

- ▶ Kinetex®
- ▶ Luna® Omega
- ▶ Synergi™
- ▶ Gemini®
- ▶ Luna



Micro LC Column & Trap Product Guide

Improve Your Micro LC Applications
with NEW Column & Trap Selectivities

- Compatible with Your System
- Dependable and Available
- Wide Range of Selectivities

**SMALL but
MIGHTY**

New Micro Column
& Trap Phases Inside!



 **phenomenex**®
...breaking with traditionSM



www.phenomenex.com/MicroLC

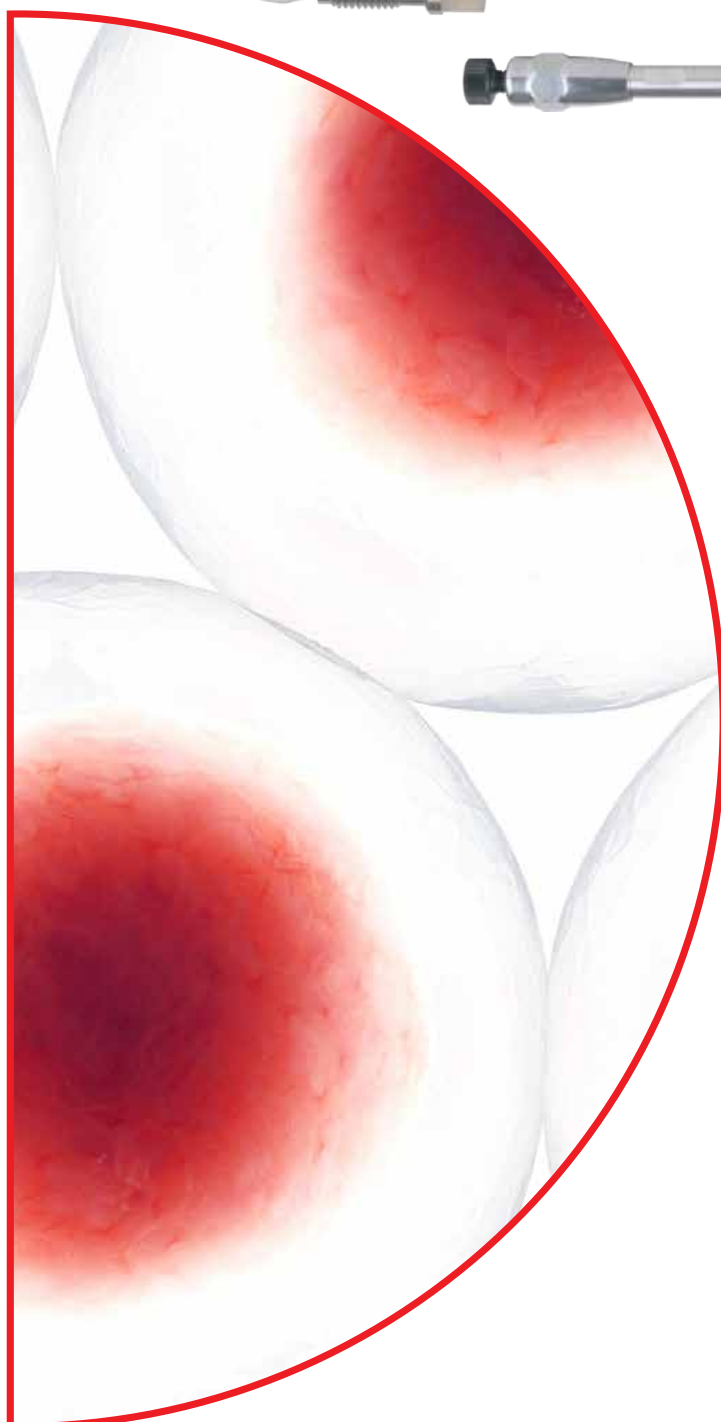
New Micro LC Hardware Design

- Developed for control and reproducibility
- Focus on secure & robust connections
- Commitment to product reliability and availability



Table of Contents

• Reproducible Micro LC Columns	4
• System Flexibility & Lab Compatibility!	5 - 6
• Unique & Complementary Micro LC Column & Trap Selectivity	7 - 8
• New Micro LC Column & Trap Selectivity	9 - 11
• Faith in a Connection – Security in a Click	12
• Product Ordering Information	13 - 15

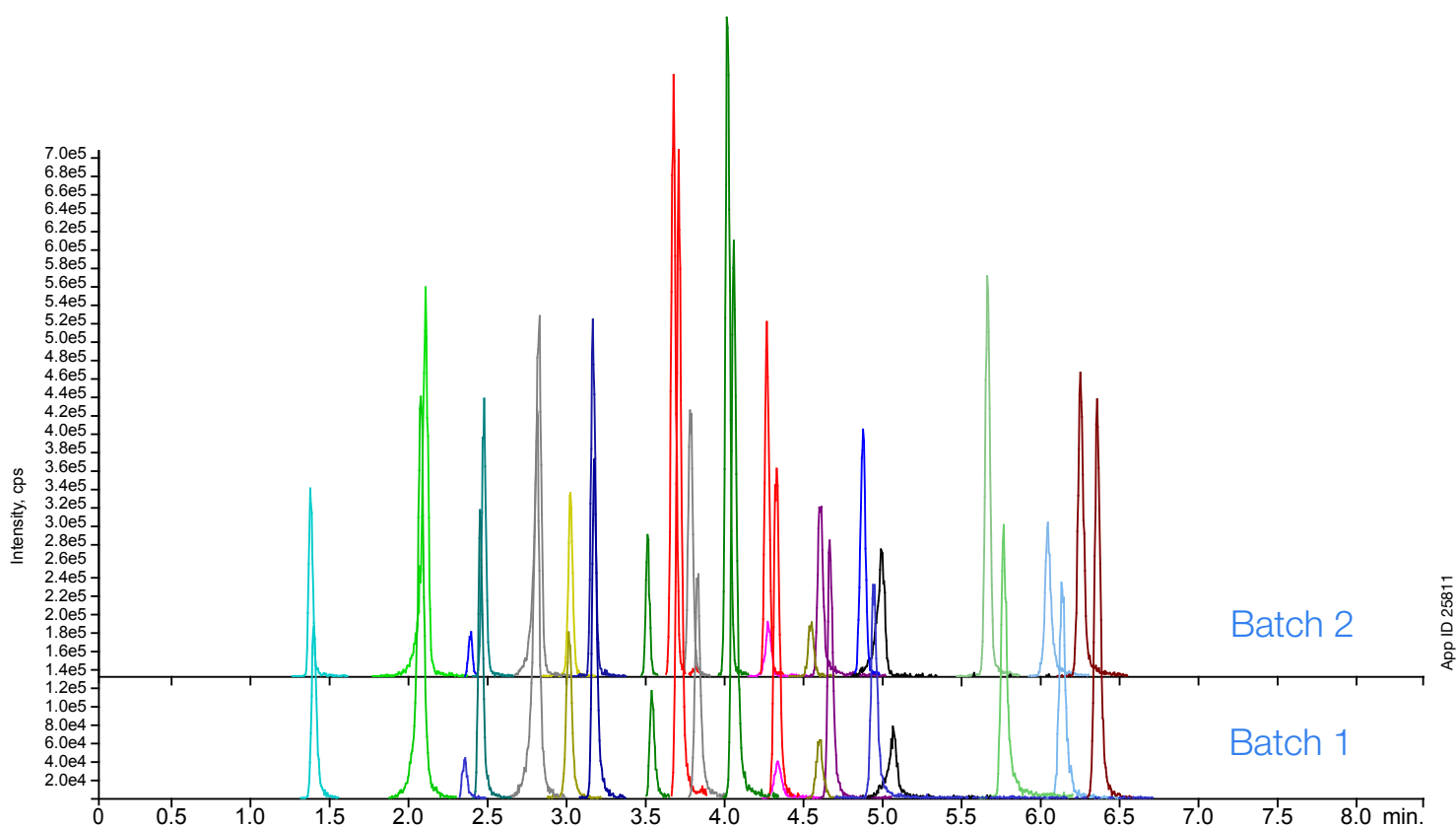




Confidence is Key! Enjoy Reproducible Micro Columns

Our micro columns are manufactured with hardware and surface chemistries that are designed to be consistent analytical tools for your analysis. They undergo extensive quality testing to ensure dependability and reproducibility to bring confidence to your application.

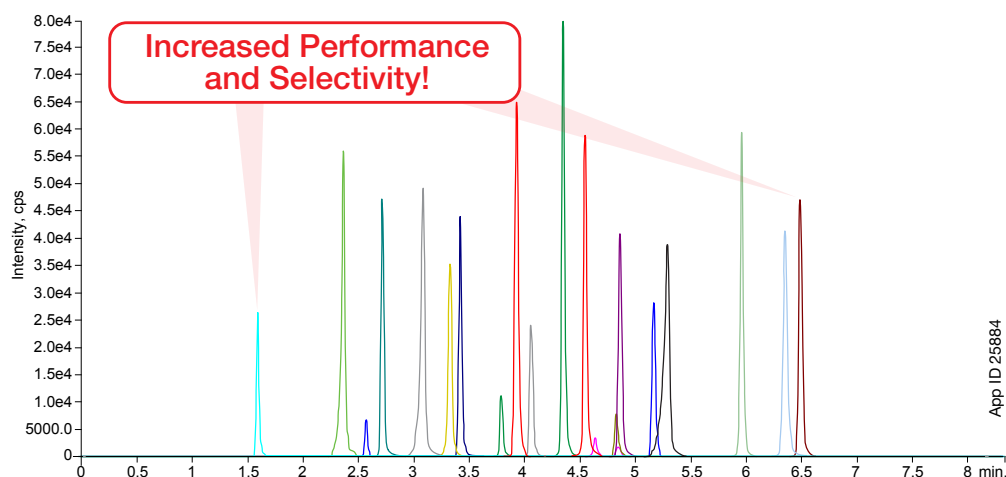
Micro LC Kinetex® Batch-to-Batch: 20 Stable-Isotope-Labeled (SIL) Peptides



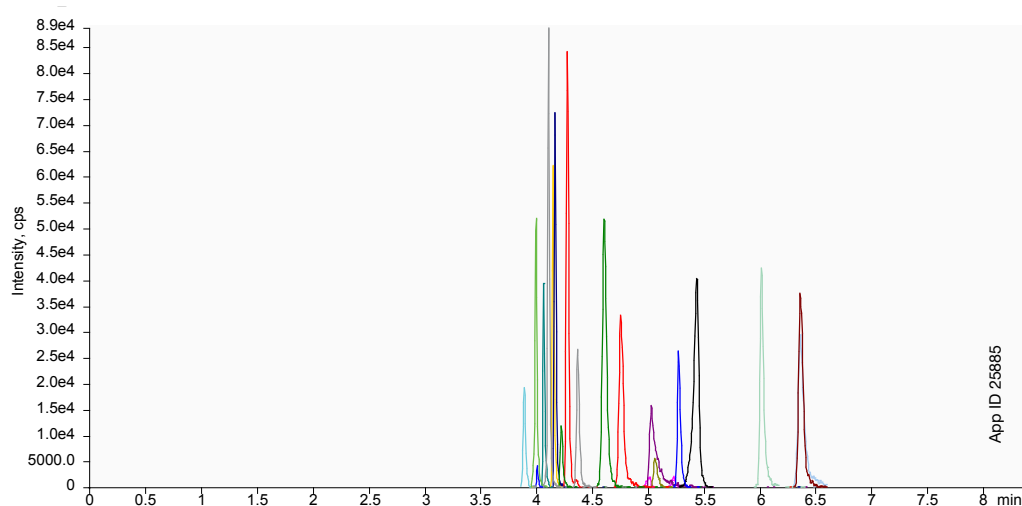
This comparison was generated using a sample of 20 stable-isotope-labeled (SIL) peptides under general reversed phase mobile phase conditions. The system used for this example was an Ekspert™ nanoLC™ 425 with a SCIEX® 5500 QTRAP® for detection. See page 5 for conditions used for batch-to-batch comparison.

Bring Diverse Selectivity and Improved Performance to Your Lab!

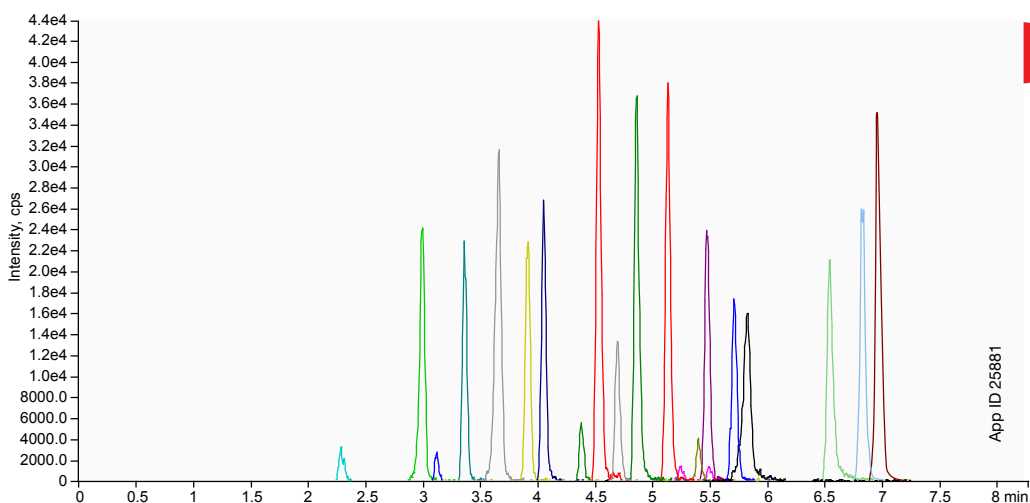
Kinetex Core-Shell Technology packed in a highly compatible micro LC column hardware makes choosing easy; now you get both selectivity and performance gains.



Micro LC Column:
Kinetex® XB-C18
2.6 μ m 50 x 0.3 mm



Micro LC Column:
Waters® nanoEase™ M/Z
Peptide BEH C18
1.7 μ m 50 x 0.3 mm



Micro LC Column:
Thermo Scientific™ Acclaim™
PepMap™ C18
2 μ m 50 x 0.3 mm

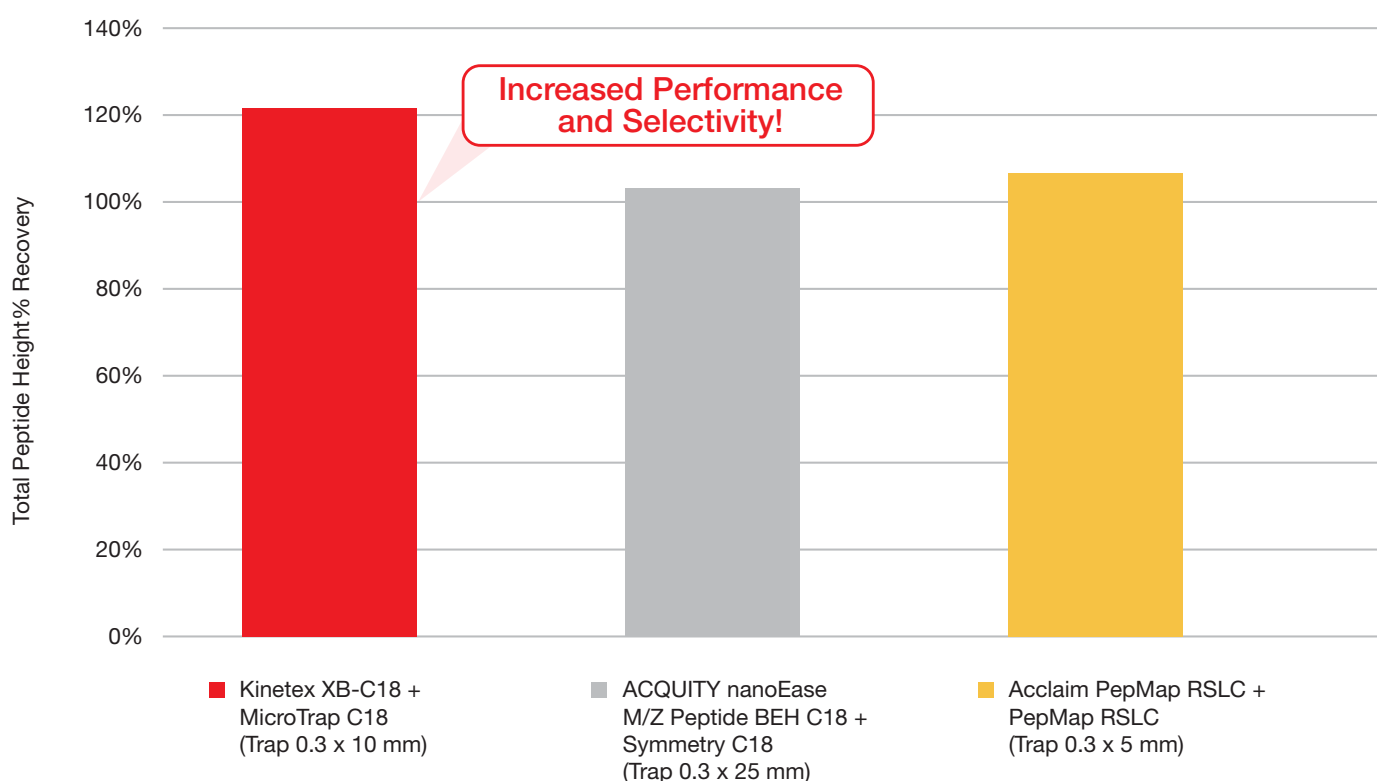
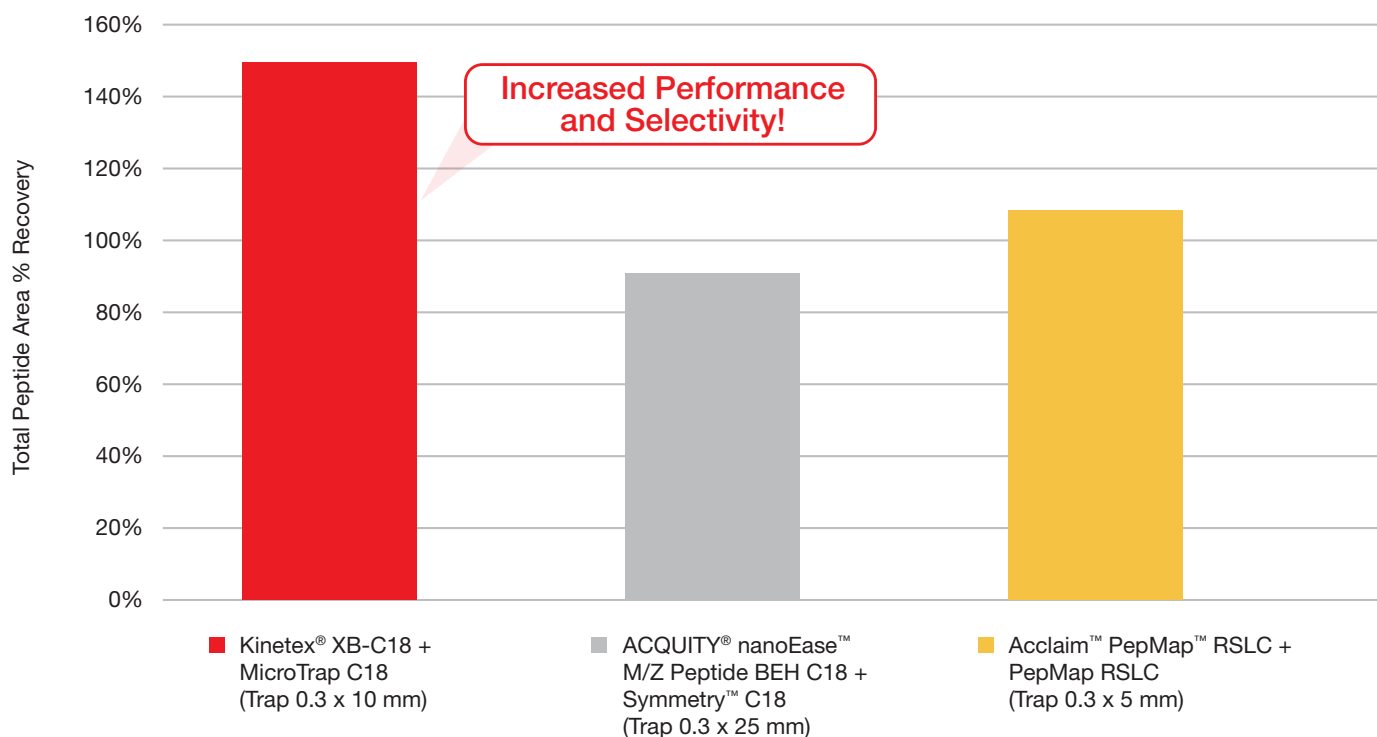
Micro LC Conditions

Columns	As noted	Gradient:	Time (min)	% B	Flow Rate:	10 μ L/min
Dimension:	50 x 0.3 mm		0	3	Temperature:	Ambient (25 °C)
Mobile Phase:	A: Water with 0.1 % Formic Acid		10	40	Detection:	MS/MS SCIEX® QTRAP® 5500
	B: Acetonitrile with 0.1 % Formic Acid		12	80	Injector Temp.:	4 °C
			14	80	Column Temp.:	25 °C
			15	3	Injection Volume:	1 μ L
			20	3	Sample:	20 stable-isotope-labeled (SIL) peptide mix



Improve Your Trap & Elute Micro LC Applications!

The two figures below summarize and compare the total peptide percentage recovery for both peak area and height from the example on page 5 under trap and elute conditions.



Comparative separations may not be representative of all applications.



Complementary Micro LC Column and Trap Selectivity

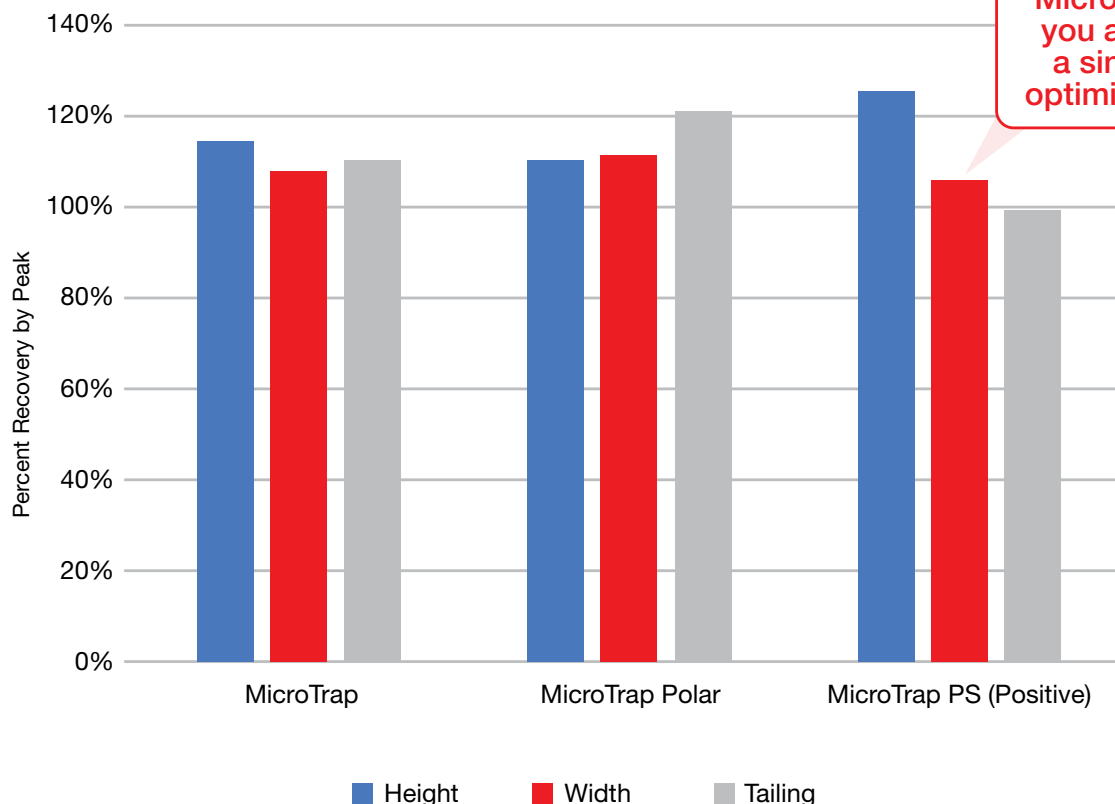
Similar to analytical scale LC, the performance and optimization of your separation is directly affected by the chosen stationary phase. By utilizing different combinations of column and trap selectivities you can positively alter relative recovery and separation performance.

MicroTrap Phases & Dimension

MicroTrap C18	10 x 0.3 mm	10 x 0.5 mm
MicroTrap Polar	10 x 0.3 mm	10 x 0.5 mm
MicroTrap PS	10 x 0.3 mm	10 x 0.5 mm



Luna Omega Polar Column with MicroTrap C18, MicroTrap Polar, or MicroTrap PS

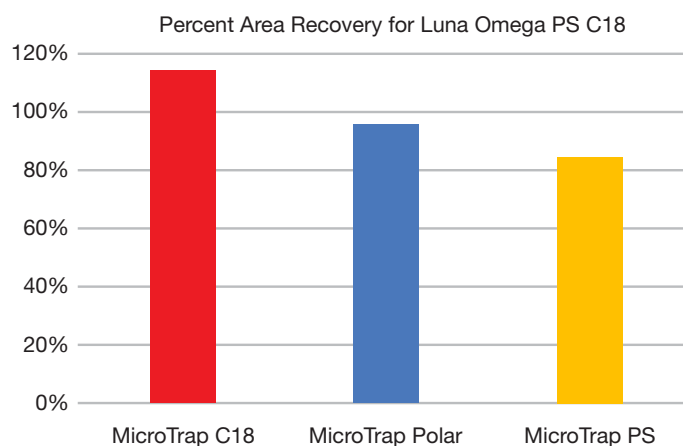
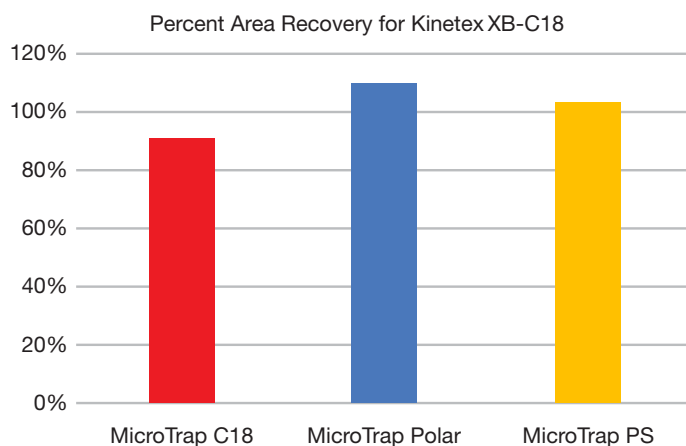


App ID 25920

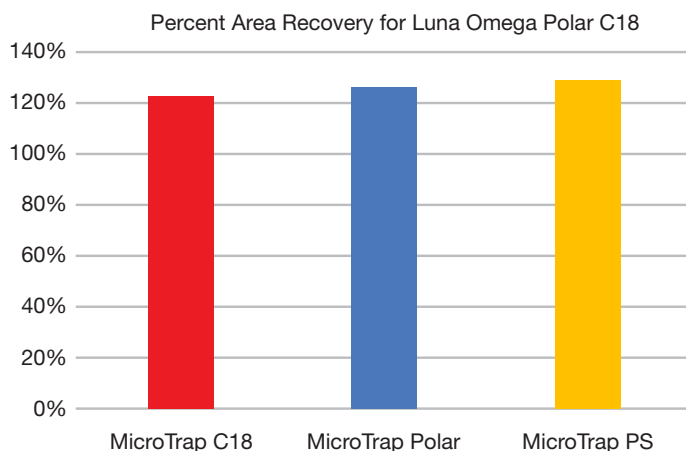


Micro LC Column and Trap Selectivity Configuration Comparison

In this example we combined complementary and orthogonal trap column and trap selectivities to analyze a 20 peptide mix. A difference in column and trap selectivity combination resulted in overall highest recovery in comparison to a similar selectivity combination.



App ID 25920



Tip

Test different MicroTrap selectivity combinations with your core-shell and fully porous micro LC column selectivities as unexpected combinations can yield improved recoveries depending upon the chemical characteristics of your compounds of interest.

The specific combination and differences between the column and trap's media can result in differences in relative recovery. The relative difference in recovery illustrates the importance of optimizing micro LC column and trap selectivity combinations and demonstrates how using different selectivity combinations can yield improved recoveries depending upon the chemical characteristics of your compounds of interest.

Micro LC Conditions

Column:	Kinetex® 2.6 µm XB C18	
	Luna® Omega 3 µm PS C18	
	Luna Omega 3 µm Polar C18	
Trap:	MicroTrap C18	
	MicroTrap Polar	
	MicroTrap PS	
Dimension:	50 x 0.3 mm Micro LC Column + 10 x 0.3 mm MicroTrap	
Mobile Phase:	A: Acetonitrile with 0.1 % Formic Acid	
	B: Water with 0.1 % Formic Acid	
Gradient:	Time (min)	% B
	0	3
	10	40
	12	80
	14	80
	15	3
	20	3
Flow Rate:	10 µL/min	
Temperature:	Ambient (25 °C)	
Detection:	MS/MS SCIEX® QTRAP® 5500	
Injector Temp.:	4 °C	
Column Temp.:	25 °C	
Injection Volume:	1 µL	
Sample:	20 stable-isotope-labeled (SIL) peptide mix	



Column and Trap Selectivity

Selection for Your Application



- Compatible with Your System
- Dependable and Available
- Wide Range of Selectivities

Phenomenex has extended its large range of high quality reversed phase selectivities to capillary and trap formats. These materials will allow you to achieve greater separation power for all your Micro LC applications.

General Selectivity and Popular Application Recommendations

General Purpose C18	Luna® Omega C18 MicroTrap C18	Very Hydrophobic Compounds	Luna C8(2) MicroTrap PS
	Kinetex® C18 MicroTrap C18		Jupiter® C4 MicroTrap WP C4
Polar Bases	Luna Omega PS C18 MicroTrap C18	Aromatic Compounds*	Kinetex Biphenyl MicroTrap Polar
	Synergi™ RP-Polar MicroTrap Polar		Luna Phenyl-Hexyl MicroTrap Polar
Polar Acids	Luna Omega Polar C18 MicroTrap C18	Isomers and Closely Related Compounds*	Kinetex F5 MicroTrap Polar
	Kinetex XB-C18 MicroTrap PS		Kinetex Biphenyl MicroTrap Polar
HILIC Conditions	Luna HILIC	Alkaline Mobile Phase	Gemini® C18
	Luna NH ₂		Kinetex EVO C18
Intact Proteins	Jupiter C4 MicroTrap WP C4	Peptide Quantitation	Luna Omega Polar C18 MicroTrap C18
	Jupiter C18 MicroTrap WP C4		Luna C18(2) MicroTrap C18
Peptide Mapping	Luna Omega Polar C18 MicroTrap C18	Metabolomics Screening	Kinetex F5 MicroTrap PS
	Kinetex XB-C18 MicroTrap PS		Luna NH ₂

*Phenyl-based phases are generally recommended for both Aromatic and Closely Related Compounds.

See pages 14-15 for Micro LC Column & Trap ordering information.

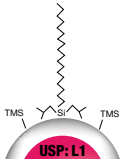
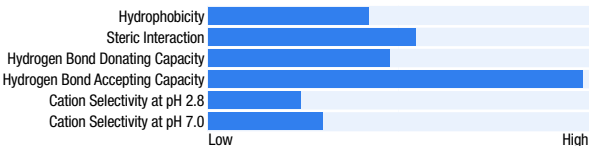
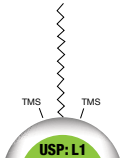
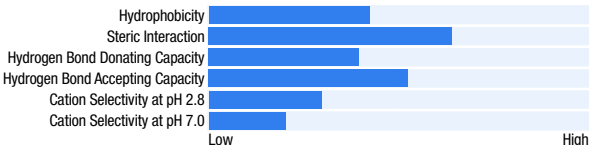
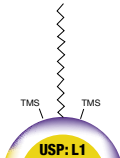
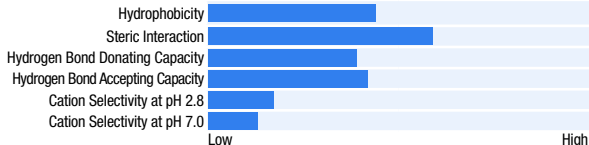
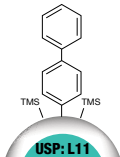
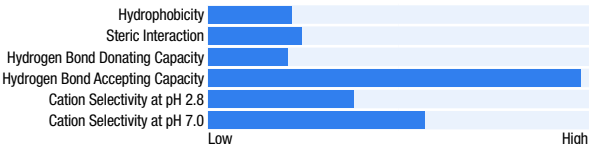
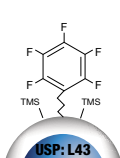
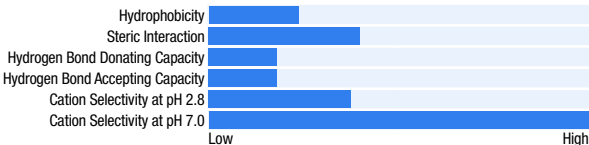




Kinetex

Core-Shell Technology

The finely tuned and unique core-shell manufacturing process delivers dramatic improvements in efficiency over conventional fully porous media which can be leveraged to increase resolution, reduce solvent consumption, decrease costs, and greatly improve productivity. The Kinetex core-shell family can deliver shockingly improved performance to your Micro LC separation.

Phases		
Ligand	Description	Selectivity Profile
	Kinetex XB-C18 Di-isobutyl side chains differentiate this C18 column. Low ligand density and an inactive surface makes 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 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 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.	

Material Characteristics

Packing Material	Total Particle Size (µm)	Pore Size (Å)	Effective Surface Area (m²/g)	Effective Carbon Load %	pH Stability
XB-C18	2.6	100	200	10	1.5-8.5*
C18	2.6	100	200	12	1.5-8.5*
EVO C18	2.6	100	200	11	1.0-12.0
Biphenyl	2.6	100	200	11	1.5-8.5*
F5	2.6	100	200	9	1.5-8.5*

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

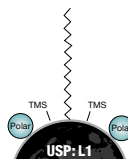
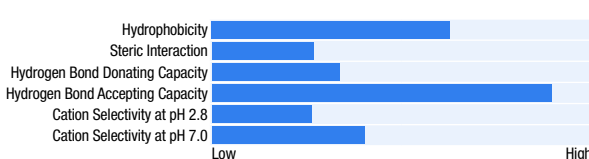
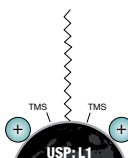
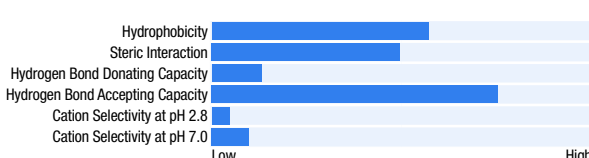
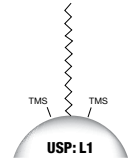
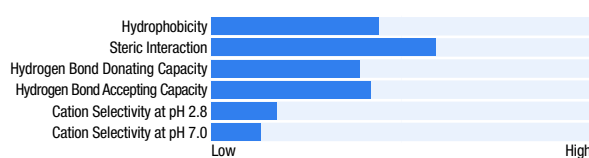
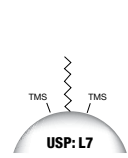
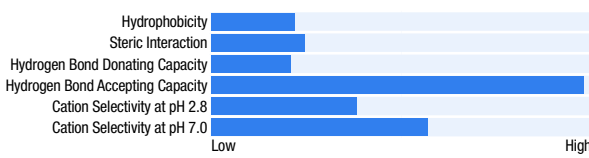
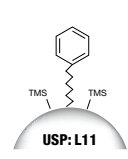
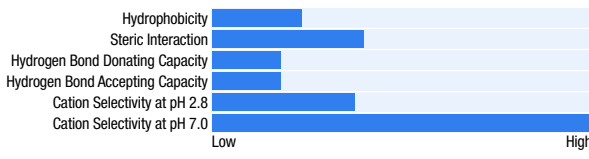
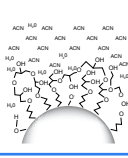
† 2.1 mm ID Kinetex columns are pressure stable up to 1000 bar. 3.0 mm and 4.6 mm ID Kinetex 2.6 µm columns are stable up to 600 bar. When using Kinetex 1.3 µm or 1.7 µm, increased performance can be achieved, however high pressure-capable instrumentation is required.



Luna Omega

Cutting Edge Fully Porous Silica

One of the world's leading HPLC brands, now enhanced for incredible HPLC, UHPLC, and Micro LC performance! Luna Omega columns culminate over 20 years of technological prowess, advancements, and innovation from Phenomenex! With astounding efficiency levels, highly versatile selectivities, and trusted accuracy, Luna Omega columns will take your chromatographic experience to a new level.

Phases		
Ligand	Description	Selectivity Profile
	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 positively 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.	
	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 HILIC HILIC phase that provides excellent selectivity for polar compounds; and improved MS sensitivity with low bleed.	

Material Characteristics

Packing Material	Particle Sizes (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Stability	Pressure Stability
Polar C18	3, 5	100	260	9	1.5 - 8.5*	1,000/bar
PS C18	3, 5	100	260	9	1.5 - 8.5*	
C18(2)	3, 5	100	400	17.5	1.5 - 9.0*	
C8(2)	3, 5	100	400	13.5	1.5 - 9.0*	
Phenyl-Hexyl	3, 5	100	400	17.5	1.5 - 9.0*	
HILIC	3, 5	200	200	5.7	1.5 - 8.0	

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



Faith in a Micro LC Column Connection

Security in a Click

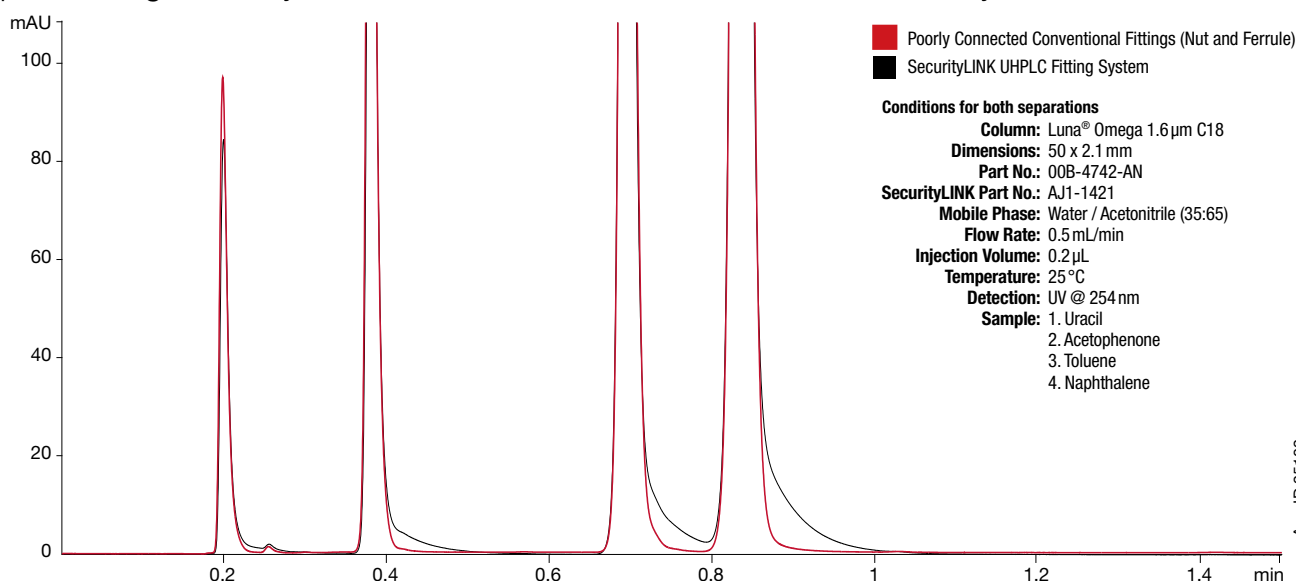
SecurityLINK™ Fingertight HPLC and UHPLC Connections

- No tools required for quick and easy installation
- Fitting self-adjusts at column inlet to ensure zero dead-volume for better chromatographic results
- Torque limiting technology prevents system and column port damage
- UHPLC and HPLC compatibility: pressure rated to 19,000 psi (1,310 bar)

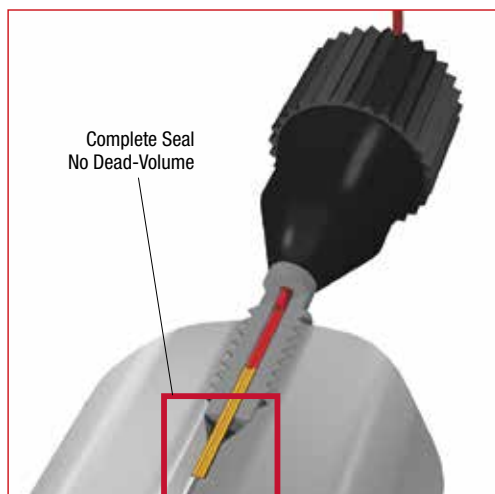


SecurityLINK vs. Poorly Connected Conventional Fittings

Poorly connected fittings are often the cause of carryover, band broadening, and peak tailing. SecurityLINK offers zero dead-volume connections every time.

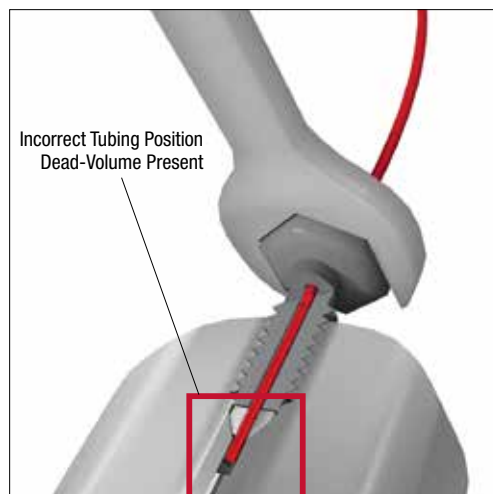


SecurityLINK UHPLC Fitting System



VS.

Poorly Connected Conventional Fittings (Nut and Ferrule)





SecurityLINK

Ordering Information

PEEKsil™ Double-Sided Fittings



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

Stainless Steel Double-Sided Fittings



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

PEEK-Lined Stainless Steel Double-Sided Fittings



ID (µm)	Length (mm)	Fitting Size Top (in.)	Fitting Size Bottom (in.)	Part No.
25	150	1/16	1/16	AJ1-3121
25	250	1/16	1/16	AJ1-3141
25	350	1/16	1/16	AJ1-3161
25	500	1/16	1/16	AJ1-3171
25	600	1/16	1/16	AJ1-3181
50	150	1/16	1/16	AJ1-3221
50	250	1/16	1/16	AJ1-3241
50	350	1/16	1/16	AJ1-3261
50	500	1/16	1/16	AJ1-3271
50	600	1/16	1/16	AJ1-3281
75	150	1/16	1/16	AJ1-3321
75	250	1/16	1/16	AJ1-3341
75	350	1/16	1/16	AJ1-3361
75	500	1/16	1/16	AJ1-3371
75	600	1/16	1/16	AJ1-3381
100	150	1/16	1/16	AJ1-3421
100	250	1/16	1/16	AJ1-3441
100	350	1/16	1/16	AJ1-3461
100	500	1/16	1/16	AJ1-3471
100	600	1/16	1/16	AJ1-3481
75	250	1/16	1/16	AJ1-2341
75	500	1/16	1/16	AJ1-2371
75	1000	1/16	1/16	AJ1-23A1
100	100	1/16	1/16	AJ1-2411
100	150	1/16	1/16	AJ1-2421
100	250	1/16	1/16	AJ1-2441
100	500	1/16	1/16	AJ1-2471
100	1000	1/16	1/16	AJ1-24A1

PEEKsil Single-Sided Fittings



ID (µm)	Length (mm)	Fitting Size Top (in.)	Fitting Size Bottom (in.)	Part No.
50	150	1/16	None	AJ1-2224
50	500	1/16	None	AJ1-2274
50	750	1/16	None	AJ1-2294
50	1000	1/16	None	AJ1-22A4

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



Micro LC Column Ordering Information



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

3 µm Micro LC Columns (mm)						
Phase	50 x 0.3	100 x 0.3	150 x 0.3	50 x 0.5	100 x 0.5	150 x 0.5
Luna® C8(2)100 Å	00B-4248-AC	—	—	00B-4248-AF	—	—
Luna C18(2) 100 Å	00B-4251-AC	00D-4251-AC	00F-4251-AC	00B-4251-AF	00D-4251-AF	00F-4251-AF
Luna NH2 100 Å	—	—	00F-4377-AC	—	—	—
Luna HILIC 200 Å	—	—	—	00B-4449-AF	—	—
Luna Phenyl-Hexyl 100 Å	—	00D-4256-AC	—	—	00D-4256-AF	—
Luna Omega PS C18 100 Å	00B-4758-AC	00D-4758-AC	00F-4758-AC	00B-4758-AF	00D-4758-AF	00F-4758-AF
Luna Omega Polar C18 100 Å	00B-4760-AC	00D-4760-AC	00F-4760-AC	00B-4760-AF	00D-4760-AF	00F-4760-AF
Gemini® C18 110 Å	00B-4439-AC	—	00F-4439-AC	00B-4439-AF	—	—

4 µm Micro LC Columns (mm)						
Phase	50 x 0.3	150 x 0.3	250 x 0.3	50 x 0.5	150 x 0.5	250 x 0.5
Synergi™ Max-RP 80 Å	—	—	—	00B-4337-AF	00F-4337-AF	—
Synergi Hydro-RP 80 Å	00B-4375-AC	00F-4375-AC	00G-4375-AC	00B-4375-AF	—	00G-4375-AF
Synergi Fusion-RP 80 Å	—	00F-4424-AC	—	—	00F-4424-AF	—
Synergi Polar-RP 80 Å	—	—	—	—	00F-4336-AF	—
Jupiter® Proteo 90 Å	00B-4396-AC	00F-4396-AC	—	—	00F-4396-AF	—

5 µm Micro LC Columns (mm)					
Phase	50 x 0.3	150 x 0.3	50 x 0.5	150 x 0.5	250 x 0.5
Luna C8(2) 100 Å	—	00F-4249-AC	—	—	—
Luna C18(2)100 Å	—	00F-4252-AC	—	00F-4252-AF	00G-4252-AF
Luna Phenyl-Hexyl 100 Å	00B-4257-AC	—	00B-4257-AF	—	—
Luna Omega Polar C18 100 Å	00B-4760-AC	00F-4760-AC	00B-4760-AF	00F-4760-AF	—
Luna Omega PS C18 100 Å	00B-4758-AC	00F-4758-AC	00B-4758-AF	00F-4758-AF	—
Jupiter C18 300 Å	00B-4053-AC	—	00B-4053-AF	00F-4053-AF	—
Jupiter C4 300 Å	00B-4167-AC	—	00B-4167-AF	—	—

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Micro LC Trap Selectivities

Tip!

It's recommended that you optimize the selectivity between your Micro LC trap and column configuration to maximize your separation performance. See page 9 for phase recommendations.

MicroTraps

Phase	10 x 0.3 mm	10 x 0.5 mm	Unit
MicroTrap C18	05N-4252-AC	05N-4252-AF	3/pk
MicroTrap Polar	05N-4754-AC	05N-4754-AF	3/pk
MicroTrap PS	05N-4753-AC	05N-4753-AF	3/pk
MicroTrap WP C4	05N-4167-AC	05N-4167-AF	3/pk



MicroTraps Fittings

Part No.	Description	Unit
AQO-7602	PEEKlok™ fittings with 6-40 thread for 1/32" OD tubing (2 x fittings, 6 x ferrules and 1 x tightening tool)	ea
AQO-7603	PEEKlok fittings with 6-32 thread for 1/32" OD tubing (2 x fittings, 6 x ferrules and 1 x tightening tool)	ea
AQO-7601	PEEKlok fittings with 10-32 thread for 1/16" OD tubing with low profile hex head (2 x fittings, 6 x ferrules and 1 x wrench)	ea



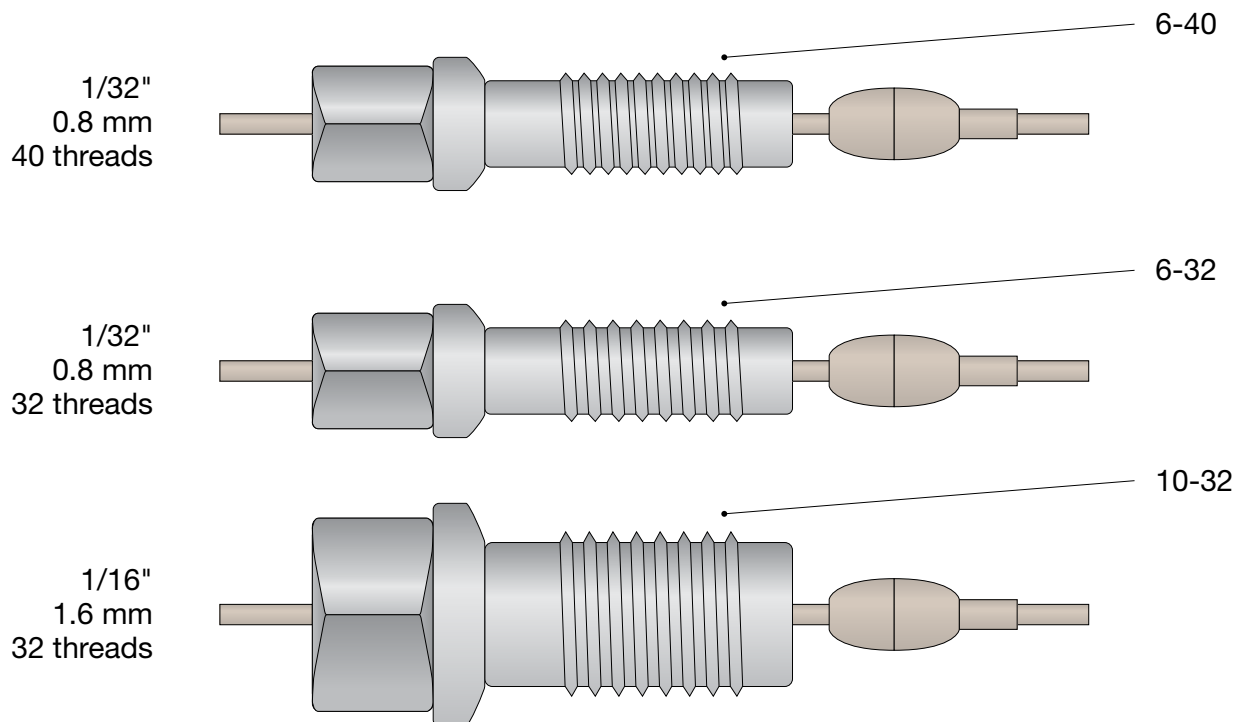
CAUTION:

The installation of an improper nut could potentially cause cross-threading or damage to the port and fitting

Verify fit: Micro LC Traps are available for 1/16" connections (10-32 thread) or with 1/32" connections (6-40 or 6-32 thread).

MicroTraps

Threads per Inch	Pitch (inches)	Pitch (mm)
32	0.0313	0.794
40	0.025	0.635



Have a question?

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