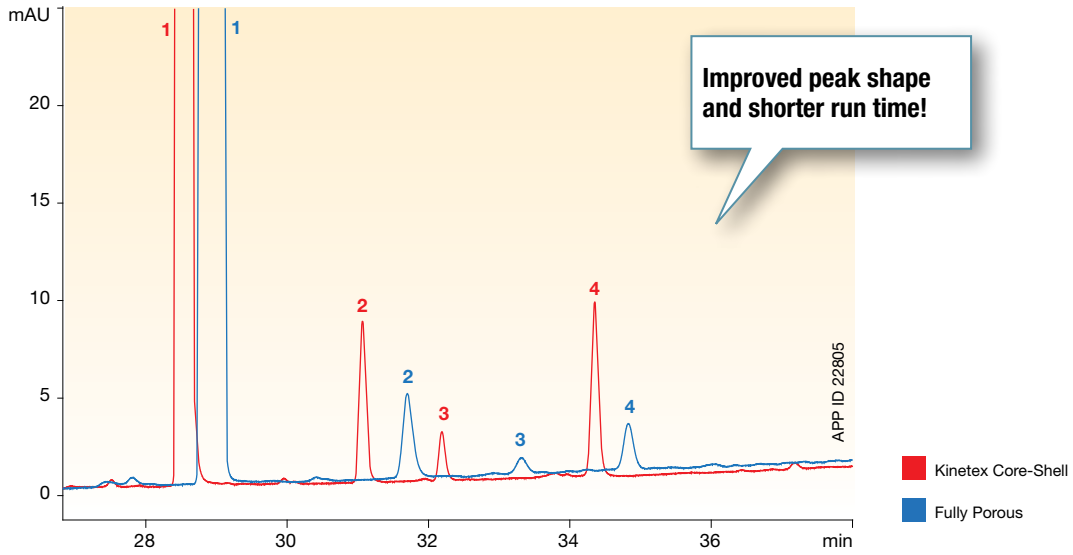
Better Performance than Fully Porous Particles

Using sol-gel processing techniques that incorporate nano structuring technology, a durable, homogeneous porous shell is grown on a solid silica core. This highly optimized process combined with industry leading column packing technology produces highly reproducible columns that generate extremely high plate counts.

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



Core-Shell Performance Gains



Material Characteristics

Packing Material	Total Particle Size (µm)	Pore Size (Å)	Effective Surface Area (m^2/g)	Effective Carbon Load %	pH Stability	Pressure Stability
Polar C18	2.6	100	200	9	1.5-8.5*	1,000/600† bar
EVO C18	1.7, 2.6, 5	100	200	11	1.0-12.0	
PS C18	2.6	100	200	9	1.5-8.5*	
C18	1.3, 1.7, 2.6, 5	100	200	12	1.5-8.5*	
XB-C18	1.7, 2.6, 3.5, 5	100	200	10	1.5-8.5*	
C8	1.7, 2.6, 5	100	200	8	1.5-8.5*	
F5	1.7, 2.6, 5	100	200	9	1.5-8.5*	
Biphenyl	1.7, 2.6, 5	100	200	11	1.5-8.5*	
Phenyl-Hexyl	1.7, 2.6, 5	100	200	11	1.5-8.5*	
HILIC	1.7, 2.6, 5	100	200	0	2.0-7.5	

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

† 2.1 mm ID Kinetex columns are pressure stable up to 1000 bar. 3.0 mm and 4.6 mm ID Kinetex 2.6 µm columns are stable up to 600 bar. When using Kinetex 1.3 µm or 1.7 µm, increased performance can be achieved, however high pressure-capable instrumentation is required.

Optimized for Ultra-High Performance

KINETEX™ Core-Shell Technology

High Efficiency, High Density Particle

Kinetex particles are built with a solid high density core that promotes the particles to settle into an optimal bed structure. This reduces the band broadening effects of Eddy Diffusion since the interstitial space between the particles is virtually homogeneous and results in ultra-high column efficiency and excellent reproducibility.

High Efficiency over Extended Range of Flow Rates

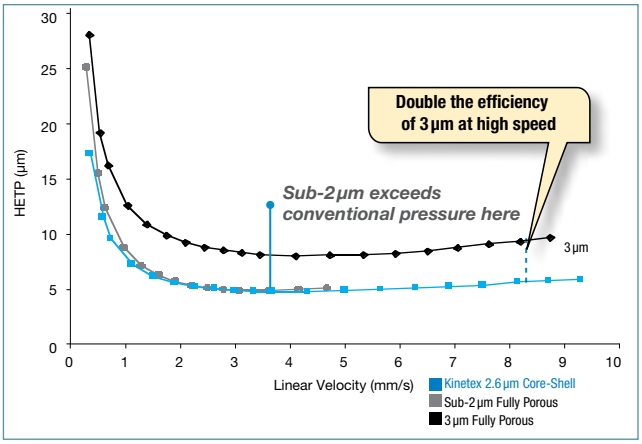


Illustration of Eddy Diffusion Effects

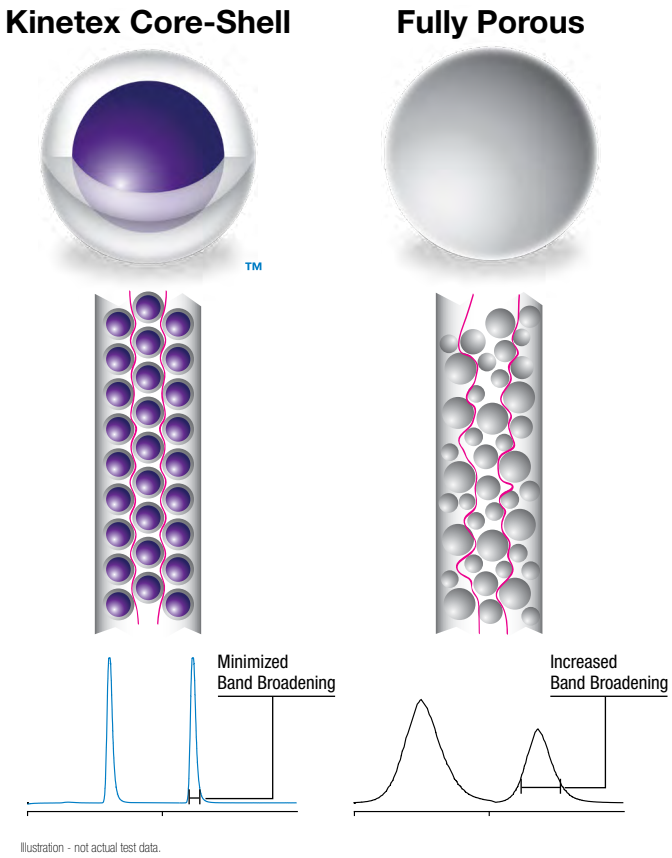
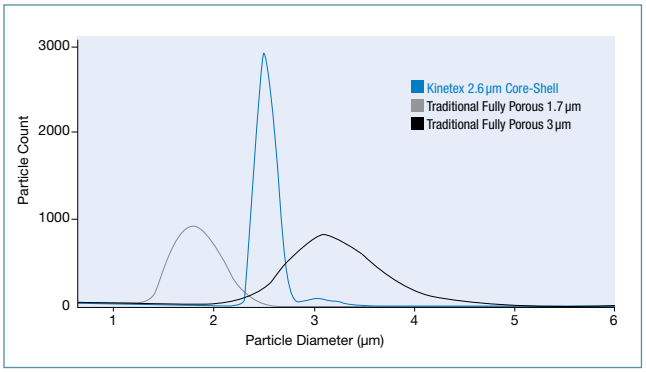


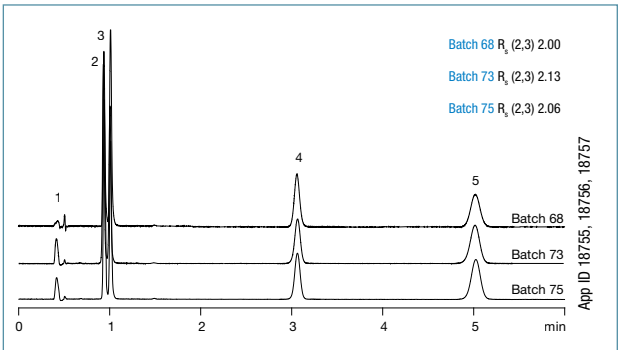
Illustration - not actual test data.

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

Uniform Particle Size Distribution



Batch-to-Batch Reproducibility Overlay



Conditions same for all batches:

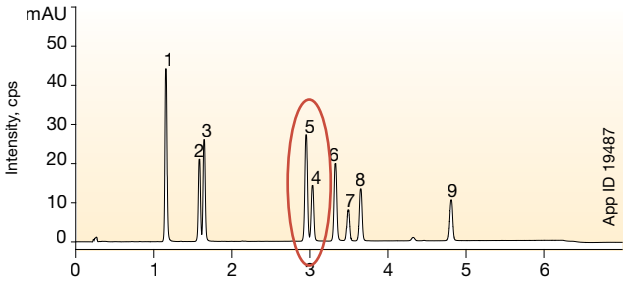
Column: Kinetex 2.6 µm C18
Dimensions: 50 x 4.6 mm
Part No.: 00B-4462-E0
Mobile Phase: Water / Acetonitrile (65:35)
Flow Rate: 1.0 mL/min
Detection: UV @ 254 nm
Sample: 1. Uracil
2. Hydroxycortisone
3. Cortisone
4. Cortisone acetate
5. 17-Hydroxyprogesterone

Complementary Selectivities Coupled with Ultra-High Efficiencies

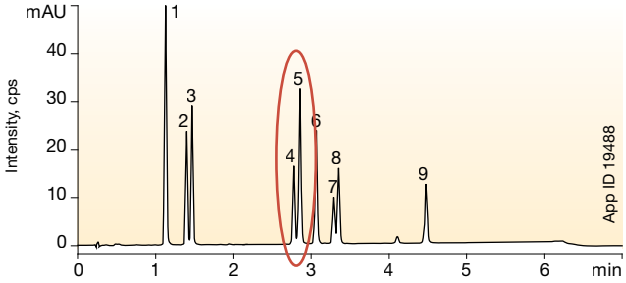
Ultra-high performance columns like Kinetex™ will give you very narrow peaks, but without the right selectivities you are left with very narrow, overlapping peaks. The phases offered in the Kinetex column line are complementary to one another, so the spectrum of selectivity your separations require is covered.

C18 Phases (C18 vs. XB-C18)

Kinetex 2.6 µm XB-C18



Kinetex 2.6 µm C18



Dimensions: 50 x 2.1 mm
Mobile Phase: A: Water
B: Acetonitrile

Gradient: Time (min)	% B
0	20
6	60
6.01	20
8	20

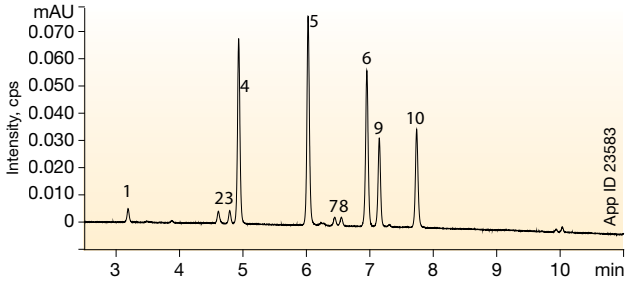
Flow Rate: 0.5 mL/min
Temperature: 30 °C

Detection: UV @ 220 nm (ambient)
Sample:
1. Estriol
2. Hydrocortisone
3. Cortisone
4. Estradiol
5. Cortisone-21-acetate
6. 21-Hydroxyprogesterone
7. Estrone
8. 17-Hydroxyprogesterone
9. Deoxycorticosterone acetate

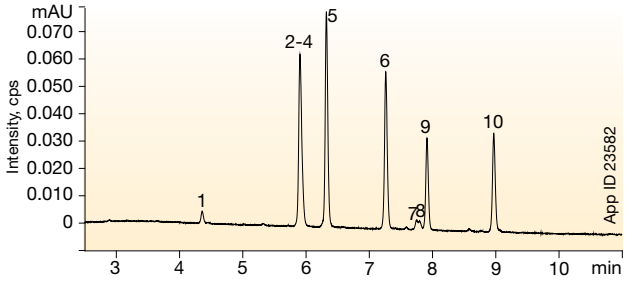
Conditions same for both columns except where noted.

Phenyl Phases (F5 vs. Biphenyl)

Kinetex 1.7 µm F5



Kinetex 1.7 µm Biphenyl



Dimensions: 100 x 2.1 mm
Mobile Phase: A: 20 mM Ammonium Formate pH 3.2
B: Acetonitrile

Gradient: Time (min)	% B
0	60
12	95
13	95
13.01	60
15	60

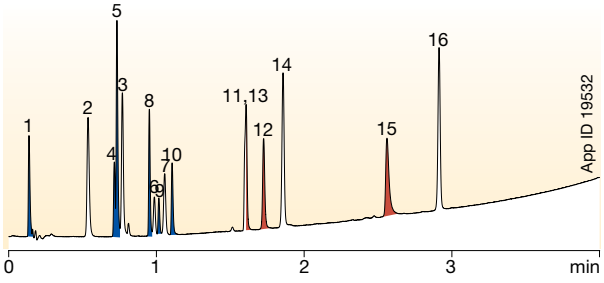
Flow Rate: 0.4 mL/min
Temperature: 40 °C

Detection: UV @ 256 nm
Sample:
1. CBDV
2. Cannabidiol
3. CBG
4. Cannabidolic Acid
5. CBG-A
6. Cannabinol
7. Delta-9-THC
8. Delta-8-THC
9. CBC
10. THCA-A

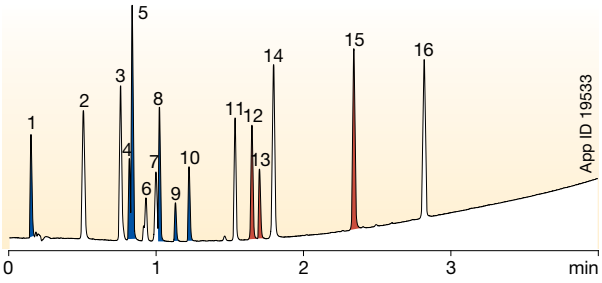
Conditions same for both columns except where noted.

Manipulate Acidic and Basic Compound Retention

Kinetex 2.6 µm XB-C18



Kinetex 2.6 µm C18



Dimensions: 50 x 2.1 mm
Mobile Phase: A: 0.1 % Formic acid in Water
B: 0.1 % Formic acid in Acetonitrile

Gradient: Time (min)	% B
0	5
0.2	5
4.2	95
4.21	5
5.5	5

Flow Rate: 0.8 mL/min
Temperature: 30 °C
Detection: UV @ 245 nm (ambient)

Sample:
1. Pyridine
2. Acetaminophen
3. Pindolol
4. Quinidine
5. Sulfathiazole
6. Acebutolol
7. Benzyl alcohol
8. Chlorpheniramine
9. Phenol
10. Triprolidine
11. Nortriptyline
12. Prednisolone
13. 3-Methyl, 4-nitrobenzoic acid
14. 2-Hydroxy, 5-methylbenzaldehyde
15. Diflunisal
16. Hexanophenone

■ Base
■ Acid
□ Neutral

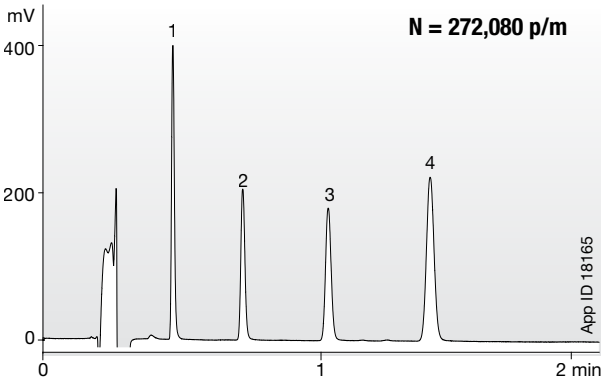
Conditions same for both columns except where noted.

Find Ordering Information on Pages 46-58!

Upgrading from Conventional Fully Porous to Core-Shell

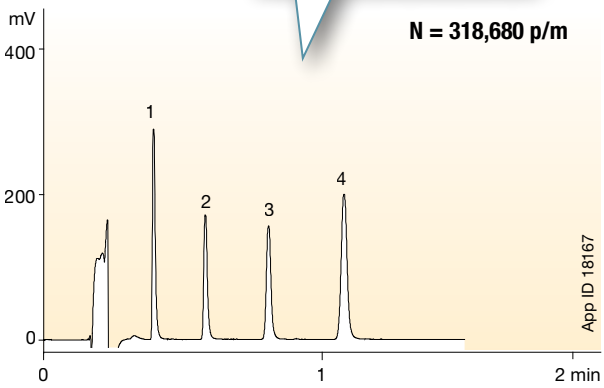
1.7 µm Fully Porous vs. 1.7 µm Core-Shell

Traditional 1.7 µm



Kinetex™ 1.7 µm

17% Higher efficiency



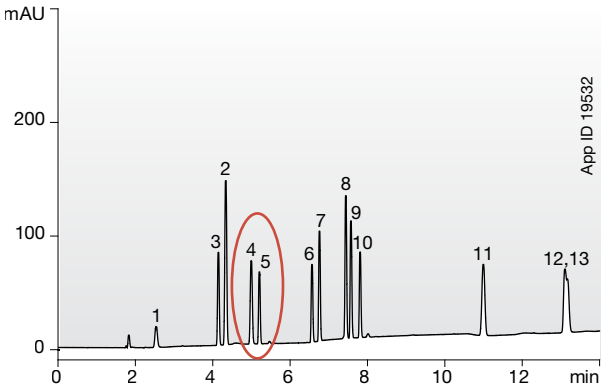
Conditions for both columns:

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
2. Benzene
3. Toluene
4. Naphthalene

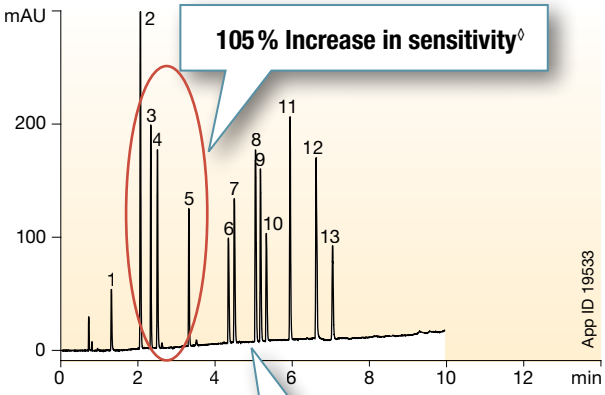
Fully Porous vs. Core-Shell

Traditional 5 µm ODS-3 250 x 4.6 mm



Kinetex 2.6 µm C18 150 x 4.6 mm

105% Increase in sensitivity◊



52% Narrower peak widths for increased resolution△

Columns: Kinetex 2.6 µm C18 100 Å
Traditional 5 µm ODS-3 100 Å
Dimensions: Kinetex: 150 x 4.6 mm
Traditional: 250 x 4.6 mm
Mobile Phase: A: 0.1% Phosphoric acid in Water
B: 0.1% Phosphoric acid in Acetonitrile
Gradient: 5% to 95% B in 9 min (150 x 4.6 mm)
5% to 95% B in 15 min (250 x 4.6 mm)
Flow Rate: 1.8 mL/min
Temperature: 50 °C
Detection: UV @ 215 nm (22 °C)

Sample: 1. Procainamide
2. Acetaminophen
3. Folic acid
4. Sulfathiazole
5. Acebutolol
6. Dextromethorphan
7. Diphenhydramine
8. Propafenone
9. Amitriptyline
10. Fluoxetine
11. Naproxen
12. Diflunisal
13. Indomethacin

◊ Signal-to-noise ratio of peak 2
△ Based on average peak widths
*Waters, ACQUITY, and UPLC are registered trademarks of Waters Technologies Corporation. Phenomenex is not affiliated with Waters Technologies Corporation.
Comparative separations may not be representative of all applications. Conditions same for both columns except where noted.

Find Ordering Information on Pages 46-58!

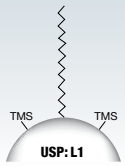
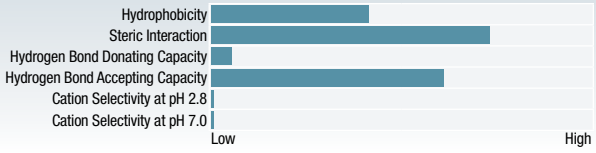
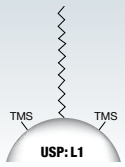
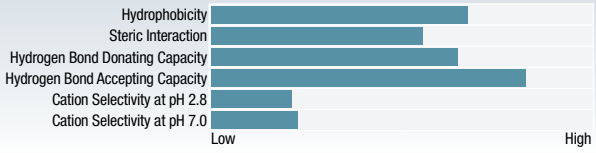
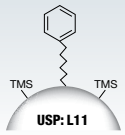
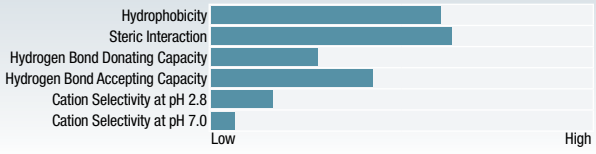
The Standard for pH Method Development

Gemini™ pH Flexible LC

Rugged HPLC columns that offer extended lifetime under extreme pH conditions (pH 1-12) and excellent stability for reproducible, high efficiency separations.

U.S. Patent Nos. 7,563,367 and 8,658,038 and foreign counterparts.

Phases

Ligand	Description	Selectivity Profile
	**Gemini NX-C18** New generation of organo-silane material incorporates ethylene bridges to provide pH stability from 1-12 and 5x the durability of earlier hybrids. The homogenous surface offers some steric selectivity.	
	**Gemini C18** This is a high loading, organo-silane particle column with pH stability 1-12. The patented procedure creates a surface that is a strong hydrogen donor and accepter. It is ideal for acids and bases.	
	**Gemini C6-Phenyl** This is a very inert phase for great peak shapes of ionized compounds The planar phenyl rings offer moderate hydrophobic retention and high steric selectivity for structural isomer selectivity.	

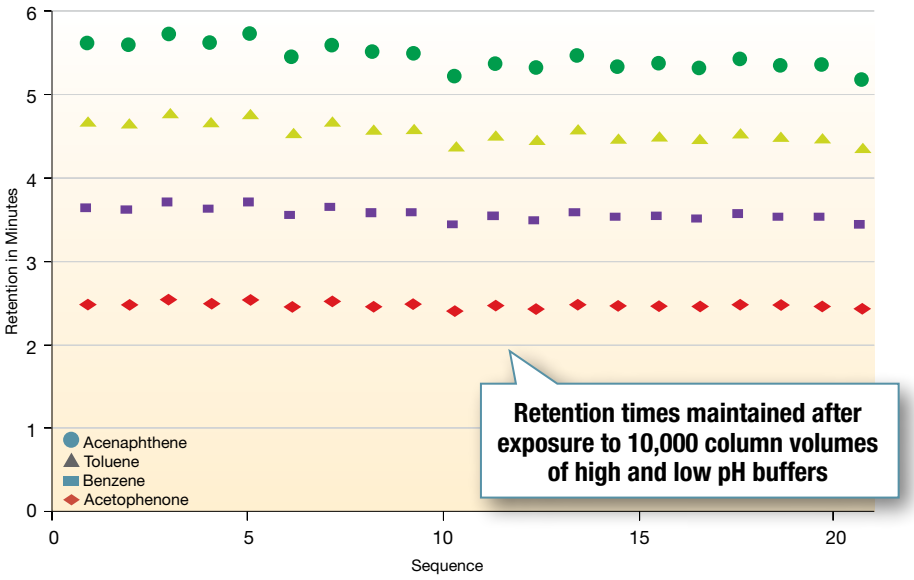
Material Characteristics

Packing Material	Particle Shape/Size (µm)	Pore Size (Å)	Surface Area (m^2/g)	Carbon Load %	Endcapping	pH Range
Gemini C18	Spherical 3, 5, 10	110	375	14	TMS	1.0 - 12.0
Gemini C6-Phenyl	Spherical 3, 5	110	375	12	TMS	1.0 - 12.0
Gemini NX-C18	Spherical 3, 5, 10	110	375	14	TMS	1.0 - 12.0

Rugged, Dependable Columns Under the Most Extreme Conditions

The harshest conditions for HPLC columns can be found in environments where columns are subjected to constant changes in pH, buffers, and temperature. A Gemini™ column's ability to hold up under these challenging conditions is a testament to the long column lifetimes and reproducible performance you can expect.

Extend Column Lifetime Under Harsh pH Conditions



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

Step 1
24x High pH (10.5) Gradient Flush

Step 2
High pH (10.5) Testing

Step 3
1x Neutral Flush Procedure

Step 4
Neutral pH Testing

Step 5
24x Low pH (2.0) Gradient Flush

Step 6
Neutral pH Flush Repeats

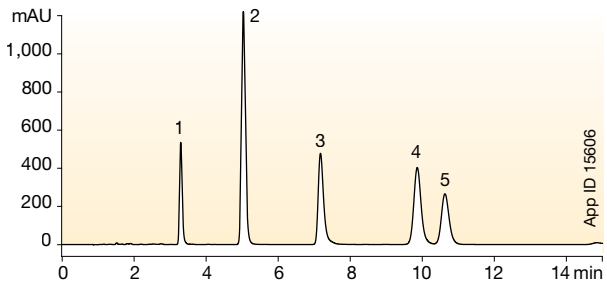
Repeats for 20 Cycles

For full procedure and parameters, **visit www.phenomenex.com/gemini**

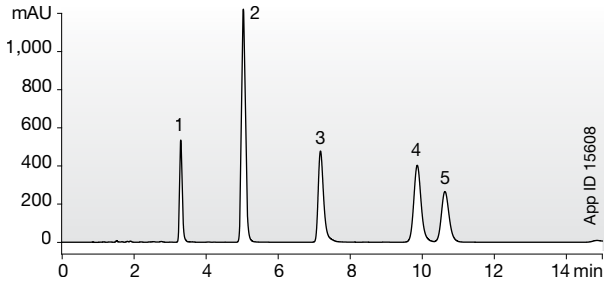
Complementary Selectivities at Extended pHs

Gemini C18 can provide a different selectivity to your current C18 column for better resolution.

Gemini 5 µm C18



Traditional 5 µm C18

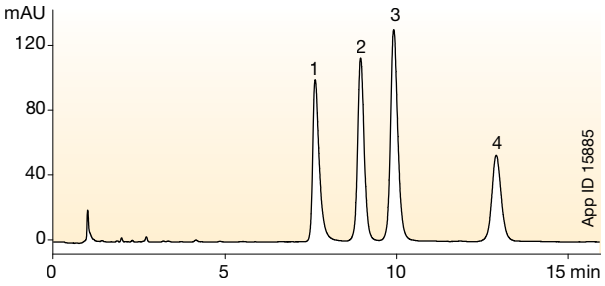


Dimensions: 150 x 4.6 mm
Mobile Phase: 20 mM Phosphate buffer, pH 2.5 / Acetonitrile (50:50)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 230 nm (ambient)

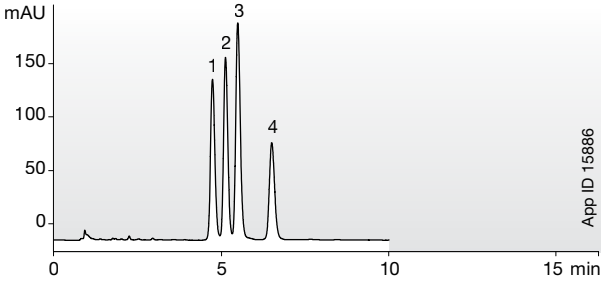
Sample:
1. Ethyl paraben
2. Naproxen
3. Diflunisal
4. Indomethacin
5. Ibuprofen

Greater retention and resolution can be achieved with Gemini C6-Phenyl over your current phenyl column.

Gemini 5 µm C6-Phenyl



Traditional 5 µm Phenyl



Dimensions: 150 x 4.6 mm
Mobile Phase: 10 mM Ammonium bicarbonate, pH 10.5 / Acetonitrile / Methanol (30:35:35)
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV @ 254 nm (ambient)

Sample:
1. Imipramine
2. Nortriptyline
3. Amitriptyline
4. Clomipramine

Dimensions and chromatographic conditions are the same for all columns unless otherwise noted.
Comparative separations may not be representative of all applications.

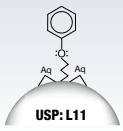
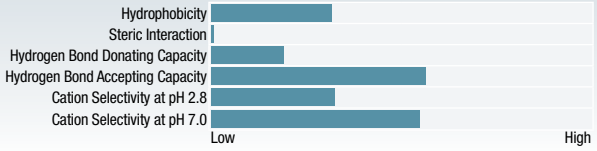
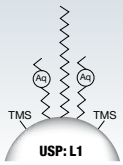
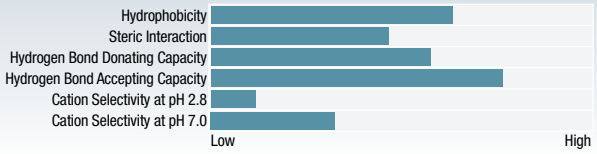
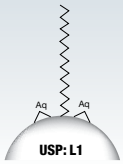
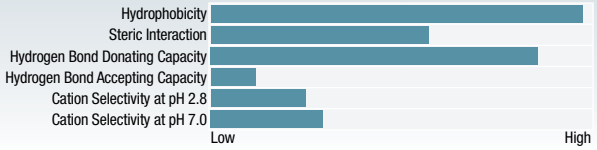
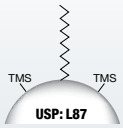
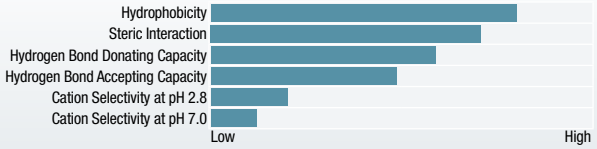
Find Ordering Information on Pages 46-58!

Full Range Selectivity

synergi™
Full Range Selectivity LC Columns

Four unique phases developed to provide a different selectivity for successful separations of the most complex mixtures and challenging analytes.

Phases

Ligand	Description	Selectivity Profile
	**Synergi Polar-RP** (100 % Aqueous Stable) This ether linked phenyl column is polar endcapped 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.	

Material Characteristics

Packing Material	Particle Shape/Size (µm)	Pore Size (Å)	Surface Area (m^2/g)	Carbon Load %	Endcapping	pH Range
Synergi Max-RP	Spher. 2.5	100	400	17	TMS	1.5 - 9.0*
Synergi Hydro-RP	Spher. 2.5	100	400	19	Hydrophilic	1.5 - 7.5
Synergi Polar-RP	Spher. 2.5	100	400	11	Hydrophilic	1.5 - 7.0
Synergi Fusion-RP	Spher. 2.5	100	400	12	TMS	1.5 - 9.0*
Synergi Max-RP	Spher. 4, 10	80	475	17	TMS	1.5 - 9.0*
Synergi Hydro-RP	Spher. 4, 10	80	475	19	Hydrophilic	1.5 - 7.5
Synergi Polar-RP	Spher. 4, 10	80	475	11	Hydrophilic	1.5 - 7.0
Synergi Fusion-RP	Spher. 4, 10	80	475	12	TMS	1.5 - 9.0*

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

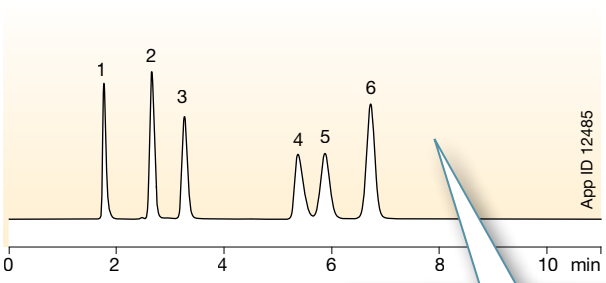
See more

Unique Phases for a Different Separation

The Synergi™ phases offer the ability to achieve greater resolution and differing peak elution order while staying in reversed phase mode.

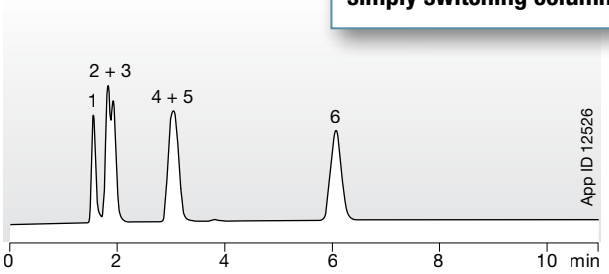
Ether-linked Phenyl vs. C18

Synergi 4 µm Polar-RP



Achieve greater resolution by simply switching column phase

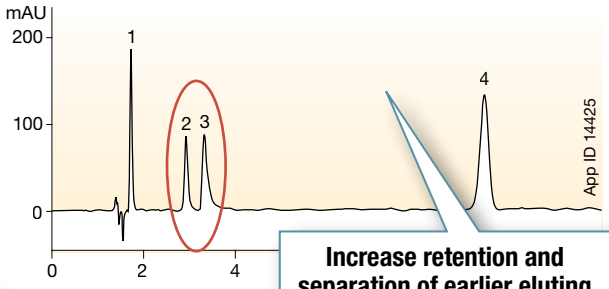
Traditional 5 µm C18



Dimensions: 150 x 4.6 mm
Mobile Phase: 20 mM Potassium phosphate, pH 3 / Methanol (50:50)
Flow Rate: 1.0 mL/min
Temperature: Ambient
Detection: UV @ 230 nm (ambient)
Sample: 1. Metaproterenol
2. Pindolol
3. Metoprolol
4. Alprenolol
5. Propranolol
6. Ethyl paraben

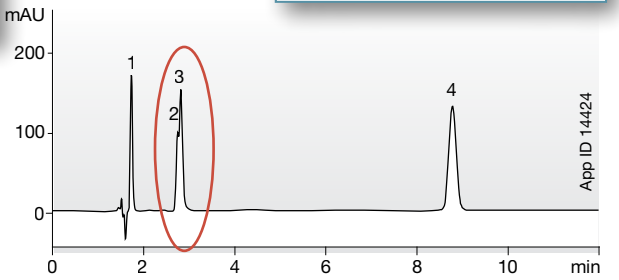
Polar Endcapping vs. Nonpolar Endcapping

Synergi 4 µm Hydro-RP



Increase retention and separation of earlier eluting polar compounds

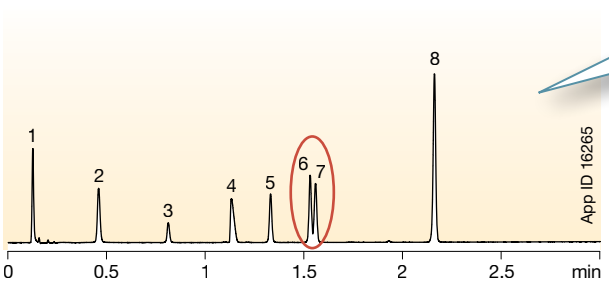
Traditional 5 µm C18



Dimensions: 150 x 4.6 mm
Mobile Phase: 20 mM Potassium phosphate, pH 7 / Methanol (60:40)
Flow Rate: 1.0 mL/min
Temperature: Ambient
Detection: UV @ 210 nm (ambient)
Sample: 1. Phenylephrine
2. Phenylpropanolamine
3. Pseudoephedrine
4. Methyl paraben

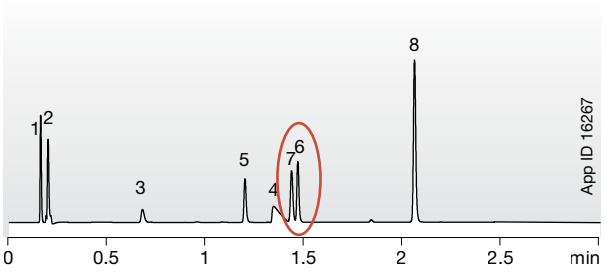
Polar Embedded C18 vs. Traditional C18

Synergi 2.5 µm Fusion-RP



Sharper peaks and alternate peak elution order

Traditional 1.9 µm C18



Dimensions: 50 x 2.0 mm
Mobile Phase: A: 0.1 % Formic acid in Water
B: 0.1 % Formic acid in Acetonitrile
Gradient: A/B (95:5) to (5:95) in 2.9 minutes
Flow Rate: 1.1 mL/min
Temperature: 50 °C
Detection: UV @ 254 nm (ambient)
Instrument: Agilent® 1200 SL
Sample: 1. Pyridine
2. Acetaminophen
3. Benzyl Alcohol
4. Nortriptyline
5. 3-Methyl-4-Nitrobenzoic Acid
6. 4-Chlorcinnamic Acid
7. 3-Hydroxy-3-Methylbenzaldehyde
8. Hexanophenone

Comparative separations may not be representative of all applications. Conditions are the same for both columns except where noted.

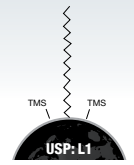
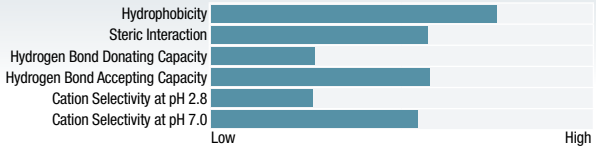
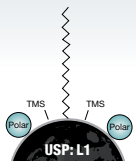
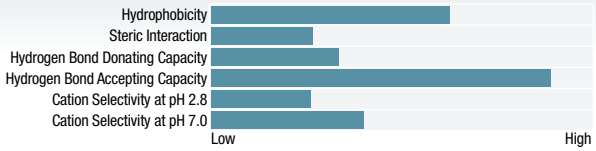
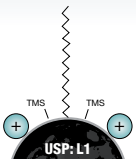
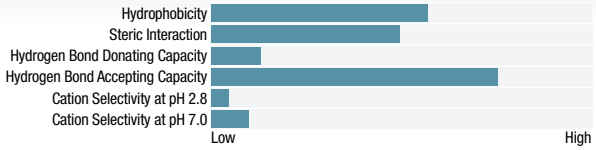
Find Ordering Information on Pages 46-58!

Performance Gains with Ultra-High Efficiencies

explore LUNA™ OMEGA

Luna Omega columns build upon the Luna legacy to provide enhanced and incredible HPLC and UHPLC performance and selectivity. With the unique Luna Omega fully porous, thermally modified silica particles you gain outstanding performance and efficiencies with better peak shapes through an inert foundation.

Phases

Ligand	Description	Selectivity Profile
	**Luna Omega C18** Rugged and highly efficient C18 with strong focus on hydrophobic retention of non-polar and polar compounds	
	**Luna Omega Polar C18** 100% aqueous stability and enhanced selectivity/retention for polar analytes without diminishing useful non-polar retention. The C18 ligand provides general hydrophobic interactions while a polar modified particle surface provides enhanced polar compound retention.	
	**Luna Omega PS C18** Unique, 100% aqueous stable mixed-mode phase that provides both polar and non-polar retention. The surface contains a positive charged ligand which aids in the retention of acidic compounds through ionic interactions, while the C18 ligand promotes general reversed phase hydrophobic retention. The positively charged surface also improves basic compound peaks shape through ionic repulsion.	

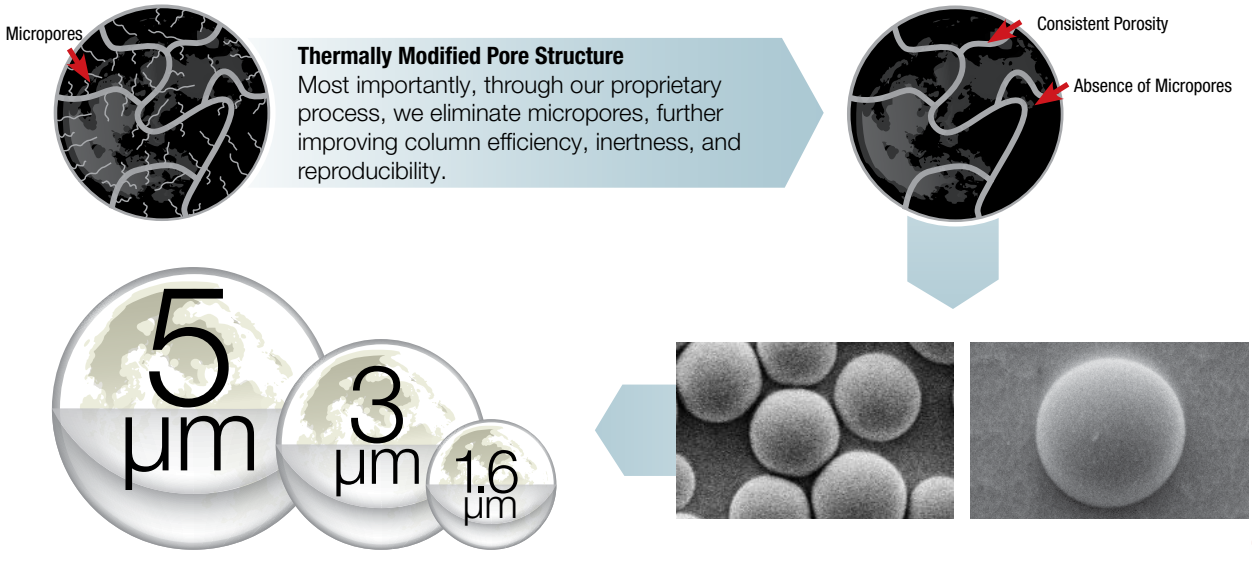
Material Characteristics

Luna Omega Phases	Particle Sizes (µm)	Pore Size (Å)	Surface Area (m^2/g)	Carbon Load (%)	pH Stability
C18	1.6, 3, 5	100	260	11	1.5 - 8.5*
Polar C18	1.6, 3, 5	100	260	9	1.5 - 8.5*
PS C18	1.6, 3, 5	100	260	9	1.5 - 8.5*

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

Novel Design and Manufacturing Process

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



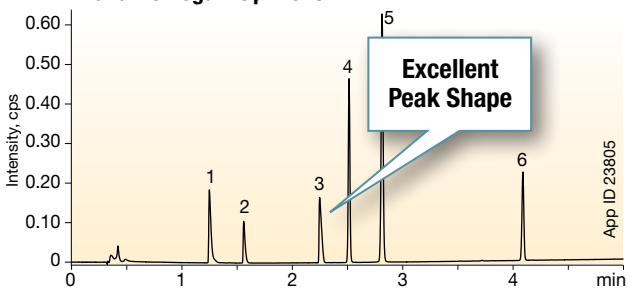
See more →

Performance Gains with Ultra-High Efficiencies

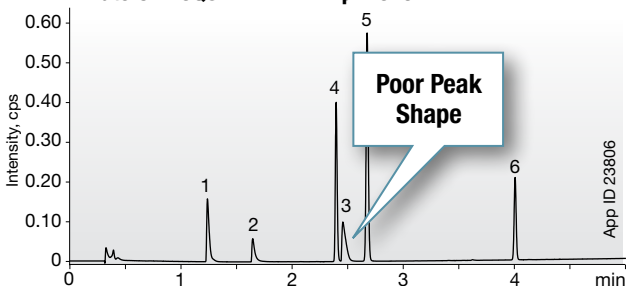
Luna Omega 1.6 µm, 3 µm, and 5 µm particle columns provide higher efficiencies compared to other silica C18 columns with fully porous particles of the same size due to the absence of micropores within the particles.

Higher Efficiency Compared to Other Silica C18 Columns with Fully Porous Particles!

Luna™ Omega 1.6 µm C18



Waters® ACQUITY® BEH 1.7 µm C18



Conditions for all columns:
Columns: Luna Omega 1.6 µm C18
ACQUITY BEH 1.7 µm C18
Dimension: 50 x 2.1 mm
Mobile Phase: A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in Acetonitrile

Gradient:	Time (min)	% B
	0	5
	5	95
	6	95
	6.1	5
	8	5

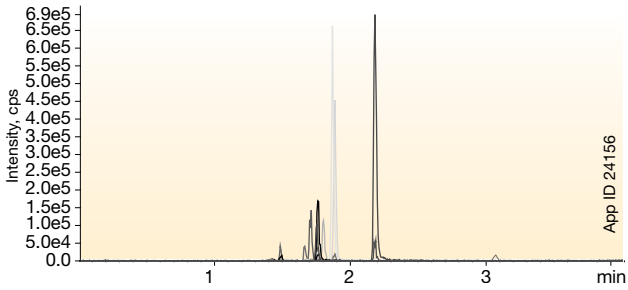
Flow Rate: 0.4 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: 1. Pindolol
2. Chlorpheniramine
3. Nortriptyline
4. 3-Methyl-4-nitrobenzoic acid
5. 5-Methyl salicylaldehyde
6. Hexanophenone

Gain Retention and Resolution with Enhanced Polar Phases

The polar modified functionalities of the Luna Omega Polar C18 and PS C18 stationary phases provide greater retention for polar compounds, resulting in higher resolution values. Additionally, the advanced proprietary bonding technology used for both Polar C18 and PS C18 ensures 100 % aqueous stability as well as balanced retention for non-polar compounds.

Workplace Drug Screen

Luna Omega 5 µm Polar C18



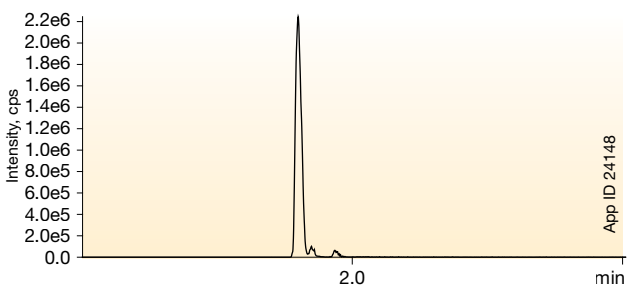
Columns: Luna Omega 5 µm Polar C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4754-AN
Mobile Phase: A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in Acetonitrile

Gradient:	Time (min)	% B
	0	0
	4	100

Flow Rate: 0.5 mL/min
Temperature: Ambient
Detection: MS/MS (SCIEX® API 4000™)
Sample: 1. Morphine
2. Amphetamine
3. Codeine
4. MDA
5. Methamphetamine
6. 6-MAM
7. MDMA
8. MDEA
9. BZE
10. PCP
11. THC-OH

Angiotensin II with Isobaric Interferences

Luna Omega 3 µm PS C18



Columns: Luna Omega 3 µm PS C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4758-AN
Mobile Phase: A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in Acetonitrile

Gradient:	Time (min)	% B
	0	0
	4	100

Flow Rate: 0.5 mL/min
Temperature: Ambient
Detection: MS/MS (SCIEX API 4000™)
Sample: 1. Angiotensin
2. Isobaric Interference 1
3. Isobaric Interference 2

Comparative applications may not be representative of all applications. Phenomenex is not affiliated with Waters Technologies Corporation.

Find Ordering Information on Pages 46-58!

Generating the Next Level Of Reliability Through Advanced Process Optimization

Over the past few years, our scientists and engineers with the help of customers and Danaher colleagues, have optimized our processes to provide products that deliver very high levels of performance and newly achievable levels of reliability and reproducibility.

Reproducible and Scalable

By setting a new standard for reliability, the Luna Omega C18 spans UHPLC and HPLC with a scalable range of high-performance particle sizes that will ensure that your developed methods are easily transferred. From single compound identification to complex impurity profiles, the Luna Omega C18 will serve as a pillar for your lab to count on day in and day out.

Batch-to-Batch Reproducibility Study

In this example, we compared three batches of Luna Omega C18 using all three different particle sizes on a complex QC Pharmaceutical representative sample.

Conditions for all columns:

Mobile Phase: A: Water with 0.1 % Formic Acid
B: Acetonitrile with 0.1 % Formic Acid

Temperature: 30 °C

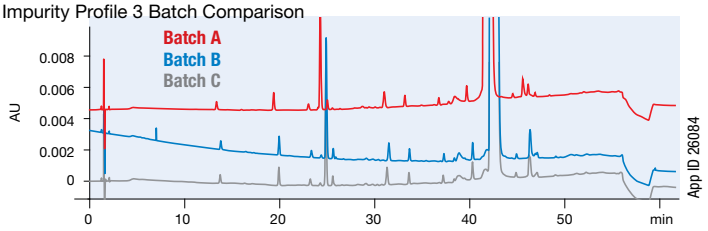
Detection: UV @ 254 nm

Injection Volume: 5 µL

Sample: 5 mg/mL of Chlorhexidine and Related Substances

Luna Omega 5 µm C18

Impurity Profile 3 Batch Comparison

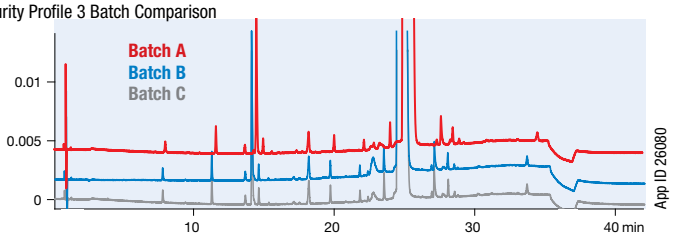


Column: Luna Omega 5 µm C18
Dimension: 250 x 4.6 mm
Part No.: 00G-4785-E0

Gradient:	Time (min)	% B
	0	2
	2.5	2
	52.5	35
	55	35
	57.5	2
	62.5	2

Luna Omega 3 µm C18

Impurity Profile 3 Batch Comparison

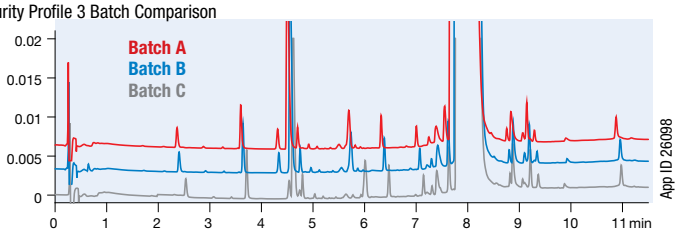


Column: Luna Omega 3 µm C18
Dimension: 150 x 4.6 mm
Part No.: 00F-4784-E0

Gradient:	Time (min)	% B
	0	2
	1.5	2
	31.5	35
	34.5	35
	36	2
	42	2

Luna Omega 1.6 µm C18

Impurity Profile 3 Batch Comparison



Column: Luna Omega 1.6 µm C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4742-AN

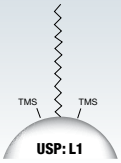
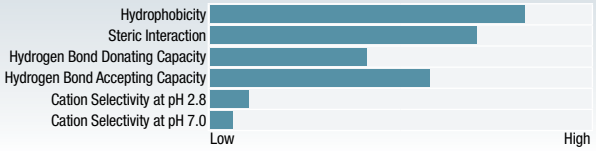
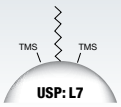
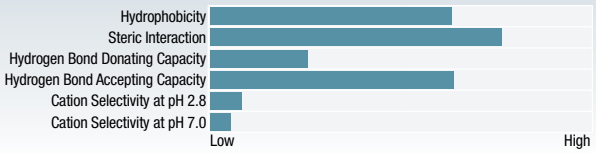
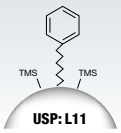
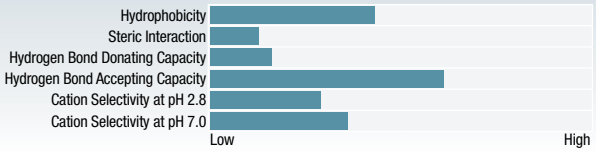
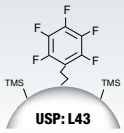
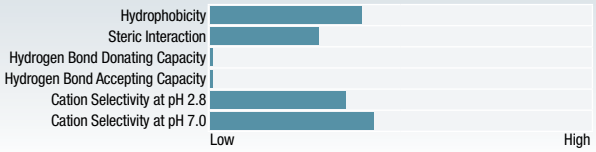
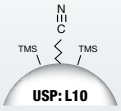
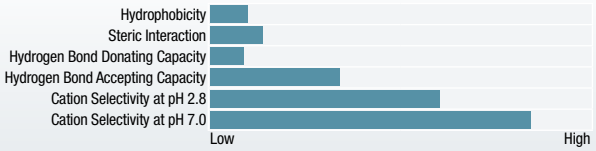
Gradient:	Time (min)	% B
	0	2
	0.5	2
	10.5	35
	11.5	35
	12	2
	14	2

One of the World's Leading HPLC Columns

explore LUNA™

Dependable, ultra-pure silica-based HPLC columns that offer an extensive variety of selectivities which are scalable from micro-bore to preparative and purification scale solutions.

Phases

Ligand	Description	Selectivity Profile
	**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.	
	**Luna C8(2)** C8 column provides less hydrophobic retention than our C18, but the density of the ligand bonding creates more steric based selectivity. The C8 columns are generally better hydrogen bond acceptors, and better for acidic compounds.	
	**Luna Phenyl-Hexyl** Our most hydrophobic phenyl column and it will also provide good hydrogen accepting functionality for acidic retention.	
	**Luna PFP(2)** Pentafluorophenyl groups provide very little hydrogen bonding abilities, but the strongly electronegative fluorine groups will provide good charge based selectivity for cationic compounds, while the rigid bonded phase is a good steric selector.	
	**Luna CN** Nitrile groups bound to the silica surface offer a unique polar selectivity under reversed phase or normal phase conditions.	

Material Characteristics

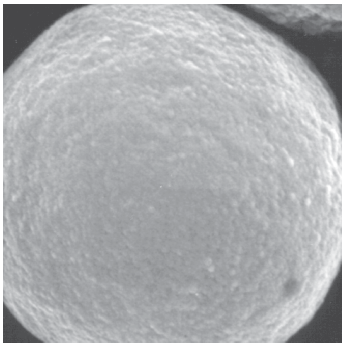
Packing Material	Particle Shape/ Size (µm)	Pore Size (Å)	Surface Area (m^2/g)	Carbon Load %	pH Stability
Luna C8(2)	Spher. 3, 5,10, 10-PREP, 15	100	400	13.5	1.5 - 9.0*
Luna C18(2)	Spher. 2.5, 3, 5,10, 10-PREP, 15	100	400	17.5	1.5 - 9.0*
Luna Phenyl-Hexyl	Spher. 3, 5,10, 10-PREP, 15	100	400	17.5	1.5 - 9.0*
Luna CN	Spher. 3, 5, 10	100	400	7.0	1.5 - 7.0
Luna PFP(2)	Spher. 3, 5	100	400	11.5	1.5 - 9.0*

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

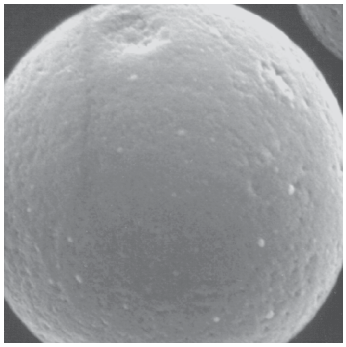
Long Column Lifetimes and Excellent Performance

Ultra-pure, metal-free silica (99.99 % purity) is the backbone of all Luna™ material. The resulting high quality particles have a surface smoothness, pore structure, and pore consistency to ensure a more uniform particle shape and greater reproducibility.

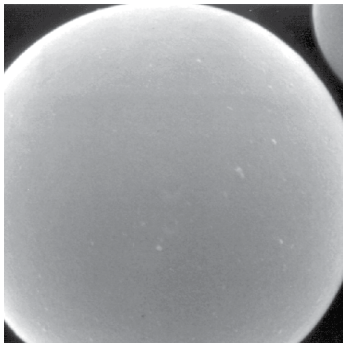
Superior Particle Smoothness



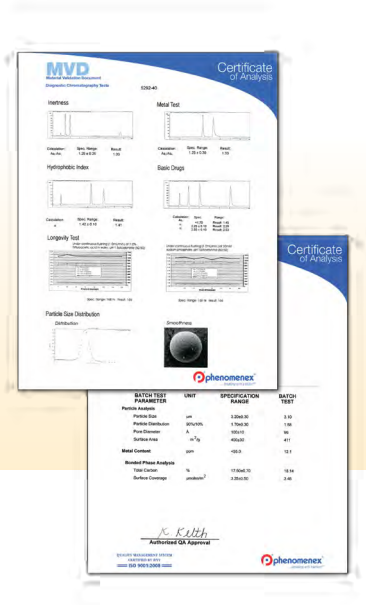
Agilent Technologies®
ZORBAX® 5 µm SB-C18



Waters®
Symmetry® 5 µm C18



Phenomenex
Luna 5 µm C18

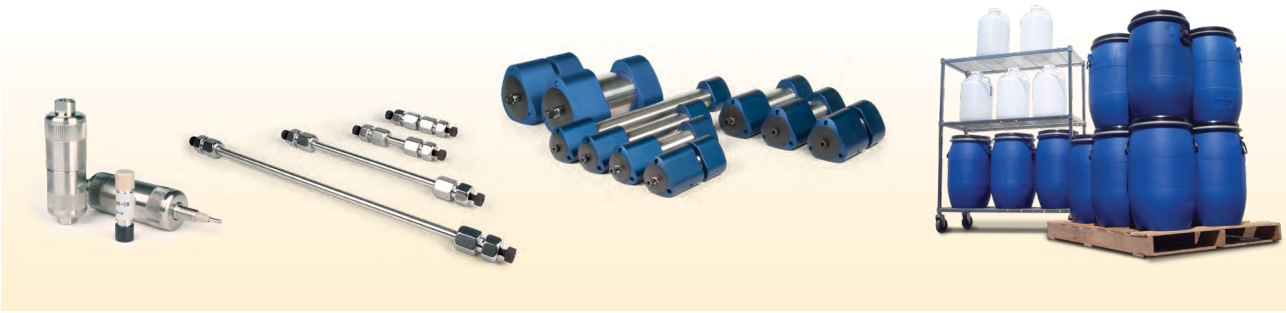


Batch Quality and Reproducibility

For over 20 years, Luna has been manufactured and tested to ensure quality and reproducibility. The Phenomenex Quality Management System is meticulous, validating every batch of material according to 16 different test parameters before it is ever packed into an HPLC column.

QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV•GL
= ISO 9001:2015 =

Breadth of Formats



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Find Ordering Information on Pages 46-58!

New Solutions for Your Large Molecule Analysis with the Biozen Column Portfolio

biozen™ by Phenomenex

4 Particle Platforms

Pore Controlled Technology

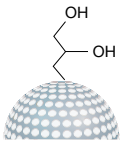
Thermally Modified Fully Porous

Core-Shell Technology

Monosized Polymeric Non-Porous

8 Particle Chemistries

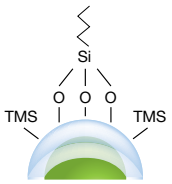
dSEC



Biozen dSEC
1.8 µm and 3 µm

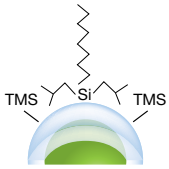
Inert, high-strength porous particle for the separation and quantitation of monoclonal antibody aggregate and fragments

Intact



Biozen WidePore C4
2.6 µm

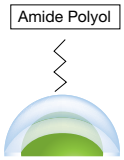
Core-shell particle with butyl stationary phase and optimal wide pore size distribution for better resolution of large biologics, iancluding monoclonal antibodies and subunit analysis.



Biozen Intact XB-C8
3.6 µm

Large pore core-shell particle for fast intact and subunit biologic entry. C8 provides highly useful moderate hydrophobic selectivity.

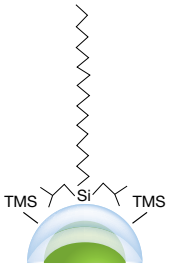
Glycan



Biozen Glycan
2.6 µm

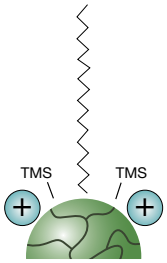
Provides optimal combination of high efficiency and selectivity for released glycans.

Peptide



Biozen Peptide XB-C18
1.7 µm and 2.6 µm

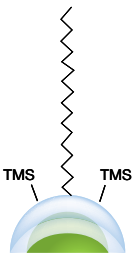
Overall retention of both acidic and basic peptides through C18 stationary phase with di-isobutyl side chains.



Biozen Peptide PS-C18
1.6 µm and 3 µm

Excellent retention by combined positively charged surface ligand and C18 ligand.

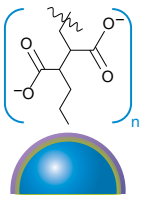
Oligonucleotides



Biozen Oligo
1.7 µm and 2.6 µm

Organo-silica core-shell particle bonded with a C18 stationary phase offers high selectivity for even minute oligo differences alongside high and low pH robustness.

Ion-Exchange



Biozen WCX
6 µm

Monosized particles grafted with linear polycarboxylate chains to envelop and separate proteins from acidic/basic variants

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and we'll drop everything to help you out. Really, we will.

Looking for Something?

Column Protection

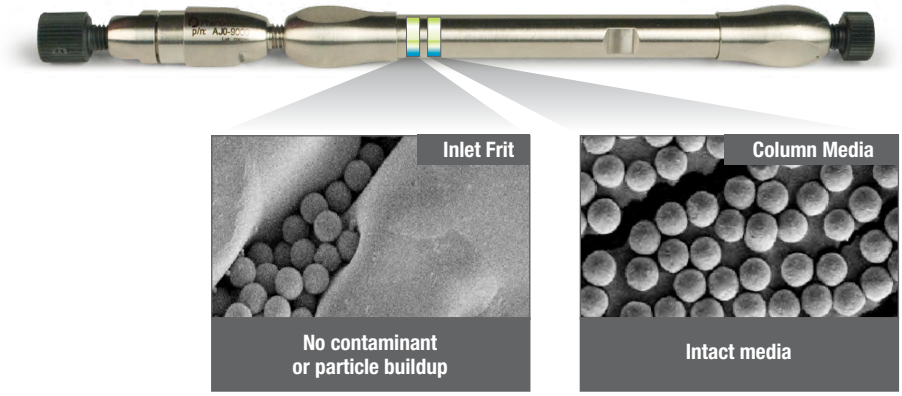
Save Time and Money

It's a fact! Chemical contaminants and particulates are a natural part of any chromatographic analysis. The easiest way to extend column performance is to remove these contaminants and particulates with the SecurityGuard Cartridge System before they reach your column and degrade your chromatography.

With SecurityGuard, you will experience:

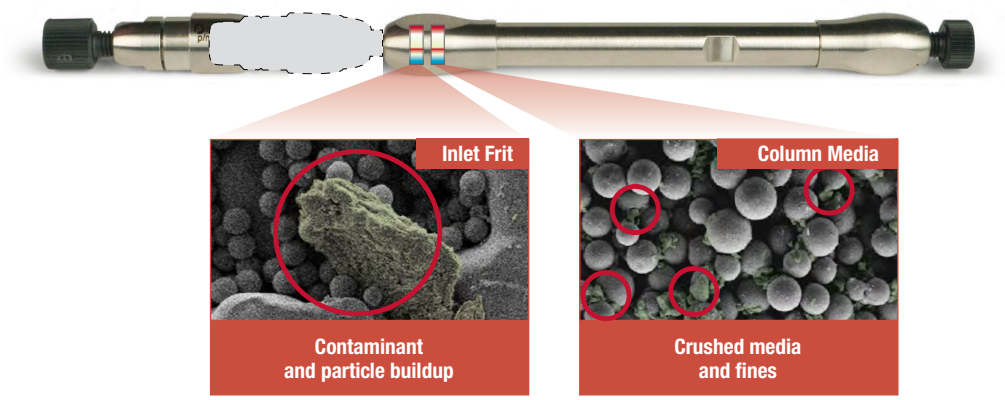
- Increased column lifetime
- Higher column performance
- More reproducible chromatography
- Fewer wasted columns

With SecurityGuard ULTRA



(24000 times magnification)

Without SecurityGuard ULTRA



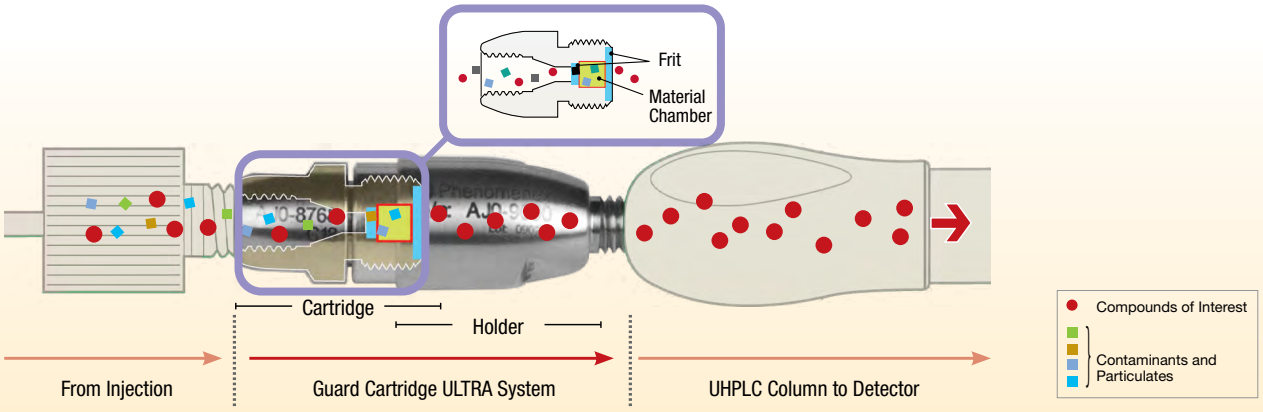
(24000 times magnification)

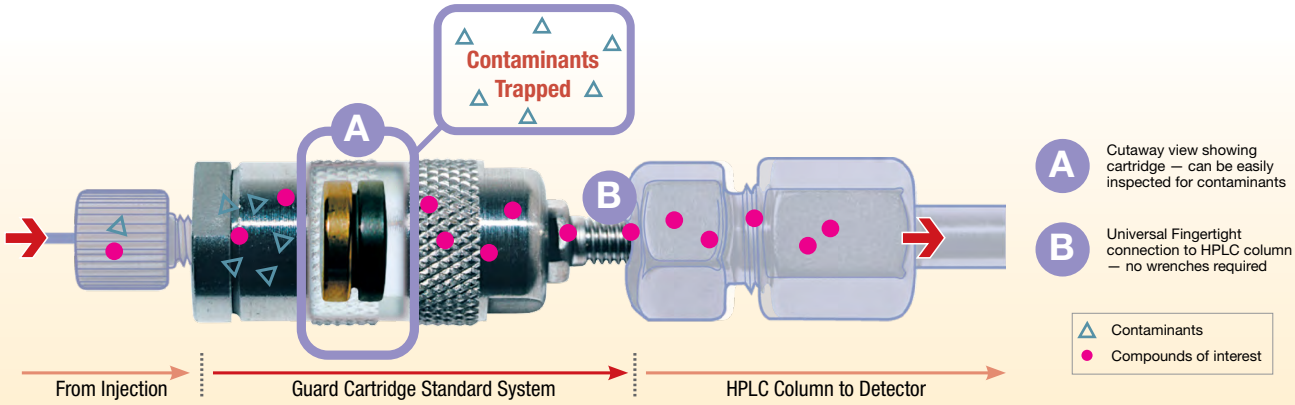
> "We used to have to change out our columns every 2 to 3 months and ever since we started using the SecurityGuard cartridges we can do at least 6 months before changing a column out."
>
> **T. Serviss**

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

Find Ordering Information on Pages 47-58!

Total Column Protection



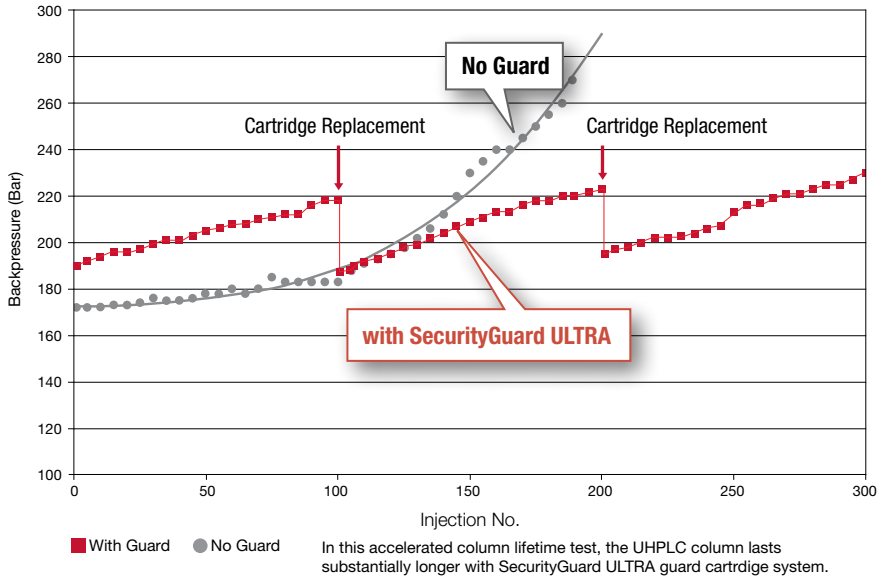


SecurityGuard Keeps Columns Performing at Their Best

When contaminates and particulates build up at the head of the column or on the guard cartridges, system pressures dramatically increase.

By simply replacing the SecurityGuard ULTRA cartridge instead of your < 3 µm and/or core-shell UHPLC column, you are able to regain normal operating conditions and reclaim original column performance.

SecurityGuard ULTRA Performance
Accelerated lifetime test using endogenous biological matrix on Kinetex™ 2.6 µm
C18 50 x 4.6 mm ID



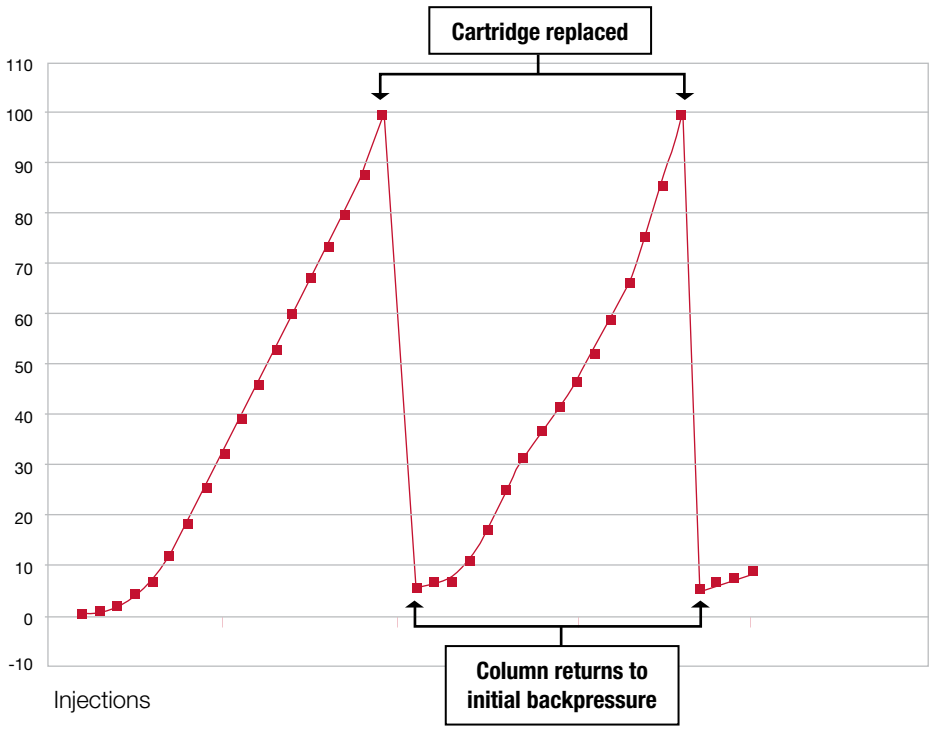
In this accelerated column lifetime test, the UHPLC column lasts substantially longer with SecurityGuard ULTRA guard cartrdige system.

Don't Forget Column Protection UHPLC, HPLC, and Prep

SecurityGuard™ Column Protection

Increases HPLC Column Lifetime, Guaranteed!

Simply replace SecurityGuard Standard cartridges instead of your expensive HPLC columns. In this graph, once the expired SecurityGuard Standard cartridge was replaced, the pressure immediately dropped and the column performance was restored allowing for extended column use.



Accelerated lifetime test using endogenous biomolecule matrix on a reversed phase C18 column, 5 µm, 50 x 4.6 mm with SecurityGuard Standard C18 cartridges. Backpressure values represent additional backpressure contributed by SecurityGuard Standard.

Ordering is easy.

Once you find the column part number, select the appropriate SecurityGuard cartridges found to the right of the column part number.

5 µm MidBore™ Columns (mm)				SecurityGuard ULTRA Cartridges‡
Phases	50 x 3.0	100 x 3.0	150 x 3.0	3/pk
EVO C18	00B-4633-Y0	00D-4633-Y0	00F-4633-Y0	AJ0-9297
F5	00B-4724-Y0	00D-4724-Y0	00F-4724-Y0	AJ0-9321
Biphenyl	00B-4627-Y0	00D-4627-Y0	00F-4627-Y0	AJ0-9208
XB-C18	00B-4605-Y0	00D-4605-Y0	00F-4605-Y0	AJ0-8775
C18	00B-4601-Y0	00D-4601-Y0	00F-4601-Y0	AJ0-8775
C8	00B-4608-Y0	00D-4608-Y0	—	AJ0-8777
Phenyl-Hexyl	00B-4603-Y0	00D-4603-Y0	—	AJ0-8781
				for 3.0 mm ID

Kinetex Columns

KINETEX™ Core-Shell Technology

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
F5	—	00B-4724-AN	00D-4724-AN	00F-4724-AN	AJ0-9322
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	—	—	AJ0-8788
HILIC	—	00B-4606-AN	—	—	AJ0-8786

for 2.1 mm ID

5 µm MidBore™ Columns (mm)					SecurityGuard ULTRA Cartridges‡
Phases	30 x 3.0	50 x 3.0	100 x 3.0	150 x 3.0	3/pk
EVO C18	00A-463-Y0	00B-4633-Y0	00D-4633-Y0	00F-4633-Y0	AJ0-9297
F5	—	—	00D-4724-Y0	00F-4724-Y0	AJ0-9321
Biphenyl	—	00B-4627-Y0	00D-4627-Y0	00F-4627-Y0	AJ0-9208
XB-C18	—	00B-4605-Y0	00D-4605-Y0	00F-4605-Y0	AJ0-8775
C18	00A-4601-Y0	00B-4601-Y0	00D-4601-Y0	00F-4601-Y0	AJ0-8775
C8	—	00B-4608-Y0	00D-4608-Y0	—	AJ0-8777
Phenyl-Hexyl	—	00B-4603-Y0	00D-4603-Y0	—	AJ0-8781

for 3.0 mm ID

5 µm Analytical Columns (mm)					SecurityGuard ULTRA Cartridges‡
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	3/pk
EVO C18	00B-4633-E0	00D-4633-E0	00F-4633-E0	00G-4633-E0	AJ0-9296
F5	00B-4724-E0	00D-4724-E0	00F-4724-E0	00G-4724-E0	AJ0-9320
Biphenyl	00B-4627-E0	00D-4627-E0	00F-4627-E0	00G-4627-E0	AJ0-9207
XB-C18	00B-4605-E0	00D-4605-E0	00F-4605-E0	00G-4605-E0	AJ0-8768
C18	00B-4601-E0	00D-4601-E0	00F-4601-E0	00G-4601-E0	AJ0-8768
C8	00B-4608-E0	00D-4608-E0	00F-4608-E0	00G-4608-E0	AJ0-8770
Phenyl-Hexyl	00B-4603-E0	00D-4603-E0	00F-4603-E0	00G-4603-E0	AJ0-8774
HILIC	—	—	00F-4606-E0	00G-4606-E0	AJ0-8772

for 4.6 mm ID

5 µm Semi-Preparative Columns (mm)				SecurityGuard SemiPrep Cartridges***
Phases	100 x 10	150 x 10	250 x 10	10 x 10
EVO C18	—	00F-4633-N0	00G-4633-N0	AJ0-9306
F5	—	—	00G-4724-N0	AJ0-9323
C18	00D-4601-N0	00F-4601-N0	00G-4601-N0	AJ0-9278
Biphenyl	—	00F-4627-N0	00G-4627-N0	AJ0-9280
XB-C18	—	00F-4605-N0	00G-4605-N0	AJ0-9278

for 9-16 mm ID

5 µm Axia™ Packed Preparative Columns (mm)					SecurityGuard PREP Cartridges*
Phases	50 x 21.2	100 x 21.2	150 x 21.2	250 x 21.2	15 x 21.2
EVO C18	00B-4633-P0-AX	00D-4633-P0-AX	00F-4633-P0-AX	00G-4633-P0-AX	AJ0-9304
F5	—	—	00F-4724-P0-AX	00G-4724-P0-AX	AJ0-9324
Biphenyl	00B-4627-P0-AX	00D-4627-P0-AX	00F-4627-P0-AX	00G-4627-P0-AX	AJ0-9272
XB-C18	00B-4605-P0-AX	00D-4605-P0-AX	00F-4605-P0-AX	00G-4605-P0-AX	AJ0-9145
C18	00B-4601-P0-AX	00D-4601-P0-AX	00F-4601-P0-AX	00G-4601-P0-AX	AJ0-9145
C8	00B-4608-P0-AX	00D-4608-P0-AX	00F-4608-P0-AX	00G-4608-P0-AX	AJ0-9205
Phenyl-Hexyl	00B-4603-P0-AX	00D-4603-P0-AX	00F-4603-P0-AX	00G-4603-P0-AX	AJ0-9147
HILIC	—	00D-4606-P0-AX	00F-4606-P0-AX	00G-4606-P0-AX	AJ0-9277

for 18-29 mm ID

5 µm Axia Packed Preparative Columns (mm)					SecurityGuard PREP Cartridges**
Phases	50 x 30	100 x 30	150 x 30	250 x 30	15 x 30
EVO C18	00B-4633-U0-AX	00D-4633-U0-AX	00F-4633-U0-AX	00G-4633-U0-AX	AJ0-9305
F5	00B-4724-U0-AX	00D-4724-U0-AX	00F-4724-U0-AX	—	AJ0-9325
Biphenyl	—	—	00F-4627-U0-AX	00G-4627-U0-AX	AJ0-9273
XB-C18	00B-4605-U0-AX	00D-4605-U0-AX	00F-4605-U0-AX	00G-4605-U0-AX	AJ0-9204
C18	00B-4601-U0-AX	00D-4601-U0-AX	00F-4601-U0-AX	00G-4601-U0-AX	AJ0-9204
C8	00B-4608-U0-AX	00D-4608-U0-AX	00F-4608-U0-AX	00G-4608-U0-AX	AJ0-9217
Phenyl-Hexyl	—	—	00F-4603-U0-AX	00G-4603-U0-AX	AJ0-9216
HILIC	—	—	00D-4606-U0-AX	—	—

for 30-49 mm ID

‡ SecurityGuard ULTRA Cartridges require holder, Part No.: AJ0-9000
*** SemiPrep SecurityGuard Cartridges require holder, Part No.: AJ0-9281
** PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8277
* PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8223

Kinetex Columns (cont'd)

3.5 µm Minibore, MidBore™, and Analytical Columns (mm)							SecurityGuard™ ULTRA Cartridges‡		
Phases	50 x 2.1	150 x 2.1	100 x 3.0	100 x 4.6	150 x 4.6	250 x 4.6	3/pk	3/pk	3/pk
XB-C18	—	—	—	00D-4744-E0	00F-4744-E0	—	—	—	AJ0-8768
PAH	00B-4764-AN	00F-4764-AN	00D-4764-Y0	00D-4764-E0	00F-4764-E0	00G-4764-E0	AJ0-9535	AJ0-9534	AJ0-9533
							for 2.1 mm ID	for 3.0 mm ID	for 4.6 mm ID

2.6 µm Micro LC Columns (mm)						
Phases	30 x 0.3	50 x 0.3	100 x 0.3	150 x 0.3	50 x 0.5	150 x 0.5
Biphenyl	—	00B-4622-AC	—	00F-4622-AC	00B-4622-AF	—
C18	00A-4462-AC	00B-4462-AC	—	00F-4462-AC	00B-4462-AF	—
EVO C18	—	00B-4725-AC	—	00F-4725-AC	00B-4725-AF	—
F5	—	00B-4723-AC	00D-4723-AC	00F-4723-AC	00B-4723-AF	—
XB-C18	00A-4496-AC	00B-4496-AC	00D-4496-AC	00F-4496-AC	00B-4496-AF	00F-4496-AF

2.6 µm Microbore Columns (mm)			
Phases	50 x 1.0	100 x 1.0	150 x 1.0
C18	00B-4462-A0	—	—
XB-C18	00B-4496-A0	00D-4496-A0	00F-4496-A0

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
PS C18	00A-4780-AN	00B-4780-AN	—	00D-4780-AN	00F-4780-AN	AJ0-8951
Polar C18	00A-4759-AN	00B-4759-AN	—	00D-4759-AN	00F-4759-AN	AJ0-9532
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

2.6 µm MidBore™ Columns (mm)						SecurityGuard ULTRA Cartridges‡
Phases	30 x 3.0	50 x 3.0	75 x 3.0	100 x 3.0	150 x 3.0	3/pk
EVO C18	00A-4725-Y0	00B-4725-Y0	—	00D-4725-Y0	00F-4725-Y0	AJ0-9297
PS C18	00B-4780-Y0	00D-4780-Y0	—	00D-4780-Y0	00F-4780-Y0	AJ0-8950
Polar C18	—	00B-4759-Y0	—	00D-4759-Y0	00F-4759-Y0	AJ0-9531
F5	—	00B-4723-Y0	—	00D-4723-Y0	00F-4723-Y0	AJ0-9321
Biphenyl	—	00B-4622-Y0	—	00D-4622-Y0	00F-4622-Y0	AJ0-9208
XB-C18	00A-4496-Y0	00B-4496-Y0	00C-4496-Y0	00D-4496-Y0	00F-4496-Y0	AJ0-8775
C18	00A-4462-Y0	00B-4462-Y0	00C-4462-Y0	00D-4462-Y0	00F-4462-Y0	AJ0-8775
C8	00A-4497-Y0	00B-4497-Y0	00C-4497-Y0	00D-4497-Y0	00F-4497-Y0	AJ0-8777
HILIC	00A-4461-Y0	—	—	00D-4461-Y0	00F-4461-Y0	AJ0-8779
Phenyl-Hexyl	—	00B-4495-Y0	—	00D-4495-Y0	00F-4495-Y0	AJ0-8781
						for 3.0 mm ID

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

Kinetex Columns (cont'd)

KINETEX™ Core-Shell Technology

2.6 µm Analytical Columns (mm)							SecurityGuard ULTRA Cartridges‡
Phases	30 x 4.6	50 x 4.6	75 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	3/pk
EVO C18	00A-4725-E0	00B-4725-E0	—	00D-4725-E0	00F-4725-E0	00G-4725-E0	AJ0-9296
PS C18	—	00B-4780-E0	—	00D-4780-E0	00F-4780-E0	00G-4780-E0	AJ0-8949
Polar C18	00A-4759-E0	00B-4759-E0	—	00D-4759-E0	00F-4759-E0	—	AJ0-9532
F5	00A-4723-E0	00B-4723-E0	—	00D-4723-E0	00F-4723-E0	—	AJ0-9320
Biphenyl	—	00B-4622-E0	—	00D-4622-E0	00F-4622-E0	—	AJ0-9207
XB-C18	—	00B-4496-E0	00C-4496-E0	00D-4496-E0	00F-4496-E0	—	AJ0-8768
C18	00A-4462-E0	00B-4462-E0	00C-4462-E0	00D-4462-E0	00F-4462-E0	—	AJ0-8768
C8	—	00B-4497-E0	00C-4497-E0	00D-4497-E0	00F-4497-E0	—	AJ0-8770
HILIC	—	00B-4461-E0	00C-4461-E0	00D-4461-E0	00F-4461-E0	—	AJ0-8772
Phenyl-Hexyl	—	00B-4495-E0	00C-4495-E0	00D-4495-E0	00F-4495-E0	—	AJ0-8774

for 4.6 mm ID

1.7 µm Microbore Columns (mm)			
Phases	50 x 1.0	100 x 1.0	150 x 1.0
EVO C18	00B-4726-A0	00D-4726-A0	00F-4726-A0
Biphenyl	00B-4628-A0	00D-4628-A0	—

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	00A-4628-AN	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

1.7 µm MidBore™ Columns (mm)				SecurityGuard ULTRA Cartridges‡
Phases	30 x 3.0	50 x 3.0	100 x 3.0	3/pk
XB-C18	00A-4498-Y0	00B-4498-Y0	00D-4498-Y0	AJ0-8775
C18	—	00B-4475-Y0	00D-4475-Y0	AJ0-8775
C8	00A-4499-Y0	00B-4499-Y0	00D-4499-Y0	AJ0-8777
Phenyl	—	—	00D-4500-Y0	AJ0-8781
HILIC	—	00B-4474-Y0	—	AJ0-8779

for 3.0 mm ID

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

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

Gemini Analytical Columns

3 µm Microbore, Minibore and MidBore™ 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*
										/10pk
C18	00B-4439-A0	00M-4439-B0	00A-4439-B0	00B-4439-B0	00D-4439-B0	00F-4439-B0	00B-4439-Y0	00D-4439-Y0	00F-4439-Y0	AJ0-7596
C6-Phenyl	00B-4443-A0	—	00A-4443-B0	00B-4443-B0	00D-4443-B0	00F-4443-B0	00B-4443-Y0	00D-4443-Y0	00F-4443-Y0	AJ0-7914
										/10pk
NX-C18	00B-4453-A0	00M-4453-B0	00A-4453-B0	00B-4453-B0	00D-4453-B0	00F-4453-B0	00B-4453-Y0	00D-4453-Y0	00F-4453-Y0	AJ0-8367

for ID: 2.0-3.0 mm

3 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*
						/10pk
C18	00A-4439-E0	00B-4439-E0	00D-4439-E0	00F-4439-E0	00G-4439-E0	AJ0-7597
C6-Phenyl	00A-4443-E0	00B-4443-E0	00D-4443-E0	00F-4443-E0	00G-4443-E0	AJ0-7915
						/10pk
NX-C18	—	00B-4453-E0	00D-4453-E0	00F-4453-E0	00G-4453-E0	AJ0-8368

for ID: 3.2-8.0 mm

5 µm Minibore and MidBore 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*
									/10pk
C18	00A-4435-B0	00B-4435-B0	00F-4435-B0	00G-4435-B0	00B-4435-Y0	00D-4435-Y0	00F-4435-Y0	00G-4435-Y0	AJ0-7596
C6-Phenyl	—	00B-4444-B0	00F-4444-B0	—	00B-4444-Y0	—	00F-4444-Y0	00G-4444-Y0	AJ0-7914
									/10pk
NX-C18	00A-4454-B0	00B-4454-B0	00F-4454-B0	—	00B-4454-Y0	00D-4454-Y0	00F-4454-Y0	00G-4454-Y0	AJ0-8367

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*
						/10pk
C18	00A-4435-E0	00B-4435-E0	00D-4435-E0	00F-4435-E0	00G-4435-E0	AJ0-7597
C6-Phenyl	—	00B-4444-E0	00D-4444-E0	00F-4444-E0	00G-4444-E0	AJ0-7915
						/10pk
NX-C18	—	00B-4454-E0	00D-4454-E0	00F-4454-E0	00G-4454-E0	AJ0-8368

for ID: 3.2-8.0 mm

Gemini Semi-Prep and Preparative Columns

5 µm Semi-Prep Columns (mm)			SecurityGuard Cartridges (mm)
Phases	150 x 10	250 x 10	10 x 10‡
			/3pk
C18	00F-4435-N0	00G-4435-N0	AJ0-7598
C6-Phenyl	—	00G-4444-N0	AJ0-9156
			/3pk
NX-C18	00F-4454-N0	00G-4454-N0	AJ0-8369

for ID: 9-16 mm

Axia™ Packed Preparative Columns (mm)							SecurityGuard PREP 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
C18	00B-4435-P0-AX	00D-4435-P0-AX	00F-4435-P0-AX	00G-4435-P0-AX	00B-4435-U0-AX	—	AJ0-7846	AJ0-8308
C6-Phenyl	—	00D-4444-P0-AX	00F-4444-P0-AX	00G-4444-P0-AX	—	—	AJ0-9157	AJ0-9158
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	AJ0-8370	AJ0-8371
10 µm							/ea	/ea
C18	—	00D-4436-P0-AX	00F-4436-P0-AX	00G-4436-P0-AX	—	—	AJ0-7846	AJ0-8308
10 µm							/ea	/ea
NX-C18	00B-4455-P0-AX	00D-4455-P0-AX	00F-4455-P0-AX	00G-4455-P0-AX	—	—	AJ0-8370	AJ0-8371

for ID: 18-29 mm 30-49 mm

Axia™ Packed Preparative Columns (mm) continued							SecurityGuard PREP Cartridges (mm)
Phases	100 x 30	150 x 30	250 x 30	100 x 50	150 x 50	250 x 50	15 x 30.0♦
5 µm							/ea
C18	00D-4435-U0-AX	00F-4435-U0-AX	00G-4435-U0-AX	—	—	—	AJ0-8308
5 µm							/ea
NX-C18	00D-4454-U0-AX	00F-4454-U0-AX	00G-4454-U0-AX	—	—	—	AJ0-8371
10 µm							/ea
C18	00D-4436-U0-AX	00F-4436-U0-AX	00G-4436-U0-AX	—	00F-4436-V0-AX	00G-4436-V0-AX	AJ0-8308
10 µm							/ea
NX-C18	00D-4455-U0-AX	00F-4455-U0-AX	00G-4455-U0-AX	00D-4455-V0-AX	00F-4455-V0-AX	00G-4455-V0-AX	AJ0-8371

for ID: 30-49 mm

* SecurityGuard Analytical Cartridges require holder, Part No.: KJ0-4282
‡ SemiPrep SecurityGuard Cartridges require holder, Part No.: AJ0-9281
** PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8223
♦ PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8277

Biozen Products - Powered by Biocompatible Hardware

biozen by Phenomenex

Biozen Columns (mm)								Biocompatible Guard Cartridges		
	50 x 2.1	100 x 2.1	150 x 2.1	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	for 2.1 mm	for 4.6 mm	Holder
								/3pk		ea
Biozen 2.6 µm Glycan	00B-4773-AN	00D-4773-AN	00F-4773-AN	—	—	—	—	AJ0-9800	—	AJ0-9000
								/3pk		ea
Biozen 1.6 µm Peptide PS-C18	00B-4770-AN	00D-4770-AN	00F-4770-AN	—	—	—	—	AJ0-9803	—	AJ0-9000
								/10pk	/10pk	ea
Biozen 3 µm Peptide PS-C18	00B-4771-AN	—	00F-4771-AN	00B-4771-E0	—	00F-4771-E0	—	AJ0-7605	AJ0-7606	KJ0-4282
								/3pk		ea
Biozen 1.7 µm Peptide XB-C18	00B-4774-AN	00D-4774-AN	00F-4774-AN	—	—	—	—	AJ0-9806	—	AJ0-9000
								/3pk	/3pk	ea
Biozen 2.6 µm Peptide XB-C18	00B-4768-AN	00D-4768-AN	00F-4768-AN	00B-4768-E0	—	00F-4768-E0	—	AJ0-9806	AJ0-9808	AJ0-9000
								/3pk	/3pk	ea
Biozen 2.6 µm WidePore C4	00B-4786-AN	00D-4786-AN	00F-4786-AN	00B-4786-E0	00D-4786-E0	00F-4786-E0	00G-4786-E0	AJ0-9816	AJ0-9818	AJ0-9000
								/3pk	/3pk	ea
Biozen 3.6 µm Intact XB-C8	00B-4766-AN	00D-4766-AN	00F-4766-AN	00B-4766-E0	—	00F-4766-E0	—	AJ0-9812	AJ0-9814	AJ0-9000

	50 x 2.1	150 x 2.1	150 x 4.6	300 x 4.6	150 x 7.8	300 x 7.8	for 4.6 mm	Holder
							/3pk	ea
Biozen 3 µm dSEC	—	—	00F-4788-E0	00H-4788-E0	00F-4788-K0	00H-4788-K0	AJ0-9850	AJ0-9000
Biozen 1.8 µm dSEC	00B-4787-AN	00F-4787-AN	00F-4787-E0	00H-4787-E0	—	—	AJ0-9851	AJ0-9000

	50 x2.1	100 x 2.1	150 x 2.1	250 x 2.1	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	for 4.6 mm	Holder
									/10pk	ea
Biozen 6 µm WCX	00B-4777-AN	00D-4777-AN	00F-4777-AN	00G-4777-AN	00B-4777-E0	00D-4777-E0	00F-4777-E0	00G-4777-E0	AJ0-9400	KJ0-4282

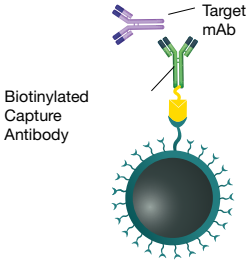
	50 x2.1	100 x 2.1	150 x 2.1	50 x 4.6	100 x 4.6	150 x 4.6	for 2.1 mm	for 4.6 mm	Holder
							/3pk	/3pk	ea
Biozen 1.7 µm Oligo	00B-4791-AN	00D-4791-AN	00F-4791-AN	—	—	—	AJ0-9820	AJ0-9822	KJ0-9000
Biozen 2.6 µm Oligo	00B-4790-AN	00D-4790-AN	00F-4790-AN	00B-4790-E0	00D-4790-E0	00F-4790-E0	AJ0-9820	AJ0-9822	KJ0-9000

Sample Preparation

Biozen Solid Phase Extraction	Format	Sorbent Mass	Part Number	Unit
Biozen N-Glycan Clean-Up	Microelution 96-Well Plate	5 mg/well	8M-S009-NGA	1/box

Biozen MagBeads Streptavidin Coated

Formats	Part No.	Concentration	Bead Size
25 mg (≈50 samples) **50 mg (≈100 samples)** **500 mg (≈1000 samples)**	KS0-9531 KS0-9532 KS0-9533	20 mg/mL	1.0 µm



synergi™
Full Range Selectivity LC Columns

Synergi Micro LC Columns

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

Synergi HST and MercuryMS LC-MS Columns

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	—	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

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

MercuryMS™ Cartridge Holders

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

Direct-Connect Holder

Standard Cartridge Holders	
CH0-5846	10 mm standard holder
CH0-5845	20 mm standard holder

Standard Holder

Synergi Analytical Columns

4 µm Microbore and Minibore Columns (mm)								SecurityGuard™ Cartridges (mm)
Phases	50 x 1.0	150 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	AJ0-6073
Hydro-RP	00B-4375-A0	00F-4375-A0	00A-4375-B0	00B-4375-B0	00C-4375-B0	00F-4375-B0	00G-4375-B0	AJ0-7510
Polar-RP	00B-4336-A0	00F-4336-A0	00A-4336-B0	00B-4336-B0	00C-4336-B0	00F-4336-B0	00G-4336-B0	AJ0-6075
Fusion-RP	00B-4424-A0	00F-4424-A0	00A-4424-B0	00B-4424-B0	00C-4424-B0	00F-4424-B0	00G-4424-B0	AJ0-7556
								for ID: 2.0-3.0 mm

4 µm MidBore™ 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*
					/10pk
Max-RP	—	00B-4337-Y0	00F-4337-Y0	00G-4337-Y0	AJ0-6073
Hydro-RP	—	00B-4375-Y0	00F-4375-Y0	00G-4375-Y0	AJ0-7510
Polar-RP	00A-4336-Y0	00B-4336-Y0	00F-4336-Y0	00G-4336-Y0	AJ0-6075
Fusion-RP	—	00B-4424-Y0	00F-4424-Y0	00G-4424-Y0	AJ0-7556
					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*
						/10pk
Max-RP	00A-4337-E0	00B-4337-E0	00C-4337-E0	00F-4337-E0	00G-4337-E0	AJ0-6074
Hydro-RP	00A-4375-E0	00B-4375-E0	00C-4375-E0	00F-4375-E0	00G-4375-E0	AJ0-7511
Polar-RP	00A-4336-E0	00B-4336-E0	00C-4336-E0	00F-4336-E0	00G-4336-E0	AJ0-6076
Fusion-RP	—	00B-4424-E0	00C-4424-E0	00F-4424-E0	00G-4424-E0	AJ0-7557
						for ID: 3.2-8.0 mm

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

synergi™
Full Range Selectivity LC Columns

Synergi Semi-Prep and Preparative Columns

4 µm Semi-Prep Columns (mm)		SecurityGuard™ Cartridges (mm)
Phases	250 x 10	10 x 10‡
		/3pk
Max-RP	00G-4337-N0	AJ0-7275
Hydro-RP	00G-4375-N0	AJ0-7512
Polar-RP	00G-4336-N0	AJ0-7276
Fusion-RP	00G-4424-N0	AJ0-7558
		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	15 x 21.2**
4 µm					/ea
Max-RP	—	—	00F-4337-P0-AX	00G-4337-P0-AX	AJ0-7842
Hydro-RP	00B-4375-P0-AX	—	00F-4375-P0-AX	00G-4375-P0-AX	AJ0-7843
Polar-RP	00B-4336-P0-AX	00D-4336-P0-AX	00F-4336-P0-AX	00G-4336-P0-AX	AJ0-7845
Fusion-RP	—	00D-4424-P0-AX	00F-4424-P0-AX	00G-4424-P0-AX	AJ0-7844
10 µm					/ea
Hydro-RP	—	—	—	00G-4376-P0-AX	AJ0-7843
Polar-RP	—	—	—	00G-4351-P0-AX	AJ0-7845
Fusion-RP	—	—	—	00G-4425-P0-AX	AJ0-7844
					for ID: 18-29 mm

Axia™ Packed Preparative Columns (mm)		SecurityGuard Cartridges (mm)
Phases	250 x 30	15 x 30.0♦
4 µm		/ea
Max-RP	00G-4337-U0-AX	AJ0-8304
		for ID: 30-49 mm

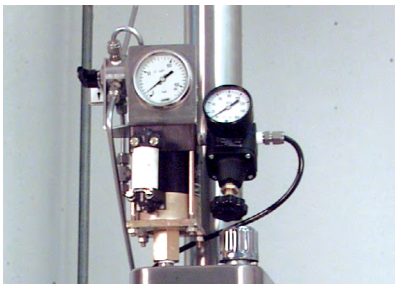
Pilot Scale Columns and Bulk Material

10 µm Analytical and Semi-Prep Columns (mm)			SecurityGuard Cartridges (mm)	
Phases	250 x 4.6	250 x 10	4 x 3.0*	10 x 10‡
			/10pk	/3pk
Hydro-RP	00G-4376-E0	00G-4376-N0	AJ0-7511	AJ0-7512
Polar-RP	00G-4351-E0	00G-4351-N0	AJ0-6076	AJ0-7276
Fusion-RP	00G-4425-E0	00G-4425-N0	AJ0-7557	AJ0-7558
			for ID: 3.2-8.0 mm	9-16 mm

10 µm Bulk Packings		
Phases	100 g	1 kg
Max-RP	04G-4350	04K-4350
Hydro-RP	04G-4376	04K-4376
Polar-RP	04G-4351	04K-4351
Fusion-RP	04G-4425	04K-4425

Synergi Bulk Media

Beyond our largest preparative column dimensions, Synergi phases are available in bulk quantities for HPLC purification at the process, pilot, and commercial scale. These medias offer a complementary selectivity to the standard C18, C8, or Silica phases traditionally employed in larger scale HPLC. Additionally, due to the diverse chemical properties of each of the Synergi phases, dramatic differences in chromatographic parameters such as retention time, selectivity, and resolution are often observed. For those challenging purifications where chromatography still makes the most sense, the Synergi family offers an excellent alternative to evaluate! Get your Synergi preparative scout column(s) and evaluate these phases today!



‡ SemiPrep SecurityGuard Cartridges require holder, Part No.: AJ0-9281
** PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8223
♦ PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8277

Luna Omega UHPLC Columns

explore LUNA™ OMEGA

1.6 µm Microbore Columns (mm)			
Phases	50 x 1.0	100 x 1.0	150 x 1.0
Polar C18	00B-4748-A0	00D-4748-A0	00F-4748-A0
PS C18	—	00D-4752-A0	—
C18	00B-4742-A0	00D-4742-A0	00F-4742-A0

1.6 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
Polar C18	00A-4748-AN	00B-4748-AN	00D-4748-AN	00F-4748-AN	AJ0-9505
PS C18	00A-4752-AN	00B-4752-AN	00D-4752-AN	00F-4752-AN	AJ0-9508
C18	00A-4742-AN	00B-4742-AN	00D-4742-AN	00F-4742-AN	AJ0-9502

for 2.1 mm ID

3 µm Micro LC Columns (mm)							Trap Column
Phases	50 x 0.30	100 x 0.30	150 x 0.30	50 x 0.50	100 x 0.50	150 x 0.50	20 x 0.30
Polar C18	00B-4760-AC	00D-4760-AC	00F-4760-AC	00B-4760-AF	00D-4760-AF	00F-4760-AF	—
PS C18	00B-4758-AC	00D-4758-AC	00F-4758-AC	00B-4758-AF	00D-4758-AF	00F-4758-AF	05M-4758-AC

3 µm Minibore Columns (mm)					SecurityGuard Cartridges (mm)
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	4 x 2.0* /10 pk
Polar C18	00A-4760-AN	00B-4760-AN	00D-4760-AN	00F-4760-AN	AJ0-7600
PS C18	00A-4758-AN	00B-4758-AN	00D-4758-AN	00F-4758-AN	AJ0-7605
C18	—	00B-4784-AN	00D-4784-AN	00F-4784-AN	AJ0-7611
SUGAR	—	00B-4775-AN	00D-4775-AN	00F-4775-AN	AJ0-4496

for ID: 2.0-3.0 mm

3 µm MidBore™ Columns (mm)				SecurityGuard Cartridges (mm)
Phases	50 x 3.0	100 x 3.0	150 x 3.0	4 x 2.0* /10 pk
Polar C18	00B-4760-Y0	00D-4760-Y0	00F-4760-Y0	AJ0-7600
PS C18	00B-4758-Y0	00D-4758-Y0	00F-4758-Y0	AJ0-7605
C18	00B-4784-Y0	00D-4784-Y0	00F-4784-Y0	AJ0-7611
SUGAR	—	—	00F-4775-Y0	AJ0-4496

for ID: 2.0-3.0 mm

3 µm Analytical Columns (mm)					SecurityGuard Cartridges (mm)
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0* /10 pk
Polar C18	00B-4760-E0	00D-4760-E0	00F-4760-E0	00G-4760-E0	AJ0-7601
PS C18	00B-4758-E0	00D-4758-E0	00F-4758-E0	00G-4758-E0	AJ0-7606
C18	00B-4784-E0	00D-4784-E0	00F-4784-E0	00G-4784-E0	AJ0-7612
SUGAR	—	00D-4775-E0	00F-4775-E0	00G-4775-E0	AJ0-4495

for ID: 3.2-8.0 mm

5 µm Minibore and MidBore™ Columns (mm)							SecurityGuard Cartridges (mm)
Phases	50 x 2.1	100 x 2.1	150 x 2.1	50 x 3.0	100 x 3.0	150 x 3.0	4 x 2.0* /10 pk
Polar C18	00B-4754-AN	00D-4754-AN	00F-4754-AN	00B-4754-Y0	00D-4754-Y0	00F-4754-Y0	AJ0-7600
PS C18	00B-4753-AN	00D-4753-AN	00F-4753-AN	00B-4753-Y0	00D-4753-Y0	00F-4753-Y0	AJ0-7605

for ID: 2.0 - 3.0 mm

5 µm Analytical Columns (mm)					SecurityGuard Cartridges (mm)
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0* /10 pk
Polar C18	00B-4754-E0	00D-4754-E0	00F-4754-E0	00G-4754-E0	AJ0-7601
PS C18	00B-4753-E0	00D-4753-E0	00F-4753-E0	00G-4753-E0	AJ0-7606
C18	00B-4785-E0	00D-4785-E0	00F-4785-E0	00G-4785-E0	AJ0-7612

for ID: 3.2-8.0 mm

5 µm Semi-Preparative Columns (mm)	SecurityGuard Cartridges (mm)
Phases	250 x 10	10 x 10** /3 pk
Polar C18	00G-4754-N0	AJ0-9519
PS C18	00G-4753-N0	AJ0-9520

for ID: 9-16 mm

5 µm 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	15 x 21.2** /ea
Polar C18	00B-4754-P0-AX	00D-4754-P0-AX	00F-4754-P0-AX	00G-4754-P0-AX	AJ0-7603
PS C18	00B-4753-P0-AX	00D-4753-P0-AX	00F-4753-P0-AX	00G-4753-P0-AX	AJ0-7608
C18	—	—	—	00G-4785-P0-AX	—

for ID: 18-29 mm

5 µm Axia™ Packed Preparative Columns (mm) (cont'd)					SecurityGuard Cartridges (mm)
Phases	100 x 30	150 x 30	250 x 30	250 x 50	15 x 30.0♦ /ea
Polar C18	00D-4754-U0-AX	00F-4754-U0-AX	00G-4754-U0-AX	00G-4754-V0-AX	AJ0-7604
PS C18	00D-4753-U0-AX	00F-4753-U0-AX	00G-4753-U0-AX	00G-4753-V0-AX	AJ0-7609

for ID: 30-49 mm

‡ SecurityGuard ULTRA Cartridges require holder, Part No.: AJ0-9000
* SecurityGuard Analytical Cartridges require holder, Part No.: KJ0-4282
***SemiPREP SecurityGuard Cartridges require holder, Part No.: AJ0-9281
**PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8223
♦PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8277

explore LUNA™

Luna Micro LC Columns

3 µm and 5 µm Micro LC Columns (mm)						Guard Columns (mm)	
Phases	**50 x 0.30**	**150 x 0.30**	**50 x 0.50**	**150 x 0.50**	**250 x 0.50**	**20 x 0.30**	**20 x 0.50**
3 µm C8(2)	—	—	00B-4248-AF	00F-4248-AF	—	—	—
3 µm C18(2)	00B-4251-AC	00F-4251-AC	00B-4251-AF	00F-4251-AF	—	03M-4251-AC	03M-4251-AF
5 µm C8(2)	—	00F-4249-AC	—	—	—	—	—
5 µm C18(2)	00B-4252-AC	00F-4252-AC	—	00F-4252-AF	00G-4252-AF	—	—
5 µm Phenyl-Hexyl	00B-4257-AC	—	00B-4257-AF	00F-4257-AF	—	—	—

Luna HST and MercuryMS LC-MS Columns

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**
Luna 2.5 µm C18(2)-HST	00A-4446-B0	00B-4446-B0	00D-4446-B0	00B-4446-Y0	00D-4446-Y0

MercuryMS™ LC-MS Cartridges (mm)						Columns (mm)	
3 µm	**Phase**	**10 x 2.0**	**10 x 4.0**	**20 x 2.0**	**20 x 4.0**	**20 x 2.0**	**20 x 4.0**
Luna	**C18(2)**	00N-4251-B0-CE	00N-4251-D0-CE	00M-4251-B0-CE	00M-4251-D0-CE	00M-4251-B0	00M-4251-D0
Luna	**C8(2)**	00N-4248-B0-CE	—	00M-4248-B0-CE	00M-4248-D0-CE	00M-4248-B0	—
5 µm	**Phase**	**10 x 2.0**	**10 x 4.0**	**20 x 2.0**	**20 x 4.0**		
Luna	**C18(2)**	00N-4252-B0-CE	00N-4252-D0-CE	00M-4252-B0-CE	00M-4252-D0-CE	—	—
Luna	**C8(2)**	00N-4249-B0-CE	—	00M-4249-B0-CE	—	—	—

MercuryMS™ Cartridge Holders

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

Direct-Connect Holder

Part No.	**Description**
CH0-7187	10 mm direct-connect holder
CH0-7188	20 mm direct-connect holder

Standard Holder

Luna Analytical Columns

3 µm Microbore and Minibore Columns (mm)							SecurityGuard™ Cartridges (mm)
Phases	**50 x 1.0**	**150 x 1.0**	**30 x 2.0**	**50 x 2.0**	**100 x 2.0**	**150 x 2.0**	**4 x 2.0***
							/10pk
Silica(2)	—	00F-4162-A0	00A-4162-B0	00B-4162-B0	00D-4162-B0	00F-4162-B0	AJ0-4347
C8(2)	00B-4248-A0	00F-4248-A0	00A-4248-B0	00B-4248-B0	00D-4248-B0	00F-4248-B0	AJ0-4289
C18(2)	00B-4251-A0	00F-4251-A0	00A-4251-B0	00B-4251-B0	00D-4251-B0	00F-4251-B0	AJ0-4286
CN	—	—	00A-4254-B0	00B-4254-B0	00D-4254-B0	00F-4254-B0	AJ0-4304
Phenyl-Hexyl	00B-4256-A0	—	00A-4256-B0	00B-4256-B0	00D-4256-B0	00F-4256-B0	AJ0-4350
NH2	—	00F-4377-A0	00A-4377-B0	00B-4377-B0	00D-4377-B0	00F-4377-B0	AJ0-4301
HILIC	—	—	00A-4449-B0	00B-4449-B0	00D-4449-B0	00F-4449-B0	AJ0-8328
PFP(2)	—	00F-4447-A0	00A-4447-B0	00B-4447-B0	00D-4447-B0	00F-4447-B0	AJ0-8326
							for ID: 2.0-3.0 mm

3 µm MidBore™ 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***
									/10pk	/10pk
Silica(2)	—	00B-4162-Y0	00F-4162-Y0	00A-4162-E0	00B-4162-E0	00C-4162-E0	00D-4162-E0	00F-4162-E0	AJ0-4347	AJ0-4348
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	AJ0-4289	AJ0-4290
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	AJ0-4286	AJ0-4287
CN	—	00B-4254-Y0	00F-4254-Y0	00A-4254-E0	00B-4254-E0	00C-4254-E0	00D-4254-E0	00F-4254-E0	AJ0-4304	AJ0-4305
Phenyl-Hexyl	—	00B-4256-Y0	00F-4256-Y0	00A-4256-E0	00B-4256-E0	00C-4256-E0	00D-4256-E0	00F-4256-E0	AJ0-4350	AJ0-4351
NH2	—	00B-4377-Y0	00F-4377-Y0	—	00B-4377-E0	—	00D-4377-E0	00F-4377-E0	AJ0-4301	AJ0-4302
HILIC	—	00B-4449-Y0	00F-4449-Y0	—	—	—	00D-4449-E0	00F-4449-E0	AJ0-8328	AJ0-8329
PFP(2)	—	00B-4447-Y0	00F-4447-Y0	—	00B-4447-E0	—	00D-4447-E0	00F-4447-E0	AJ0-8326	AJ0-8327
									for ID: 2.0-3.0 mm	3.2-8.0 mm

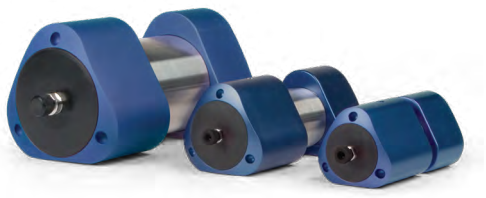
* SecurityGuard Analytical Cartridges require holder, Part No.: KJ0-4282

Luna Analytical Columns (cont'd)

5 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	150 x 2.0	250 x 2.0	4 x 2.0*
								/10pk
Silica(2)	—	—	—	00A-4274-B0	00B-4274-B0	00F-4274-B0	00G-4274-B0	AJ0-4347
C5	—	—	—	00A-4043-B0	00B-4043-B0	00F-4043-B0	—	AJ0-4292
C8(2)	—	00F-4249-A0	—	00A-4249-B0	00B-4249-B0	00F-4249-B0	00G-4249-B0	AJ0-4289
C18(2)	00B-4252-A0	00F-4252-A0	00G-4252-A0	00A-4252-B0	00B-4252-B0	00F-4252-B0	00G-4252-B0	AJ0-4286
CN	—	—	—	—	00B-4255-B0	00F-4255-B0	—	AJ0-4304
Phenyl-Hexyl	00B-4257-A0	—	—	00A-4257-B0	00B-4257-B0	00F-4257-B0	00G-4257-B0	AJ0-4350
NH2	00B-4378-A0	00F-4378-A0	—	00A-4378-B0	00B-4378-B0	00F-4378-B0	00G-4378-B0	AJ0-4301
PFP(2)	—	—	—	00A-4448-B0	00B-4448-B0	00F-4448-B0	—	AJ0-8326
								for ID: 2.0-3.0 mm

5 µm MidBore™ 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*
								/10pk	/10pk
Silica(2)	—	00B-4274-Y0	00F-4274-Y0	—	—	00B-4274-E0	—	AJ0-4347	AJ0-4348
C5	—	—	00F-4043-Y0	—	—	00B-4043-E0	—	AJ0-4292	AJ0-4293
C8(2)	00A-4249-Y0	00B-4249-Y0	00F-4249-Y0	00G-4249-Y0	00A-4249-E0	00B-4249-E0	00C-4249-E0	AJ0-4289	AJ0-4290
C18(2)	00A-4252-Y0	00B-4252-Y0	00F-4252-Y0	00G-4252-Y0	00A-4252-E0	00B-4252-E0	00C-4252-E0	AJ0-4286	AJ0-4287
CN	—	00B-4255-Y0	00F-4255-Y0	00G-4255-Y0	00A-4255-E0	00B-4255-E0	00C-4255-E0	AJ0-4304	AJ0-4305
Phenyl-Hexyl	—	00B-4257-Y0	00F-4257-Y0	00G-4257-Y0	00A-4257-E0	00B-4257-E0	—	AJ0-4350	AJ0-4351
NH2	—	00B-4378-Y0	00F-4378-Y0	00G-4378-Y0	00A-4378-E0	00B-4378-E0	—	AJ0-4301	AJ0-4302
SCX	—	—	00F-4398-Y0	—	—	00B-4398-E0	—	AJ0-4307	AJ0-4308
HILIC	—	—	00F-4450-Y0	—	—	—	—	AJ0-8328	AJ0-8329
PFP(2)	—	00B-4448-Y0	00F-4448-Y0	—	—	00B-4448-E0	—	AJ0-8326	AJ0-8327
								for ID: 2.0-3.0 mm	3.2-8.0 mm

5 µm Analytical and Semi-Prep Columns (mm)					SecurityGuard Cartridges (mm)	
Phases	100 x 4.6	150 x 4.6	250 x 4.6	250 x 10	4 x 3.0*	10 x 10‡
					/10pk	/3pk
Silica(2)	00D-4274-E0	00F-4274-E0	00G-4274-E0	00G-4274-N0	AJ0-4348	AJ0-7223
C5	00D-4043-E0	00F-4043-E0	00G-4043-E0	00G-4043-N0	AJ0-4293	AJ0-7372
C8(2)	00D-4249-E0	00F-4249-E0	00G-4249-E0	00G-4249-N0	AJ0-4290	AJ0-7222
C18(2)	00D-4252-E0	00F-4252-E0	00G-4252-E0	00G-4252-N0	AJ0-4287	AJ0-7221
CN	00D-4255-E0	00F-4255-E0	00G-4255-E0	00G-4255-N0	AJ0-4305	AJ0-7313
Phenyl-Hexyl	00D-4257-E0	00F-4257-E0	00G-4257-E0	00G-4257-N0	AJ0-4351	AJ0-7314
NH_2	00D-4378-E0	00F-4378-E0	00G-4378-E0	00G-4378-N0	AJ0-4302	AJ0-7364
SCX	00D-4398-E0	00F-4398-E0	00G-4398-E0	00G-4398-N0	AJ0-4308	AJ0-7369
HILIC	00D-4450-E0	00F-4450-E0	00G-4450-E0	00G-4450-N0	AJ0-8329	AJ0-8902
PFP(2)	00D-4448-E0	00F-4448-E0	00G-4448-E0	00G-4448-N0	AJ0-8327	AJ0-8376
					for ID: 3.2-8.0 mm	9-16 mm



Luna Preparative Columns

5 µm Axia™ Packed Preparative Columns (mm)								SecurityGuard PREP Cartridges (mm)	
Phases	50 x 21.2	100 x 21.2	150 x 21.2	250 x 21.2	50 x 30	100 x 30	250 x 30	15 x 21.2**	15 x 30◆
								/ea	/ea
Silica(2)	—	00D-4274-P0-AX	00F-4274-P0-AX	00G-4274-P0-AX	—	—	00G-4274-U0-AX	AJ0-7229	AJ0-8312
C5	—	—	—	00G-4043-P0-AX	—	—	—	—	—
C8(2)	—	—	00F-4249-P0-AX	00G-4249-P0-AX	—	00D-4249-U0-AX	—	AJ0-7840	AJ0-8302
C18(2)	00B-4252-P0-AX	00D-4252-P0-AX	00F-4252-P0-AX	00G-4252-P0-AX	00B-4252-U0-AX	00D-4252-U0-AX	00G-4252-U0-AX	AJ0-7839	AJ0-8301
CN	—	—	—	00G-4255-P0-AX	—	—	00G-4255-U0-AX	AJ0-8220	AJ0-8311
Phenyl-Hexyl	—	—	00F-4257-P0-AX	00G-4257-P0-AX	—	—	00G-4257-U0-AX	AJ0-7841	AJ0-8303
NH2	—	—	00F-4378-P0-AX	00G-4378-P0-AX	—	—	—	AJ0-8162	AJ0-8309
PFP(2)	—	00D-4448-P0-AX	00F-4448-P0-AX	00G-4448-P0-AX	—	00D-4448-U0-AX	—	AJ0-8377	AJ0-8378
HILIC	—	00D-4450-P0-AX	00F-4450-P0-AX	00G-4450-P0-AX	—	—	00G-4450-U0-AX	AJ0-8829	AJ0-8830
								for ID: 18-29 mm	30-49 mm

10 µm Axia™ Packed Preparative Columns (mm)						SecurityGuard PREP Cartridges (mm)	
Phases	50 x 21.2	100 x 21.2	250 x 21.2	250 x 30	250 x 50	15 x 21.2**	15 x 30◆
						/ea	/ea
Silica(2)	—	—	00G-4091-P0-AX	00G-4091-U0-AX	00G-4091-V0-AX	AJ0-7229	AJ0-8312
C5	—	00D-4092-P0-AX	00G-4092-P0-AX	—	00G-4092-V0-AX	—	—
C8(2)	—	—	00G-4250-P0-AX	—	00G-4250-V0-AX	AJ0-7840	AJ0-8302
C18(2)	00B-4253-P0-AX	00D-4253-P0-AX	00G-4253-P0-AX	00G-4253-U0-AX	00G-4253-V0-AX	AJ0-7839	AJ0-8301
CN	—	—	00G-4300-P0-AX	—	—	AJ0-8220	AJ0-8311
Phenyl-Hexyl	—	—	00G-4285-P0-AX	00G-4285-U0-AX	—	AJ0-7841	AJ0-8303
NH_2	—	—	00G-4379-P0-AX	—	—	AJ0-8162	AJ0-8309
						for ID: 18-29 mm	30-49 mm

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

‡ SemiPrep SecurityGuard Cartridges require holder, Part No.: AJ0-9281

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

◆ PREP SecurityGuard Cartridges require holder, Part No.: AJ0-8277

Increase Lab Safety with HPLC/UHPLC Solvent Protection SecurityCAPs

SecurityCAP™ LC SOLVENT SAFETY PRODUCTS

Mobile Phase (Eluent) Safety Starter Kits

SecurityCAPadd space Mobile Phase Starter Kits		
Part No.	**Description**	**Unit**
AC2-1245	2-port GL45 Cap and 6-month Safety Filter	ea
AC2-4245	2-port GL45 Caps (x4) and 6-month Safety Filter (x4)	ea
AC2-4240	2-port Merck S40 Caps (x4) and 6-month Safety Filter (x4)	ea
AC2-1345	3-port GL45 Cap and 6-month Safety Filter	ea
AC2-4345	3-port GL45 Caps (x4) and 6-month Safety Filter (x4)	ea
AC2-1445	4-port GL45 Cap and 6-month Safety Filter	ea
AC2-4445	4-port GL45 Cap (x1) and 2-port Cap (3x) and 6-month Safety Filter (x4)	ea
AC2-1545	5-port GL45 Cap and 6-month Safety Filter	ea
AC2-1561	5-port S60/S61 Cap and 6-month Safety Filter	ea

Waste Safety Starter Kits

SecurityCAP Waste Starter Kits		
Part No.	**Description**	**Unit**
AC1-1245	2-port GL/DIN45 Cap and 6-month Exhaust Filter and Barbed connector	ea
AC1-1545	5-port GL/DIN45 Cap and 6-month Exhaust Filter	ea
AC1-1551	5-port DIN51 Cap and 6-month Exhaust Filter	ea
AC1-1553	5-port B53 Cap and 6-month Exhaust Filter	ea
AC1-1561	5-port S61 Cap and 6-month Exhaust Filter	ea

Replacement Filters

SecurityCAP Mobile Phase Safety Filter		
Part No.	**Description**	**Unit**
AC2-0161	6-month Capacity, ¼ in.-28 Threads	ea
AC2-0961	6-month Capacity, ¼in.-28 Threads	10/pk

SecurityCAP Waste Safety Filters		
Part No.	**Description**	**Unit**
AC1-0161	6-month Exhaust Filter for SecurityCAP, ¼ in.-28 Threads	ea
AC1-0361	6-month Exhaust Filter for SecurityCAP, ¼ in.-28 Threads	3/pk
AC1-0162	6-month Exhaust Filter for Wide-port Caps, GL14 Threads	ea
AC1-0362	6-month Exhaust Filter for Wide-port Caps, GL14 Threads	3/pk

SecurityCAP Waste Safety Filter Compatibility Table

Supplier	Phenomenex SecurityCAP Filters	
	ea	3/pk
S.C.A.T.® SafetyWasteCaps	AC1-0162	AC1-0362
AIT® Smart Healthy Caps	AC1-0162	AC1-0362
Agilent® InfinityLab Stay Safe Caps	AC1-0162	AC1-0362
VICI Jour® Waste Caps	AC1-0161	AC1-0361
Canary-Safe™ Safety Caps	AC1-0162	AC1-0362
DURAN® DG Safety Caps	AC1-0162	AC1-0362
VapLock™ Safety Caps (with AC3-1111)	AC1-0161	AC1-0361

Fittings and Accessories

SecurityCAP Fittings		
Part No.	**Description**	**Unit**
AC3-1101	for 1/16 in. or 2.0 mm ID Tubing, ¼ in.-28 Threads (POM), blue	ea
AC3-1201	for 2.3-2.6 mm ID Tubing, ¼ in.-28 Threads (POM), white	ea
AC3-2101	for ⅛ in. ID Tubing, ¼ in.-28 Threads (POM), black	ea

SecurityCAP Connectors		
Part No.	**Description**	**Unit**
AC3-1001	Barbed connector, for 5-8 mm ID Tubing (PTFE), white	ea
AC3-1301	Y-connector for 6-8 mm ID Tubing (POM), white	ea

SecurityCAP Adapter		
Part No.	**Description**	**Unit**
AC2-1138	Cap Thread Adapter, PTFE, GPI/GL 38 Female to GL45 Male	ea
AC3-1111	Waste Adapter for Male ¼in. NPT-port (PTFE)	ea

SecurityCAP Sealing Plug		
Part No.	**Description**	**Unit**
AC3-2001	¼ in.-28 Threads (POM), white	ea

POM = polyoxymethylene
PTFE = polytetrafluoroethylene (Teflon®)

Disclaimer

The 6 month SecurityCAP filter lifetime is a general guideline based on running a single instrument for 8 hours a day at 1 mL/min.

SecurityCAP filters may need to be changed more or less frequently based on the system usage.

SecurityLINK™
UHPLC Connections in a Click

PEEKsil™ Double-Sided 10-32 Fittings for 1/16 in. Ports

Part No.	ID (µm)	LENGTH (mm)	Fitting Size Top (in.)	Fitting Size Bottom (in.)
AJ1-2111	25	100	1/16	1/16
AJ1-2121	25	150	1/16	1/16
AJ1-2141	25	250	1/16	1/16
AJ1-2151	25	300	1/16	1/16
AJ1-2171	25	500	1/16	1/16
AJ1-2191	25	750	1/16	1/16
AJ1-21A1	25	1000	1/16	1/16
AJ1-2211	50	100	1/16	1/16
AJ1-2221	50	150	1/16	1/16
AJ1-2231	50	200	1/16	1/16
AJ1-2241	50	250	1/16	1/16
AJ1-2251	50	300	1/16	1/16
AJ1-2271	50	500	1/16	1/16
AJ1-2291	50	750	1/16	1/16
AJ1-22A1	50	1000	1/16	1/16
AJ1-2321	75	150	1/16	1/16
AJ1-2341	75	250	1/16	1/16
AJ1-2371	75	500	1/16	1/16
AJ1-23A1	75	1000	1/16	1/16
AJ1-2411	100	100	1/16	1/16
AJ1-2421	100	150	1/16	1/16
AJ1-2441	100	250	1/16	1/16
AJ1-2461	100	350	1/16	1/16
AJ1-2471	100	500	1/16	1/16
AJ1-24A1	100	1000	1/16	1/16

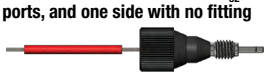
PEEK-Lined Stainless Steel Double-Sided 10-32 Fittings for 1/16 in. Ports

Part No.	ID (µm)	LENGTH (mm)	Fitting Size Top (in.)	Fitting Size Bottom (in.)
AJ1-3121	25	150	1/16	1/16
AJ1-3141	25	250	1/16	1/16
AJ1-3161	25	350	1/16	1/16
AJ1-3171	25	500	1/16	1/16
AJ1-3181	25	600	1/16	1/16
AJ1-3221	50	150	1/16	1/16
AJ1-3241	50	250	1/16	1/16
AJ1-3261	50	350	1/16	1/16
AJ1-3271	50	500	1/16	1/16
AJ1-3281	50	600	1/16	1/16
AJ1-3321	75	150	1/16	1/16
AJ1-3341	75	250	1/16	1/16
AJ1-3361	75	350	1/16	1/16
AJ1-3371	75	500	1/16	1/16
AJ1-3381	75	600	1/16	1/16
AJ1-3421	100	150	1/16	1/16
AJ1-3441	100	250	1/16	1/16
AJ1-3461	100	350	1/16	1/16
AJ1-3471	100	500	1/16	1/16
AJ1-3481	100	600	1/16	1/16

Stainless Steel Double-Sided 10-32 Fittings for 1/16 in. Ports

Part No.	ID (µm)	LENGTH (mm)	Fitting Size Top (in.)	Fitting Size Bottom (in.)
AJ1-14A1	100	1000	1/16	1/16
AJ1-1411	100	100	1/16	1/16
AJ1-1414	100	100	1/16	1/16
AJ1-1421	100	150	1/16	1/16
AJ1-1441	100	250	1/16	1/16
AJ1-1461	100	350	1/16	1/16
AJ1-1471	100	500	1/16	1/16
AJ1-1481	100	600	1/16	1/16
AJ1-15A1	125	1000	1/16	1/16
AJ1-1521	125	150	1/16	1/16
AJ1-1541	125	250	1/16	1/16
AJ1-1561	125	350	1/16	1/16
AJ1-1571	125	500	1/16	1/16
AJ1-1581	125	600	1/16	1/16
AJ1-1611	254	100	1/16	1/16
AJ1-1621	254	150	1/16	1/16
AJ1-1641	254	250	1/16	1/16
AJ1-1661	254	350	1/16	1/16
AJ1-1671	254	500	1/16	1/16
AJ1-1681	254	600	1/16	1/16

PEEKsil Single-Sided Fittings 1/32 in. OD PEEKsil Tubing with one 10-32 fitting for 1/16 in. ports, and one side with no fitting



Part No.	ID (µm)	LENGTH (mm)	Fitting Size Top (in.)	Fitting Size Bottom (in.)
AJ1-21B1	25	1500	1/16	None
AJ1-2124	25	150	1/16	None
AJ1-2174	25	500	1/16	None
AJ1-2194	25	750	1/16	None
AJ1-2224	50	150	1/16	None
AJ1-2274	50	500	1/16	None
AJ1-2294	50	750	1/16	None
AJ1-22A4	50	1000	1/16	None

Phenomenex Column / Tubing ID Recommendation Chart

	Nano	Microbore		Analytical			Semi-Prep	
Column ID	0.05 - 0.1 mm (50 µm - 100 µm)	0.3 - 0.5 mm (300 µm - 500 µm)	1 mm	2.1 mm	3 mm	4.6 mm	7.8 mm	9.0 - 16.0 mm
Tubing ID	25 µm	50 µm	50 µm - 75 µm	100 µm	100 µm	100 µm	120 µm	254 µm

Reorder Tip

SecurityLINK tubing material includes a sleeve that provides: part number and lot number information. Just go to www.phenomenex.com/SecurityLINK to place your order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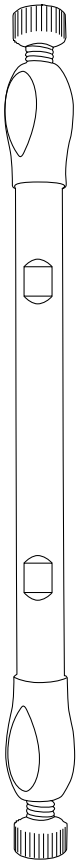

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Australia
t: +61 (0)2-9428-6444
auinfo@phenomenex.com

Austria
t: +43 (0)1-319-1301
anfrage@phenomenex.com

Belgium
t: +32 (0)2 503 4015 (French)
t: +32 (0)2 511 8666 (Dutch)
beinfo@phenomenex.com

Canada
t: +1 (800) 543-3681
info@phenomenex.com

China
t: +86 400-606-8099
cninfo@phenomenex.com

Czech Republic
t: +420 272 017 077
cz-info@phenomenex.com

Denmark
t: +45 4824 8048
nordicinfo@phenomenex.com

Finland
t: +358 (0)9 4789 0063
nordicinfo@phenomenex.com

France
t: +33 (0)1 30 09 21 10
franceinfo@phenomenex.com

Germany
t: +49 (0)6021-58830-0
anfrage@phenomenex.com

Hong Kong
t: +852 6012 8162
hkinfo@phenomenex.com

India
t: +91 (0)40-3012 2400
indiainfo@phenomenex.com

Indonesia
t: +62 21 5010 9707
indoinfo@phenomenex.com

Ireland
t: +353 (0)1 247 5405
eireinfo@phenomenex.com

Italy
t: +39 051 6327511
italiainfo@phenomenex.com

Japan
t: +81 (0) 120-149-262
jpinfo@phenomenex.com

Luxembourg
t: +31 (0)30-2418700
nlinfo@phenomenex.com

Mexico
t: 01-800-844-5226
tecnicomx@phenomenex.com

The Netherlands
t: +31 (0)30-2418700
nlinfo@phenomenex.com

New Zealand
t: +64 (0)9-4780951
nzinfo@phenomenex.com

Norway
t: +47 810 02 005
nordicinfo@phenomenex.com

Poland
t: +48 22 104 21 72
pl-info@phenomenex.com

Portugal
t: +351 221 450 488
ptinfo@phenomenex.com

Singapore
t: +65 800-852-3944
sginfo@phenomenex.com

Slovakia
t: +420 272 017 077
sk-info@phenomenex.com

Spain
t: +34 91-413-8613
espinfo@phenomenex.com

Sweden
t: +46 (0)8 611 6950
nordicinfo@phenomenex.com

Switzerland
t: +41 (0)61 692 20 20
swissinfo@phenomenex.com

Taiwan
t: +886 (0) 0801-49-1246
twinfo@phenomenex.com

Thailand
t: +66 (0) 2 566 0287
thaiinfo@phenomenex.com

United Kingdom
t: +44 (0)1625-501367
ukinfo@phenomenex.com

USA
t: +1 (310) 212-0555
info@phenomenex.com

All other countries/regions
Corporate Office USA
t: +1 (310) 212-0555
info@phenomenex.com

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