Luna™ Omega

World Renowned HPLC Media

Reinvented for UHPLC!

Links to over 20 Pharmaceutical Technical Notes inside!

Staggering LC Efficiencies and Performance

- Extreme Ruggedness and Mechanical Strength
- Perfect Complement to Kinetex™ Core-Shell Technology

5 µm

3 µm

1.6 µm

Four Selectivities for UHPLC and HPLC

C18 (1.6 µm, 3 µm, 5 µm)
Polar C18 (1.6 µm, 3 µm, 5 µm)
PS C18 (1.6 µm, 3 µm, 5 µm)
SUGAR (3 µm)

www.phenomenex.com/LunaOmega

phenomenex™

Luna Omega

Cutting Edge Fully Porous Silica Particle

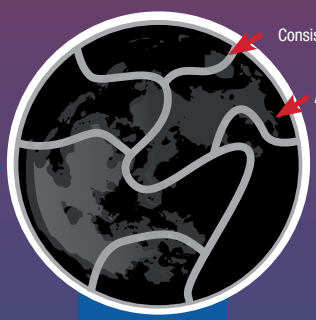
Luna® is one of the most recognized HPLC brands on the market, delivering high efficiency, ruggedness, reproducibility, and dependability for a wide range of analyses. Luna Omega builds upon this legacy with an innovative yet rugged silica particle architecture, designed and manufactured by Phenomenex based on more than 20 years of applied knowledge, invention, and customer experience.

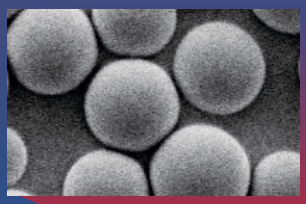
Novel Design and Manufacturing Process

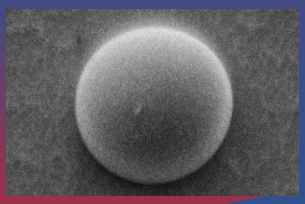
Within the novel manufacturing process of Luna Omega silica, we implement a proprietary processing technique to gain greater particle inertness, a stronger particle morphology, and more consistent porosity.

Thermal Modified Pore Structure

Most importantly, through our proprietary process, we eliminate micropores, further improving column efficiency, inertness, and reproducibility.







Enhanced with 20 Years of Technology, Innovation, and Experience

One of the world's leading HPLC brands, now enhanced for incredible UHPLC performance! Luna Omega LC columns culminate 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 UHPLC experience to a new level.

Ω

Luna® Omega UHPLC columns
will boost your UHPLC instrumentation!

Why Luna Omega Should Be in Your Lab?

Omega

C18

Polar C18

PS C18

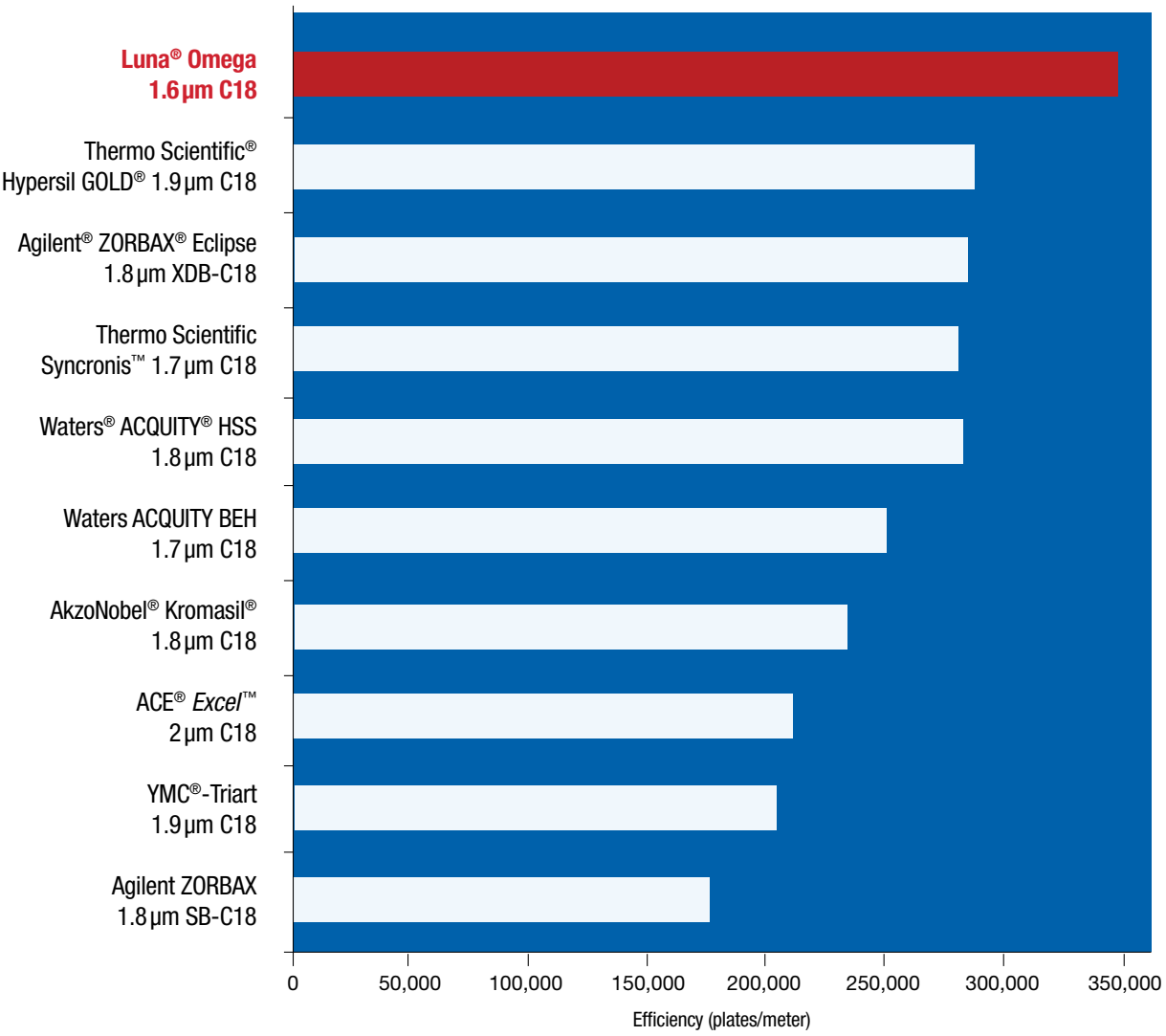
SUGER

Reinvented

Astounding Performance

The undeniably high efficiency levels found in each Luna Omega UHPLC/HPLC column provides you with the potential of huge gains in method performance. While traditional silica and hybrid fully porous particles claim high performance, when compared to Luna Omega, they drastically fall short and prevent UHPLC scientists from reaching their UHPLC potential.

UHPLC Efficiency Comparison



Conditions for all columns:

Dimension: 50 x 2.1 mm
Mobile Phase: Acetonitrile/Water (65:35)
Flow Rate: 0.5 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
System: ACQUITY UPLC®
Sample: Naphthalene*

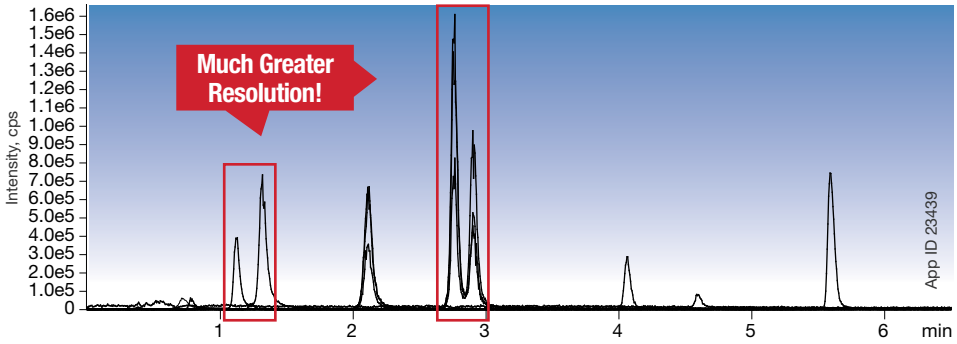
Comparative separations may not be representative of all applications.

*Efficiency (plates/meter) comparison is based on peak performance associated with the compound naphthalene for all columns.

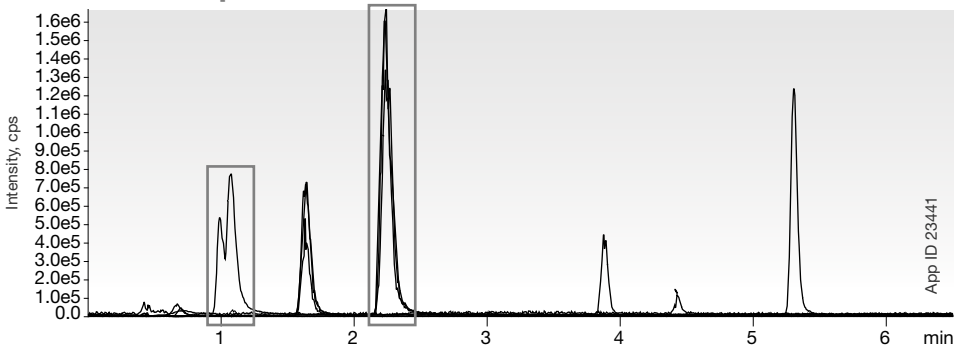
Separation Muscle

Our industry leading bonding technologies in conjunction with high efficiency levels ensure excellent stationary phase coverage and improved separation power. Now, with Luna Omega 1.6, 3, or 5 µm, you can turn difficult separations into resolution that is reliable and repeatable.

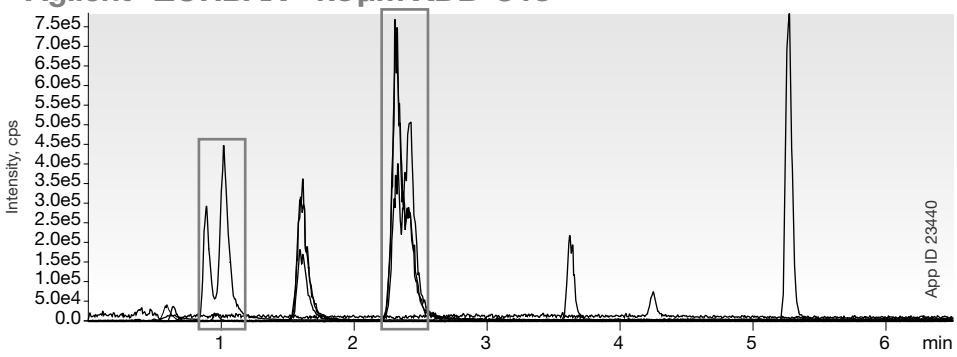
Luna® Omega 1.6µm C18



ACE® *Excel*™ 2µm C18-AR



Agilent® ZORBAX® 1.8µm XDB-C18



Conditions for all columns:

Columns: Luna Omega 1.6µm C18
ZORBAX 1.8µm XDB-C18
ACE *Excel* 2µm C18-AR

Dimension: 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	3
7	90

Flow Rate: 0.3 mL/min

Temperature: 30 °C

Detection: MS/MS

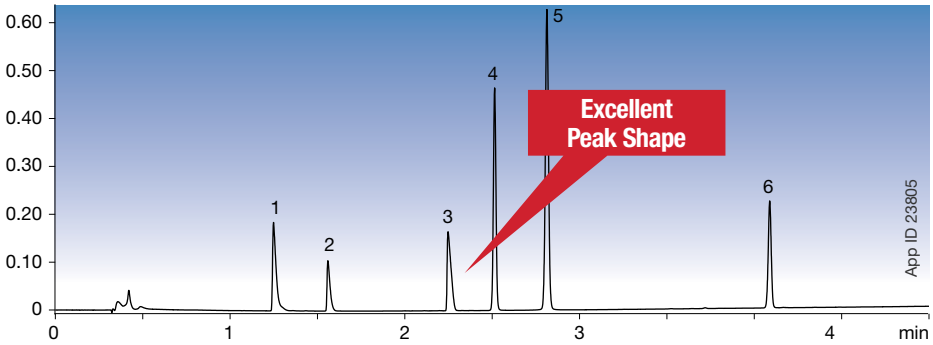
Sample:
1. Succinic acid
2. MMA
3. Glutaric acid
4. Methylsuccinate
5. Ethylmalonic acid
6. Hippuric acid
7. Homovanillic acid
8. Suberic acid

Comparative separations may not be representative of all applications.

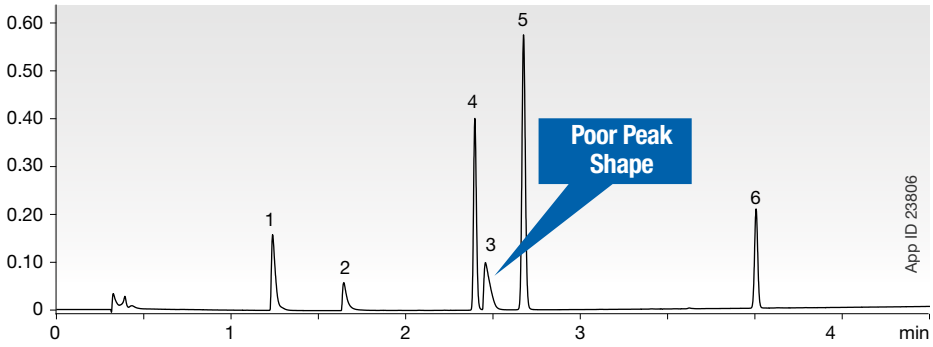
Inert Foundation

Luna Omega HPLC and UHPLC columns contain a unique silica that is modified by using a proprietary, post-synthetic thermal treatment process to provide extraordinary mechanical strength and significantly greater inertness than traditional fully porous and hybrid materials. With this process, and our commitment to continuous improvement, the Luna Omega column is manufactured reproducibly from column-to-column, to batch-to-batch.

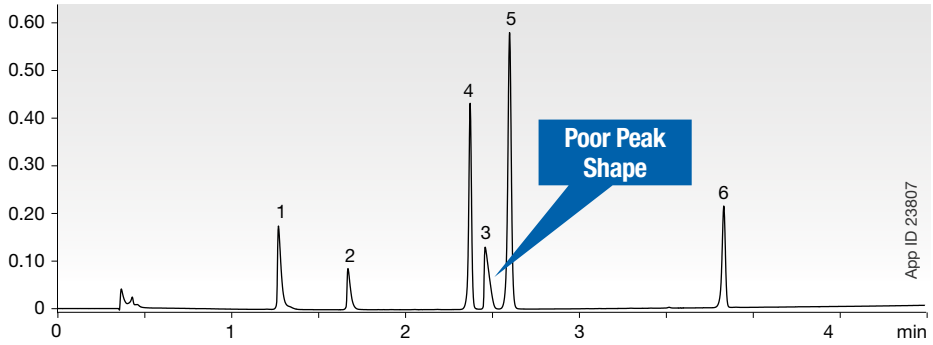
Luna® Omega 1.6µm C18



Waters® ACQUITY® BEH 1.7µm C18



Thermo Scientific® Hypersil GOLD® 1.9µm C18



Conditions for all columns:

Columns: Luna Omega 1.6µm C18
ACQUITY BEH 1.7µm C18
Hypersil GOLD 1.9µm 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

Comparative separations may not be representative of all applications.

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

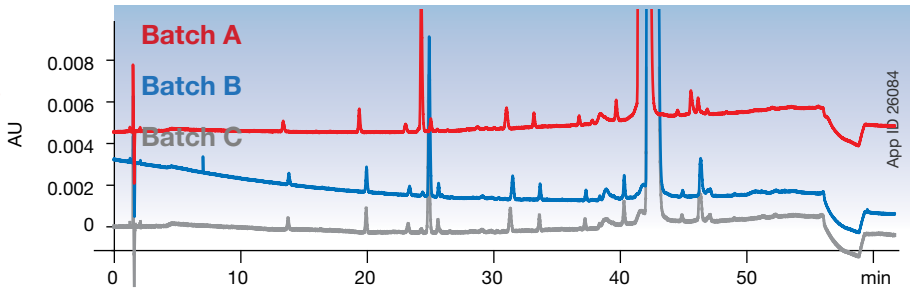
In this example, we compared three batches of Luna Omega C18 using all three different particle sizes on a complex QC Pharmaceutical representative sample.

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

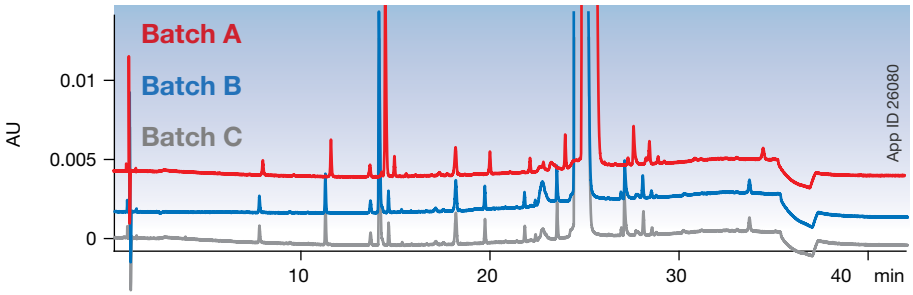


Column: Luna Omega 5 µm C18
Dimension: 250 x 4.6 mm
Part No.: 00G-4785-E0

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

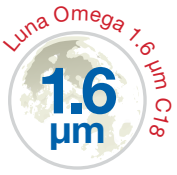
Luna Omega 3 µm C18

Impurity Profile 3 Batch Comparison



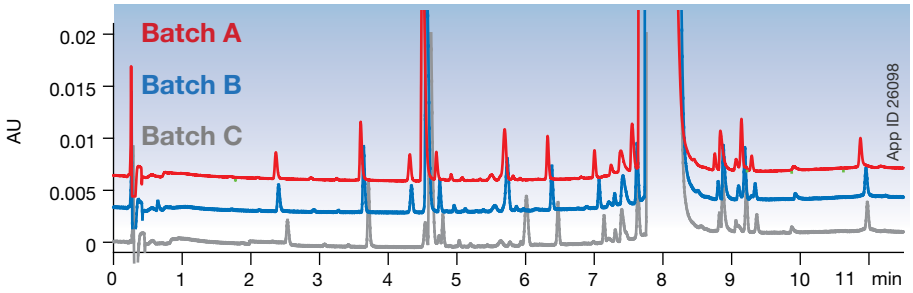
Column: Luna Omega 3 µm C18
Dimension: 150 x 4.6 mm
Part No.: 00F-4784-E0

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

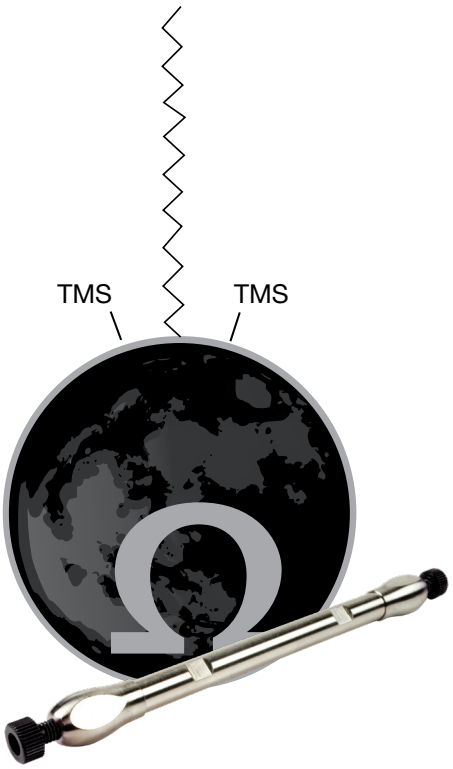
Selectivity Highlight Luna Omega C18

Selectivity Highlight Luna Omega C18

Luna® Omega C18 is an excellent first choice for chromatographers who are just starting method development or attempting to improve upon existing chromatographic results with other C18s. With its higher performance potential, excellent retention profile, and greater inertness, the Luna Omega C18 was designed to be the new reproducible, all-purpose HPLC/UHPLC solution for all industries.

Phase	C18
Particle Size	1.6, 3, 5 µm
Pore Size	100 Å
pH Range	1.5 - 8.5*
Surface Area	260 m^2/g
Carbon Load	11 %
Pressure Limit	1034 bar/15 000 psi
USP Listing	L1

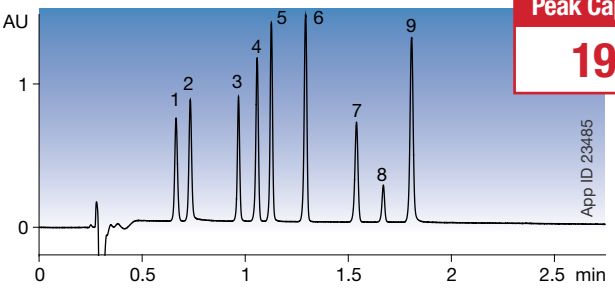
*pH stability under gradient conditions. pH stability is 1.5-10 under isocratic conditions.



Greater Retention and Better Results

Higher efficiency levels in combination with excellent stationary phase coverage and greater particle inertness, translates to improved separation power for you. Now you can utilize the greater retention of Luna Omega C18 to tackle both easy and difficult separations.

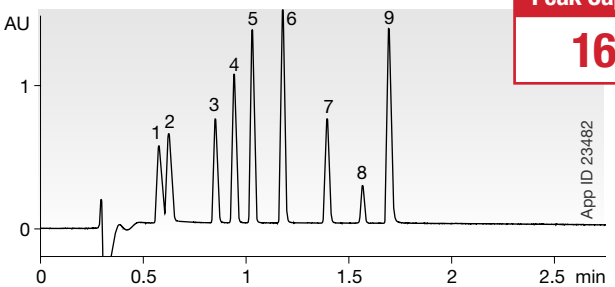
Luna Omega 1.6 µm C18



Peak Capacity
196

Greater Peak Capacity and Retention

Waters® ACQUITY® BEH 1.7 µm C18



Peak Capacity
160

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	10
3	55
3.5	55
3.51	10
5	10

Flow Rate: 0.4 mL/min

Temperature: Ambient

Detection: UV @ 205 nm

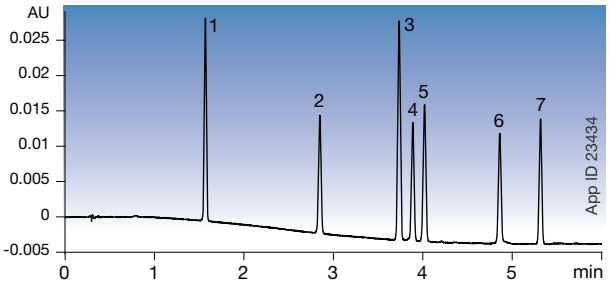
Sample:
1. Acetaminophen
2. 4-Aminobenzoic Acid
3. 4-Hydroxybenzoic Acid
4. 2-Acetaminophenol
5. 3-Hydroxybenzoic Acid
6. Salicylicamide
7. Phenol
8. Benzoic Acid
9. Salicylic Acid

Comparative separations may not be representative of all applications.

Small and Large Compound Mixtures

Strong and focused hydrophobic retention, incredible efficiency and valuable inertness of Luna® Omega C18 columns make them an excellent choice for small mixtures of compounds differing in hydrophobicity as well as large mixtures of compounds like impurity/degradation profiles and peptide maps.

Phenols



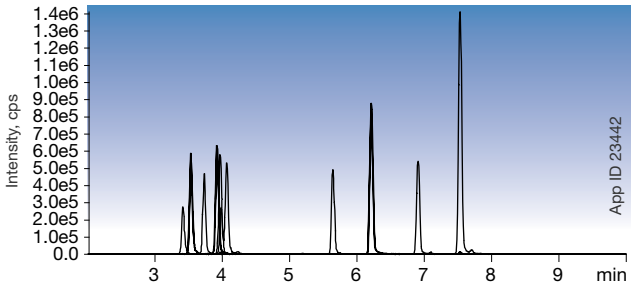
Columns: Luna Omega 1.6µm C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4742-AN
Mobile Phase: A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in Acetonitrile

Gradient:

Time (min)	% B
0	5
6	50
7	50
7.1	5
9	5

Flow Rate: 0.4 mL/min
Temperature: 22 °C
Detection: UV @ 270 nm
Sample:
1. 3-Hydroxyphenol
2. Phenol
3. 4-Nitrophenol
4. 4-Methylphenol
5. 2-Methylphenol
6. 2,4-Dimethylphenol
7. 1-Naphthol

Synthetic Cannabinoids



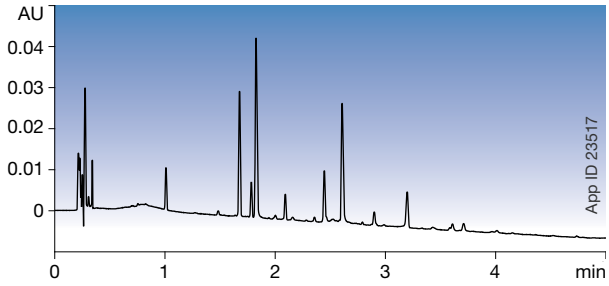
Columns: Luna Omega 1.6µm C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4742-AN
Mobile Phase: A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in Acetonitrile

Gradient:

Time (min)	% B
0	50
6	100

Flow Rate: 0.3 mL/min
Temperature: 30 °C
Detection: MS/MS (SCIEX® API 4000™)
Sample:
1. JWH-073 Butanoic acid metabolite
2. JWH-073 3-hydroxybutyl metabolite
3. JWH-018 Pentanoic acid metabolite
4. JWH-073 4-hydroxybutyl metabolite
5. JWH-018 4-hydroxypentyl metabolite
6. AM-2201 4-hydroxypentyl metabolite
7. JWH-018 5-hydroxypentyl metabolite
8. AM-694
9. AM-2201
10. JWH-073
11. JWH-018

OTC Drug - Pill Formulation Profile



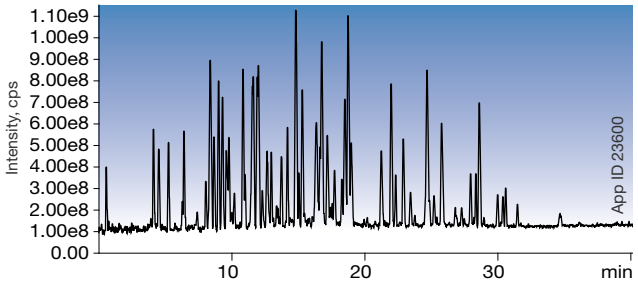
Columns: Luna Omega 1.6µm C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4742-AN
Mobile Phase: A: 20 mM Potassium Phosphate pH 7.2
B: Acetonitrile

Gradient:

Time (min)	% B
0	5
5	70
6	70
6.1	5
8	5

Flow Rate: 0.4 mL/min
Temperature: Ambient
Detection: UV @ 254 nm
Sample: OTC Drug Pill

Peptide Map – Digested BSA



Columns: Luna Omega 1.6µm C18
Dimension: 100 x 2.1 mm
Part No.: 00D-4742-AN
Mobile Phase: A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in Acetonitrile

Gradient:

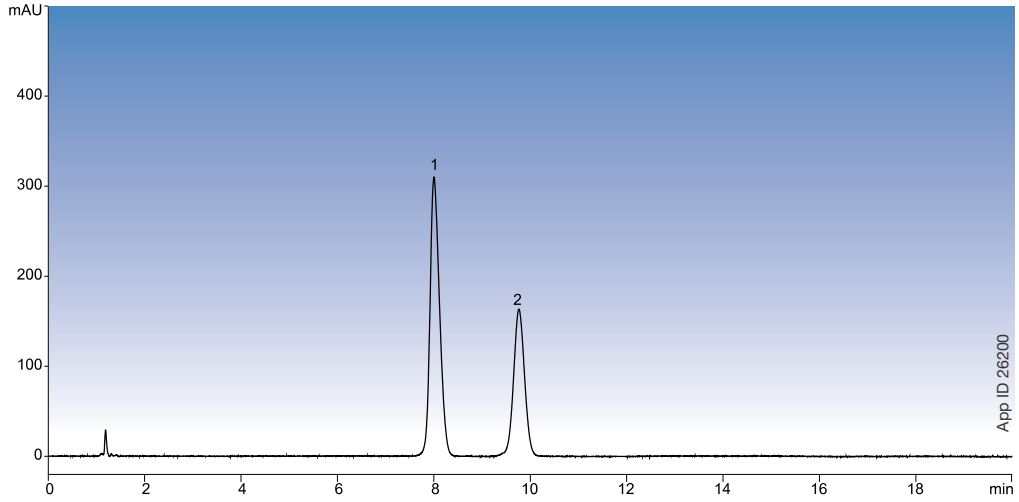
Time (min)	% B
0	3
50	50
50.1	3

Flow Rate: 0.4 mL/min
Temperature: 40 °C
Detection: MS/MS (SCIEX API 4000)
Sample: Tryptic digest of BSA

Comparative separations may not be representative of all applications.

Small Molecule Organic Compounds

Sildenafil Citrate RS and Sildenafil N-Oxide USP System Suitability Solution on Luna® Omega 5 µm C18

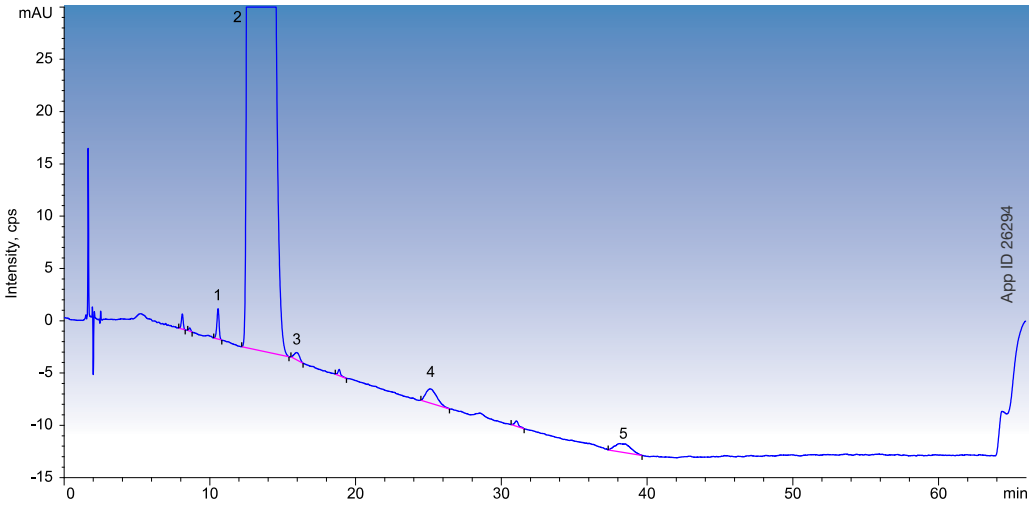


Columns: Luna Omega 5 µm C18
Dimension: 150 x 4.6 mm
Part No.: 00F-4785-E0
Elution Type: Isocratic
Find the full elution online at www.phenomenex.com/Application/Detail/26200

Gradient:	Time (min)	% B
	20	0

Flow Rate: 1.4 mL/min
Temperature: 30 °C
Detection: UV @ 290 nm
Sample: 1. Sildenafil citrate
2. Sildenafil N-Oxide

Lisinopril Ph. Eur Reference Solution A+B+C+D on Luna Omega 5 µm C18



Columns: Luna Omega 5 µm C18
Dimension: 250 x 4.6 mm
Part No.: 00G-4785-E0
Elution Type: Gradient
Find the full elution online at www.phenomenex.com/Application/Detail/26294

Gradient:	Time (min)	% B
	0	0
	2	0
	37	100
	62	100
	62.5	0
	66	0

Flow Rate: 1.4 mL/min
Temperature: 30 °C
Detection: UV @ 290 nm
Sample: 1. Impurity A
2. Lisinopril
3. Impurity E
4. Impurity F
5. Impurity G

C18 Application Highlight

Ph. Eur. Monograph 401: Levothyroxine Sodium

The suitability of this Luna Omega reversed phase HPLC column for the analysis of related substances according to Ph. Eur. monograph 401 and effect of adapting the flow rate according to the allowable adjustments of chapter 2.246 of the European Pharmacopoeia is shown here. System suitability requires a resolution of greater than 5 for the separation of impurity A and Levothyroxine.

Figure 2a: Reference a on Luna® Omega 3 µm C18 with flow rate 1.0 mL/min

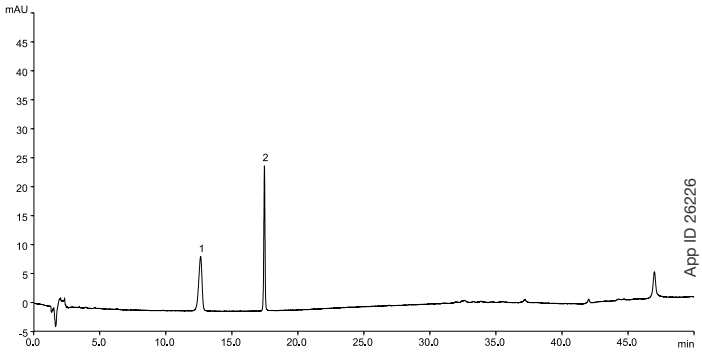


Figure 2b: Reference d on Luna Omega 3 µm C18 with flow rate 1.0 mL/min

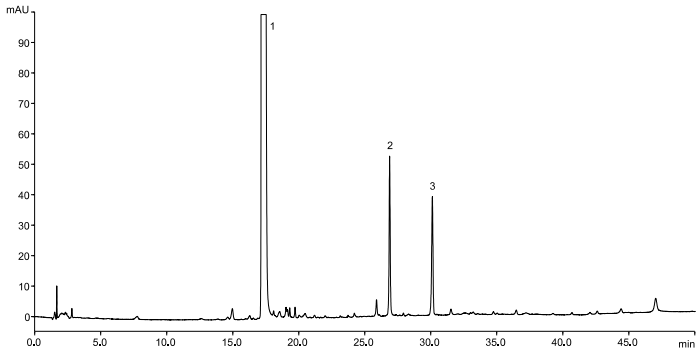


Figure 3a: Reference a on Luna Omega 3 µm C18 with flow rate 1.32 mL/min

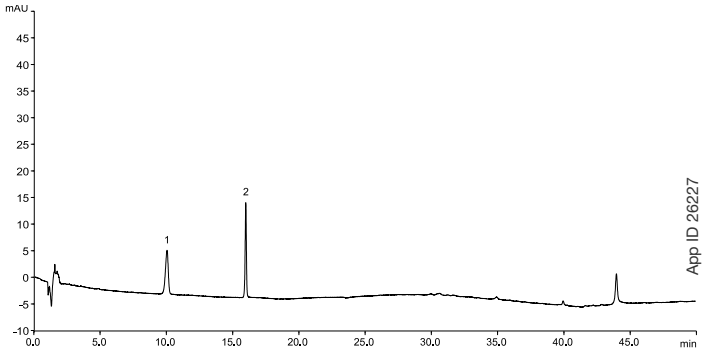
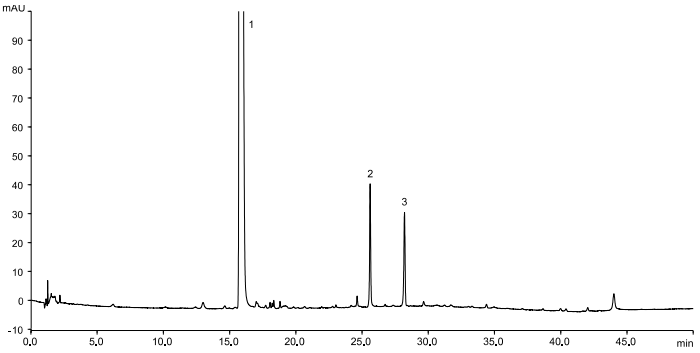


Figure 3b: Reference d on Luna Omega 3 µm C18 with flow rate 1.32 mL/min



HPLC Conditions

Columns: Luna Omega 3 µm C18
Dimension: 150 x 4.6 mm
Part No.: 00F-4874-E0
Elution Type: A: 1.97 g phosphoric acid in 2 L water
B: 1.97 g phosphoric acid in 2 L acetonitrile

Gradient:

Time (min)	% B
0	30
10	30
40	80
50	80

Flow Rate: as indicated on the chromatograms
Temperature: 25 °C
Injection:: 25 µL
System: Shimadzu® Nexera® XR
Detector: UV @ 225 nm

See the full application note online

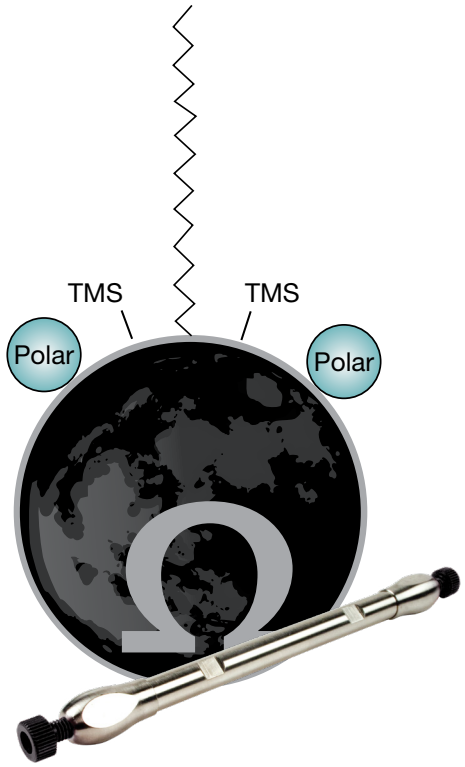
Click here to view →

Selectivity Highlight
Luna Omega Polar C18

Luna Omega Polar C18 is a novel UHPLC stationary phase capable of providing a unique selectivity within a wide elution window and increased retention for both polar and non-polar analytes. The all-purpose C18 ligand provides hydrophobic interactions while a polar modified particle surface provides enhanced polar retention and also aqueous stability. These attributes make the Luna Omega Polar C18 an excellent choice for balanced retention of polar and hydrophobic compounds as well as to solely enhance retention of highly polar compounds.

Phase	Polar C18
Particle Size	1.6 µm, 3 µm, 5 µm
Pore Size	100 Å
pH Range	1.5 - 8.5*
Surface Area	260 m^2/g
Carbon Load	9 %
Pressure Limit	1034 bar/15 000 psi
USP Listing	L1

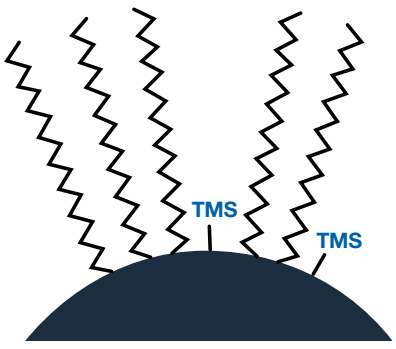
*pH stability under gradient conditions. pH stability is 1.5-10 under isocratic conditions.



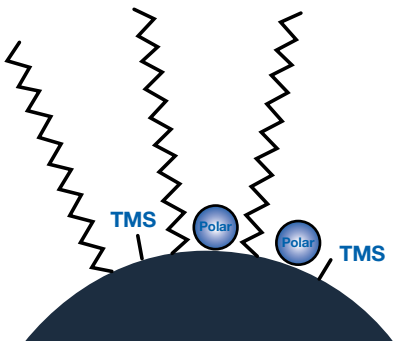
A C18, But Different

Luna Omega Polar C18 is a uniquely modified C18-based chemistry that has been optimized to improve the performance of polar analyses. This new particle surface chemistry makes the Polar C18 applicable to all industries that utilize UHPLC for mixtures of polar and non-polar compounds.

Luna Omega C18 silica surface



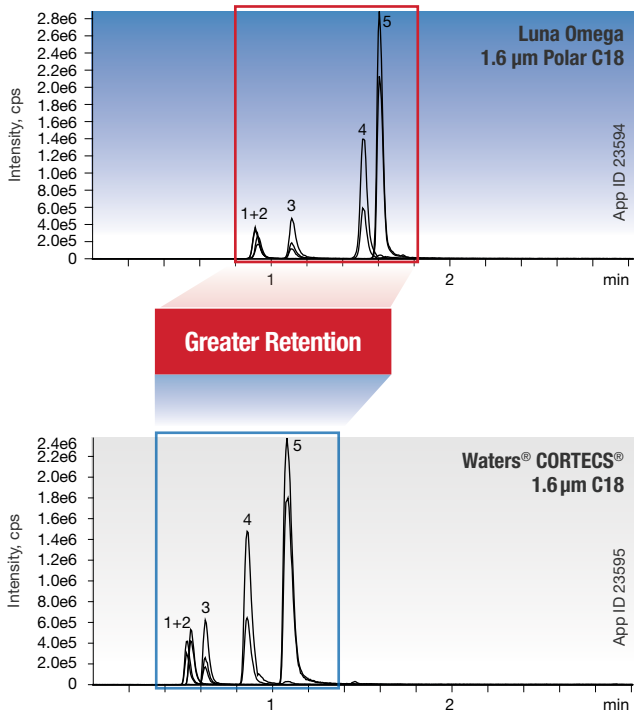
Luna Omega Polar C18 silica surface



Greater Polar Retention

With its polar modified surface, the Luna® Omega Polar C18 offers UHPLC users enhanced separation power that can greatly improve resolution values for target compounds.

Nicotine and Metabolites



Conditions for all columns:

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

Dimension: 50 x 2.1 mm

Mobile Phase: A: 10 mM Ammonium Formate with 0.1% Formic Acid
B: Acetonitrile with 0.1% Formic Acid

Gradient:

Time (min)	% B
0	2
3	90
3.1	2

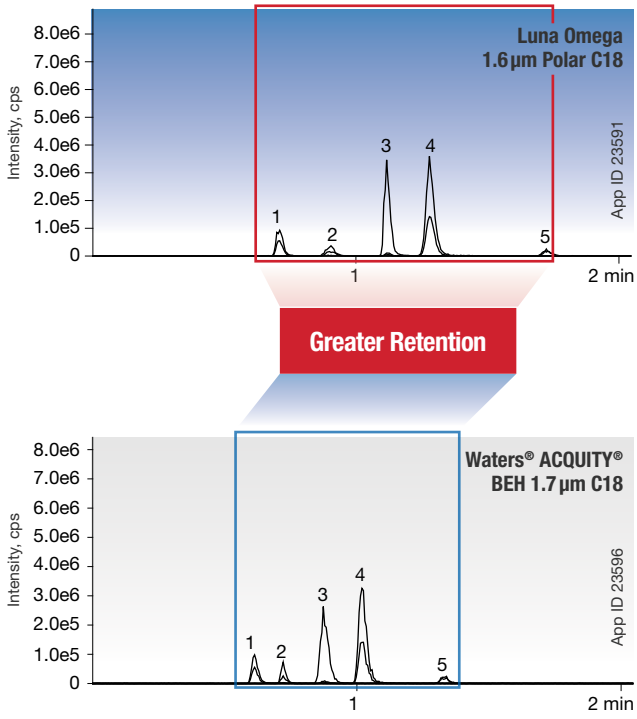
Flow Rate: 0.4 mL/min

Temperature: 25 °C

Detection: MS/MS (SCIEX API 4000™)

Sample: 1. Nornicotine
2. 3-Hydroxycotinine
3. Nicotine
4. Cotinine
5. Anabasine

Catecholamines



Conditions for all columns:

Columns: Luna Omega 1.6 µm Polar C18
ACQUITY BEH 1.7 µm C18

Dimension: 100 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
3	90
3.1	0

Flow Rate: 0.4 mL/min

Temperature: 50 °C

Detection: MS/MS (SCIEX API 4000)

Sample: 1. Norepinephrine
2. Epinephrine
3. Normetanephrine
4. Dopamine
5. Metanephrine

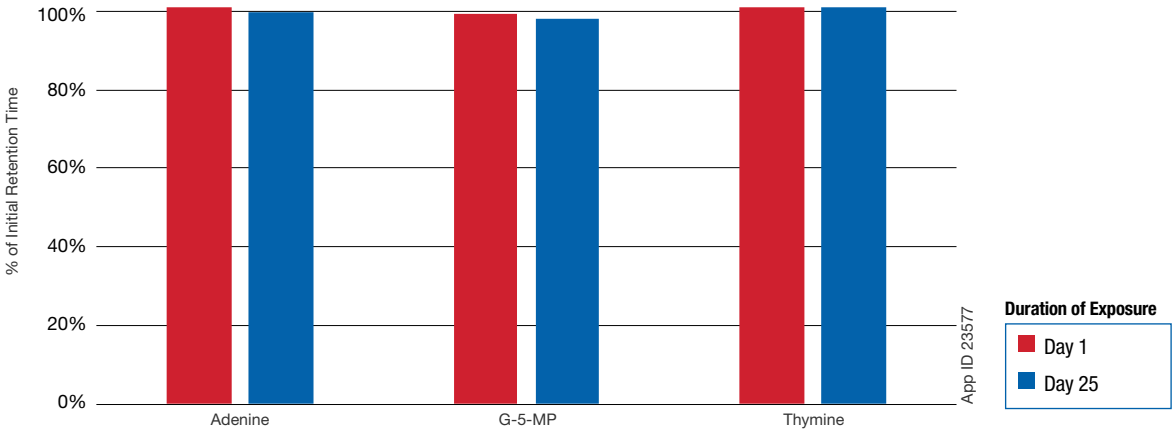
Comparative separations may not be representative of all applications.

100 % Aqueous Stability

No Stationary Phase Collapse

Traditional C18 phases are known to collapse under 100% aqueous conditions, causing retention loss of compounds and a method development headaches. That is why an advanced proprietary bonding technology was used for the Luna Omega Polar C18 in order to ensure aqueous stability. The graph below displays the excellent stability of Polar C18 in 100% aqueous buffer conditions for over 2 weeks.

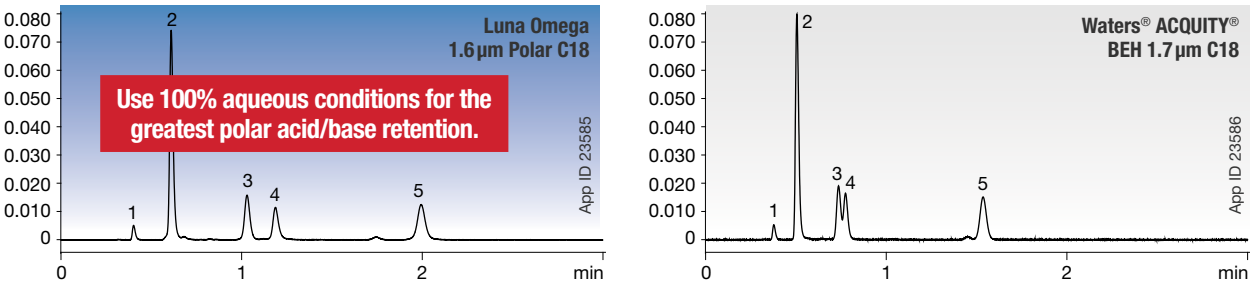
Aqueous Stability of Luna Omega Polar C18



Conditions for all columns:

Columns: Luna Omega 1.6 µm Polar C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4748-AN
Mobile Phase: 10 mM Ammonium Formate with 0.1 % Formic Acid
Flow Rate: 0.4 mL/min
Temperature: 22 °C
Detection: UV @ 254 nm
Sample: 1. Adenine
2. Guanosine-5-Monophosphate
3. Thymine

Nucleosides in 100 % Aqueous Conditions



Conditions for all columns:

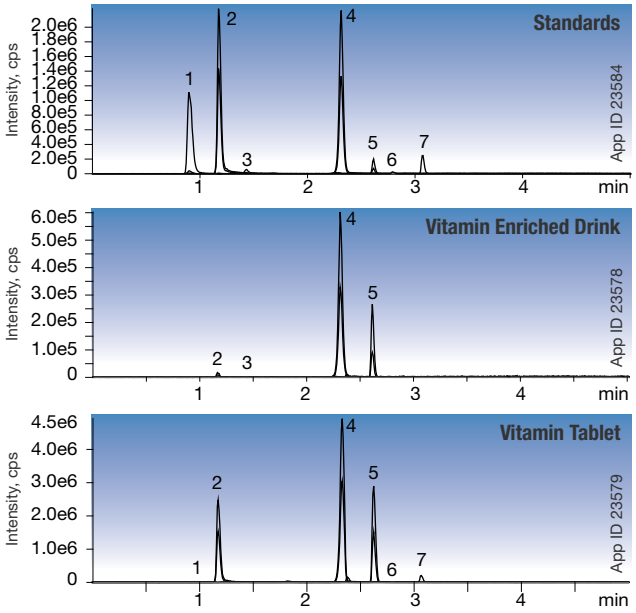
Columns: Luna Omega 1.6 µm Polar C18
ACQUITY BEH 1.7 µm C18
Dimension: 50 x 2.1 mm
Mobile Phase: 20 mM Ammonium Formate pH 3.0
Flow Rate: 0.4 mL/min
Temperature: 22 °C
Detection: UV @ 285 nm
Sample: 1. Thiourea
2. 5-Fluorocytosine
3. Guanosine-5-Monophosphate
4. Adenine
5. Thymine

Comparative separations may not be representative of all applications.

Versatility – Hydrophobic and Polar Interactions

Combined retention of polars and non-polars by the Luna Omega Polar C18 gives you an incredible range of potential success when working with methods from just about any industry. Here we illustrate the usefulness of these interaction mechanisms with water soluble vitamins from drink and tablet, a multi-compound antibiotic screen, and a UHPLC/MS/MS separation of algal toxins.

Water Soluble Vitamins



Conditions for all columns:

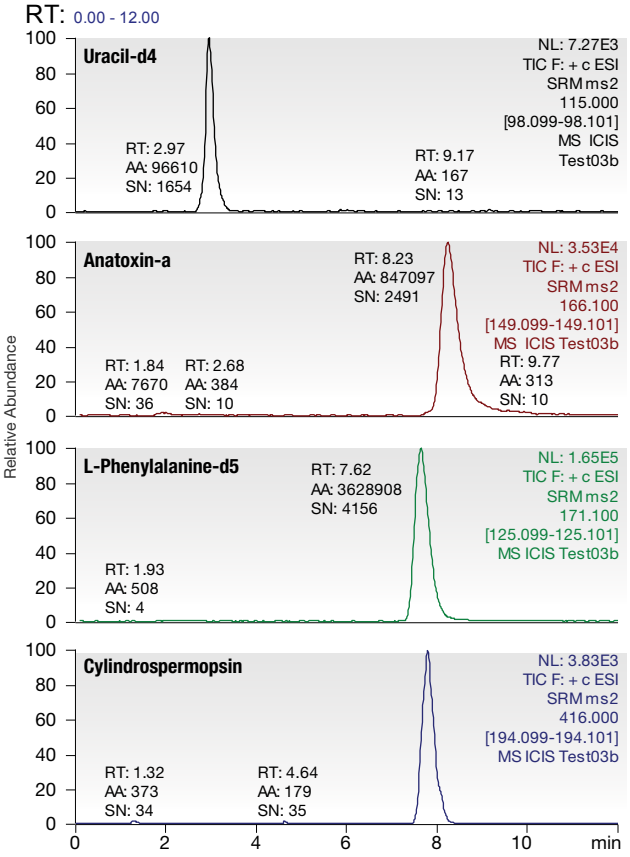
Columns: Luna Omega 1.6 µm Polar C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4748-AN
Mobile Phase: A: 10 mM Ammonium Formate with 0.1 % Formic Acid
B: Acetonitrile with 0.1 % Formic Acid

Gradient:

Time (min)	% B
0	0
4	90
4.1	0
7	0

Flow Rate: 0.4 mL/min
Temperature: 40 °C
Detection: MS/MS (SCIEX API 4000™)
Sample:
1. Pyridoxamine
2. Thiamine
3. Nicotinic acid
4. Pyridoxine
5. Pantothenic acid
6. Folic acid
7. Riboflavin

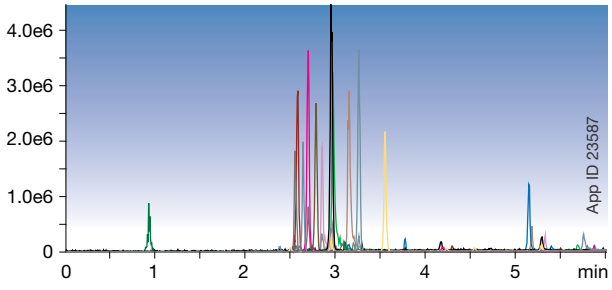
Algal Toxins (EPA 545)



Find complete method at Phenomenex.com

Application ID: 23569

Antibiotic Screen



Columns: Luna Omega 1.6 µm Polar C18
Dimension: 50 x 2.1 mm
Part No.: 00B-4748-AN
Mobile Phase: A: 10 mM Ammonium Formate with 0.1 % Formic Acid
B: Acetonitrile with 0.1 % Formic Acid

Gradient:

Time (min)	% B
0	0
0.5	95
5	0
5.1	0

Flow Rate: 0.5 mL/min
Temperature: 40 °C
Detection: MS/MS (SCIEX API 4000)

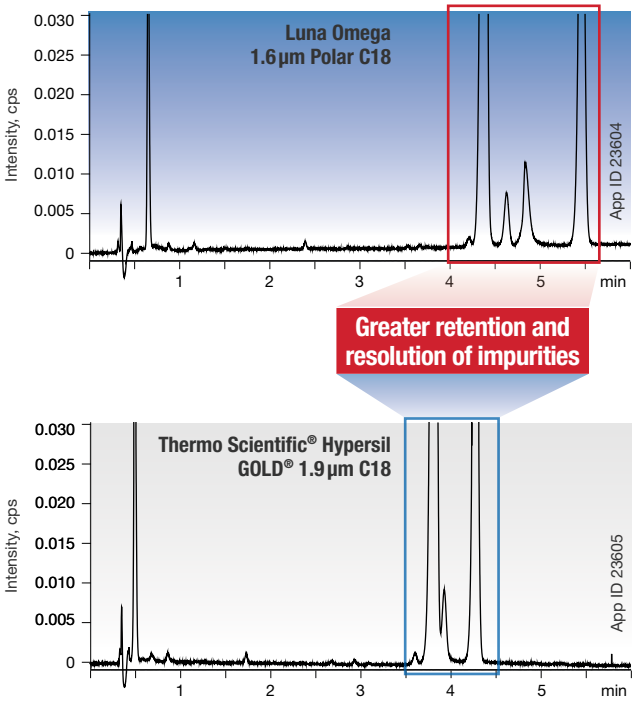
1. Sulfaguanidine
2. Sulfadiazine
3. Cefalexin
4. Lincomycin
5. Amoxicillin
6. Sulfathiazole
7. Sulfapyridine
8. Cefazolin
9. Sulfamerazine
10. Ciprofloxacin
11. Sulfamethazine
12. Sulfamonomethoxine
13. Enrofloxacin
14. Difloxacin
15. Chlortetracycline
16. Sulfamethoxazole
17. Florfenicol
18. Sulfaquinoxaline
19. Oxacillin
20. Sulfadimethoxine

Comparative separations may not be representative of all applications.

Highly Useful Alternative to the Common C18

Unlike traditional UHPLC C18 stationary phases, the polar and hydrophobic versatility of Polar C18 combined with its high efficiency levels allow for enhanced separation power. Combine that with 100 % aqueous stability and you can really see how the Luna® Omega Polar C18 can potentially lead to more separation success compared to traditional C18 columns.

Ketotifen Impurity Profile



Conditions for all columns:

Columns: Luna Omega 1.6 µm Polar C18
Hypersil GOLD 1.9 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	5
2.5	15
6	20
10	30
10.01	5
13	5

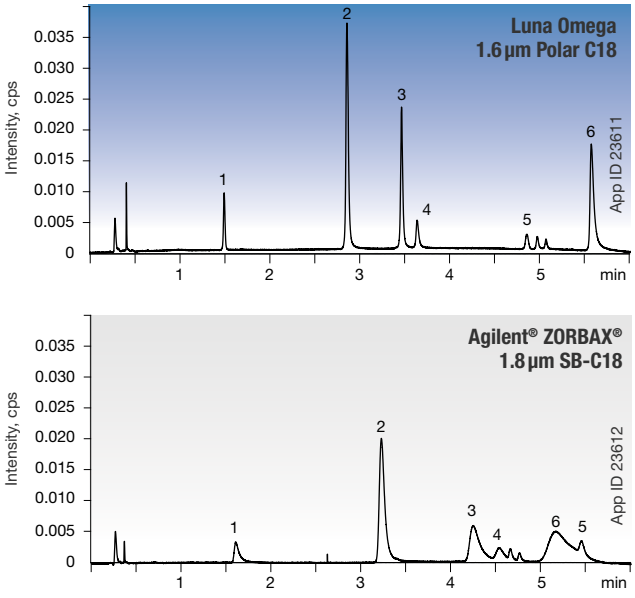
Flow Rate: 0.4 mL/min

Temperature: Ambient

Detection: UV @ 254 nm

Sample: Ketotifen

Beta Blockers



Clean, sharp peaks and excellent resolution

Conditions for all columns:

Columns: Luna Omega 1.6 µm Polar C18
ZORBAX 1.8 µm SB-C18

Dimension: 100 x 2.1 mm

Mobile Phase: A: 20 mM Postassium Phosphate pH 7.2
B: Acetonitrile

Gradient:

Time (min)	% B
0	5
2.5	35

Flow Rate: 0.4 mL/min

Temperature: Ambient

Detection: UV @ 280 nm

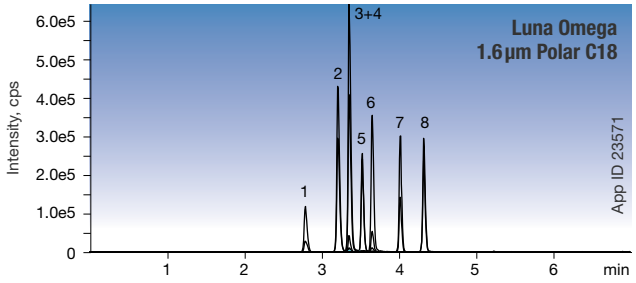
Sample:
1. Atenolol
2. Pindolol
3. Timolol
4. Metoprolol
5. Labetolol
6. Propranolol

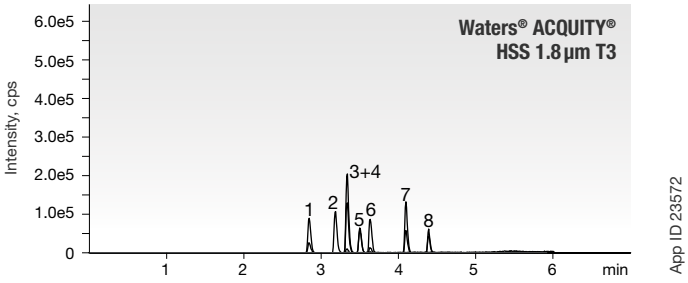
Comparative separations may not be representative of all applications.

Excellent Alternative to Existing Polar Columns

Luna Omega Polar C18 is an incredibly high performing UHPLC column with a unique selectivity profile that can be used to upgrade existing methods or jumpstart new method development. Realize lower limits of detection with the increase in sensitivity levels or just utilize the efficiency gains to help resolve closely eluting peaks.

Mycotoxins Screen





Conditions same for all columns:

Columns: Luna Omega 1.6 µm Polar C18
ACQUITY HSS 1.8 µm T3

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	20
4	90
4.1	20
6	20

Flow Rate: 0.4 mL/min

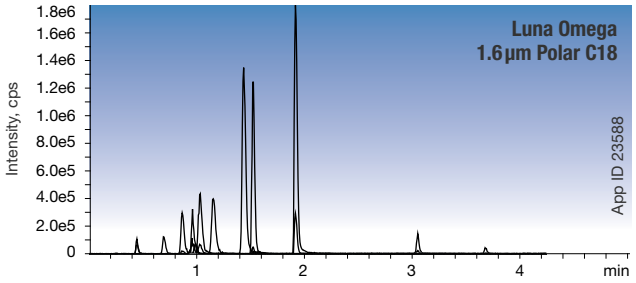
Temperature: 40 °C

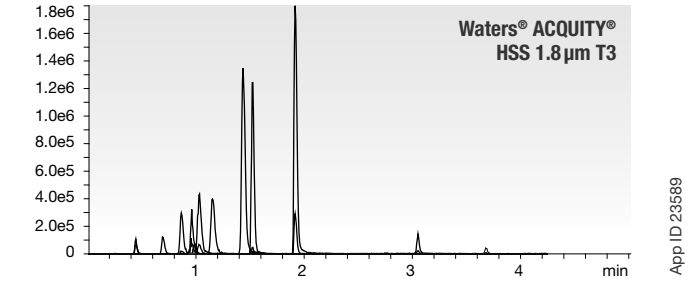
Detection: MS/MS (SCIEX API 4000™)

Sample: Positive Mode (ESI+)

1. 15-Acetyldeoxynivalenol
2. Aflatoxin G2
3. Aflatoxin G1
4. Aflatoxin B2
5. Aflatoxin B1
6. Aflatoxin M1
7. HT2 Toxin
8. T2 Toxin

SAMHSA Workplace Drug Testing Screen





Conditions same for all columns:

Columns: Luna Omega 1.6 µm Polar C18
ACQUITY HSS 1.8 µm T3

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	15
2	100
3	100
3.1	15

Flow Rate: 0.4 mL/min

Temperature: 25 °C

Detection: MS/MS (SCIEX API 4000)

Sample:

1. Morphine
2. Codeine
3. Amphetamine
4. MDA
5. Methamphetamine
6. 6-MAM
7. MDMA
8. MDEA
9. BZE
10. PCP
11. THC-COOH
12. THC

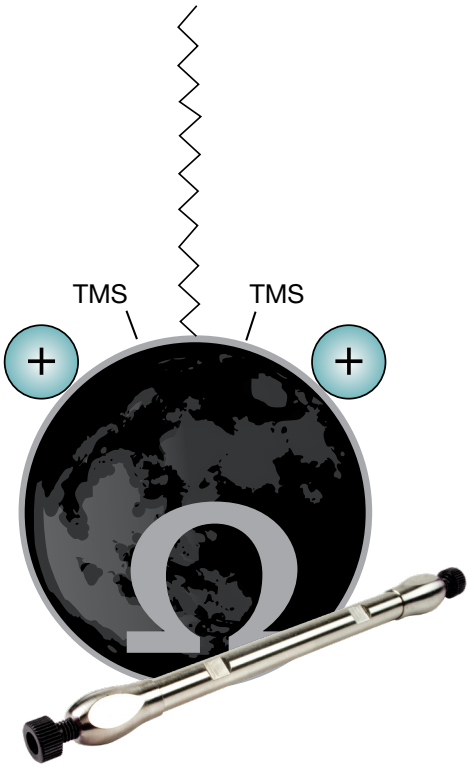
Comparative separations may not be representative of all applications.

Selectivity Highlight
Luna Omega PS C18

Luna Omega PS C18 is a unique mixed-mode stationary phase that provides incredibly useful polar and non-polar retention. The surface of the PS C18 contains a positive charge which aids in the retention of acidic compounds through ionic interactions, while the C18 ligand promotes general reversed phase retention. This mixed-mode selectivity allows for greater separation between compounds with varying functional groups.

Phase	PS C18
Particle Size	1.6 µm, 3 µm, 5 µm
Pore Size	100 Å
pH Range	1.5 - 8.5*
Surface Area	260 m^2/g
Carbon Load	9 %
Pressure Limit	1034 bar/15 000 psi
USP Listing	L1

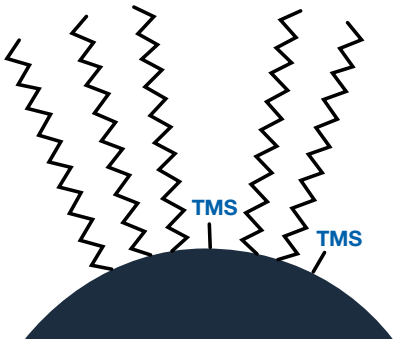
*pH stability under gradient conditions. pH stability is 1.5-10 under isocratic conditions.



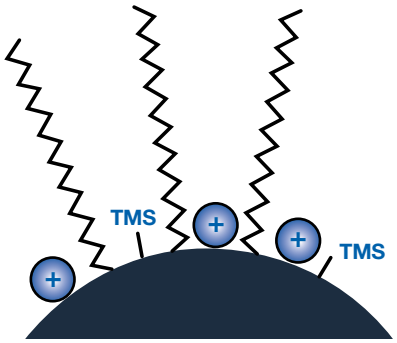
A C18, But More Positive

Luna Omega PS C18 has been fine-tuned and manufactured by Phenomenex to provide a mixed selectivity that is highly useful for method development involving either combinations of polars and non-polars, or just one single compound class with small changes in functional groups.

Luna Omega C18 silica surface



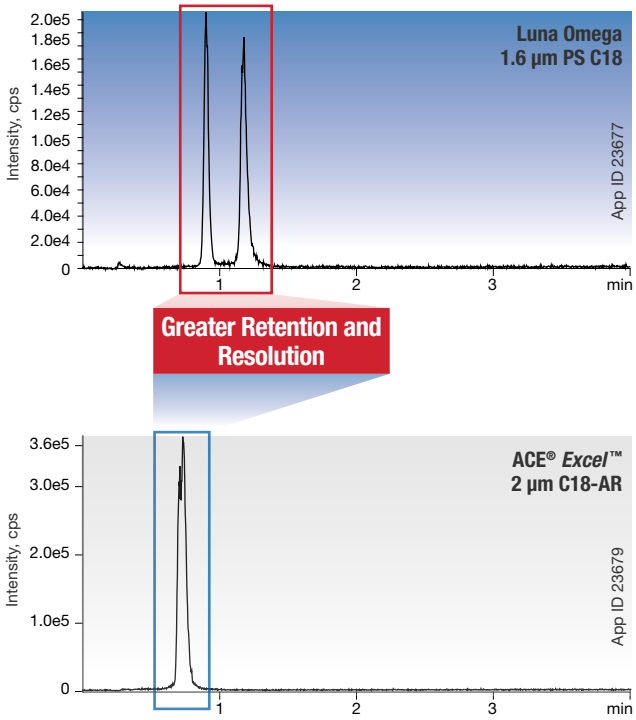
Luna Omega PS C18 silica surface



Enhanced Retention of Acids

With its positive surface (PS) the Luna Omega PS C18 provides valuable increase in retention of acids through ionic/polar interactions. In addition, the C18 ligand also stimulates hydrophobic retention that greatly promotes increased resolution between analytes of interest.

MMA and Succinic Acid



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
ACE Excel 2 µm C18-AR

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

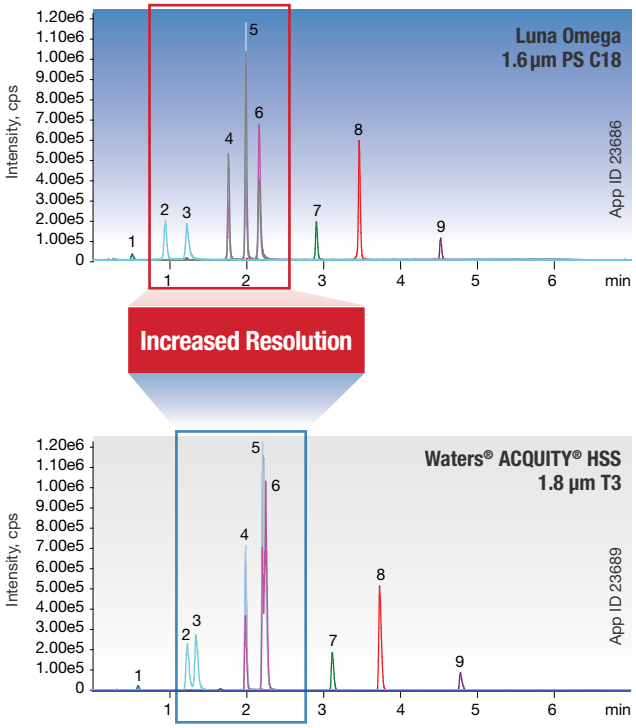
Flow Rate: 0.5 mL/min

Temperature: 22 °C

Detection: MS/MS (SCIEX API 4000™)

Sample: 1. Succinic acid
2. MMA

Organic Acids



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
ACQUITY HSS 1.8 µm T3

Dimension: 100 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)

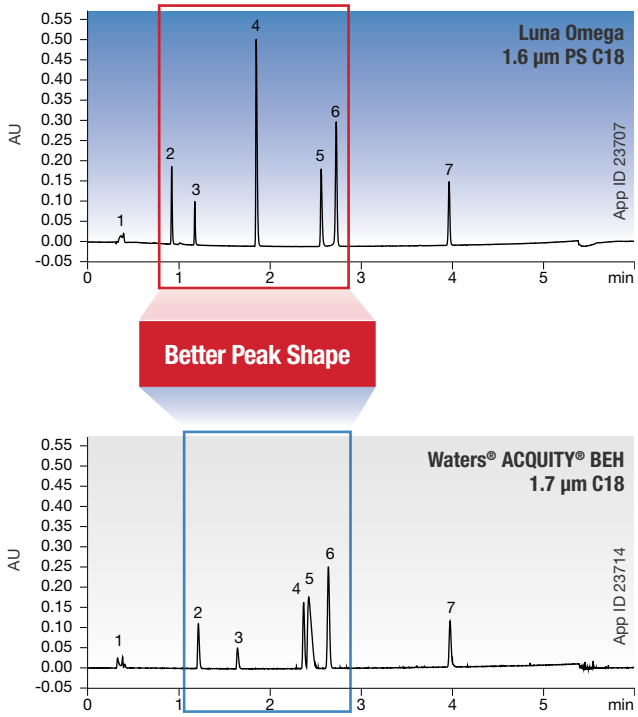
Sample: 1. Lactic acid
2. Succinic acid
3. MMA
4. Glutaric acid
5. Ethylmalonic acid
6. Methyl succinate
7. Hippuric acid
8. Suberic acid
9. Sebacic acid

Comparative separations may not be representative of all applications.

Better Peak Shape for Bases

While traditional alkyl phases are prone to show tailing for basic compounds because of secondary interactions occurring at the silica surface, the surface of the Luna Omega PS C18 was designed with positive charges that serve to repel strong basic species and consistently display sharp peak shape.

Pharmaceutical Compound Mixture



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
ACQUITY BEH 1.7 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	5
5	95
5.1	5
8	5

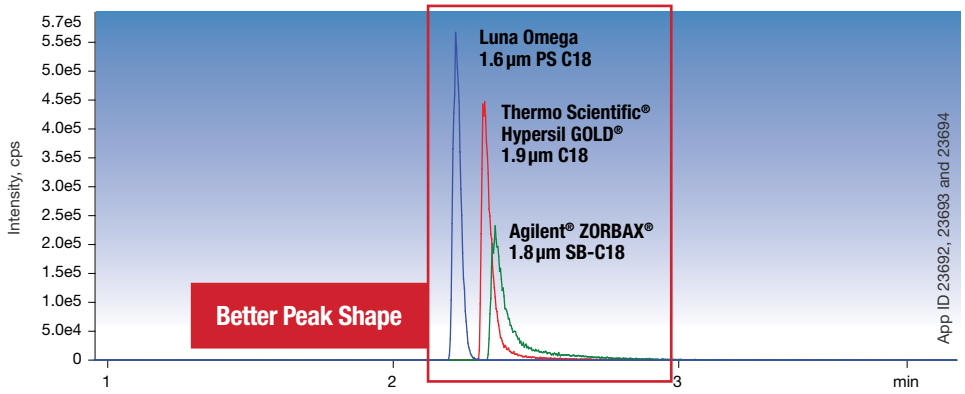
Flow Rate: 0.4 mL/min

Temperature: 22 °C

Detection: MS/MS (SCIEX API 4000™)

Sample:
1. Uracil
2. Pindolol
3. Chlorpheniramine
4. Nortriptyline
5. 3-Methyl-4-nitrobenzoic acid
6. 5-Methyl salicylaldehyde
7. Hexanophenone

Intact Insulin



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
Hypersil GOLD 1.9 µm C18
ZORBAX 1.8 µm SB-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	3
3	80
3.1	3
5	3

Flow Rate: 0.5 mL/min

Temperature: 22 °C

Detection: MS/MS (SCIEX API 4000)

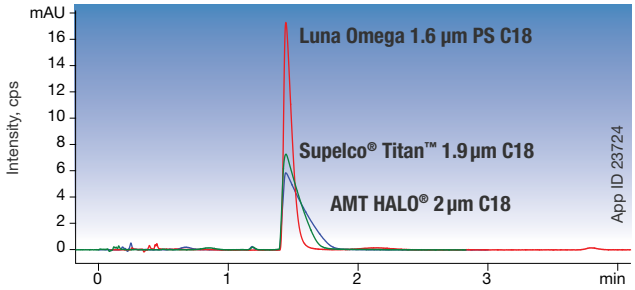
Sample: Insulin

Comparative separations may not be representative of all applications.

Excellent Loadability

The combination of great surface coverage and novel surface chemistry results in narrow peak shapes for an extended amount of sample loaded on the Luna Omega PS C18. This can visually be seen in the examples below where the excellent peak shape at different loads is kept relatively constant on the Luna Omega PS C18, while more conventional UHPLC columns show tailing and much greater peak broadening as more sample is loaded.

Amitriptyline 1µg Load



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
Titan 1.9 µm C18
HALO 2 µm C18

Dimension: 50 x 2.1 mm

Mobile Phase: Water with 0.1% Formic Acid / Acetonitrile with 0.1% Formic Acid (78:22)

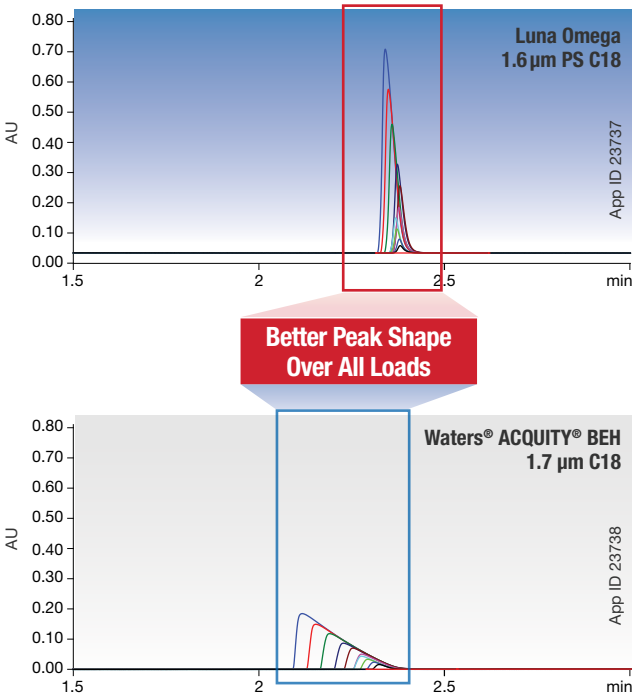
Flow Rate: 0.5 mL/min

Temperature: 22 °C

Detection: UV @ 254 nm

Sample: Amitriptyline

Amitriptyline Loading Study



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
ACQUITY BEH 1.7 µm C18

Dimension: 100 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	5
5	80

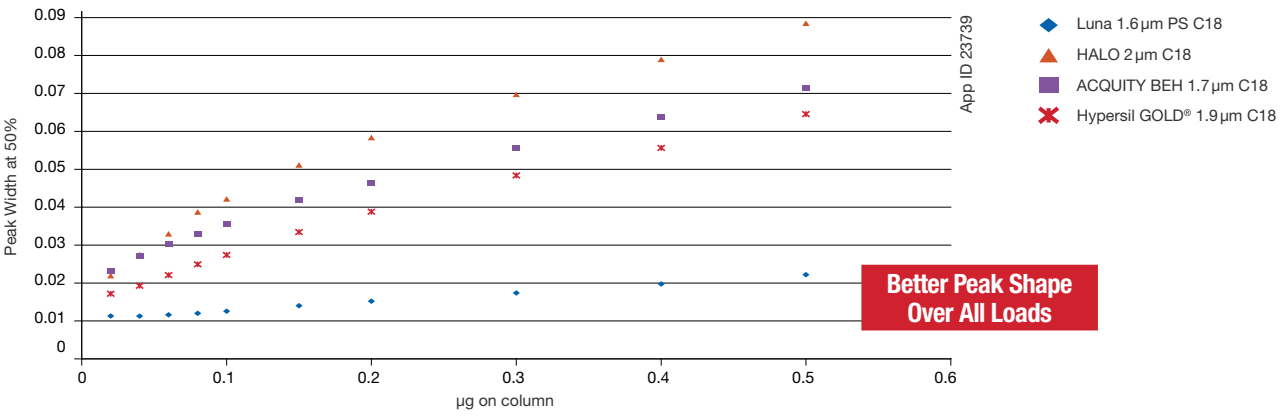
Flow Rate: 0.4 mL/min

Temperature: 22 °C

Detection: UV @ 254 nm

Sample: Amitriptyline

Luna Omega PS C18 and Competitors 50 x 2.1 mm

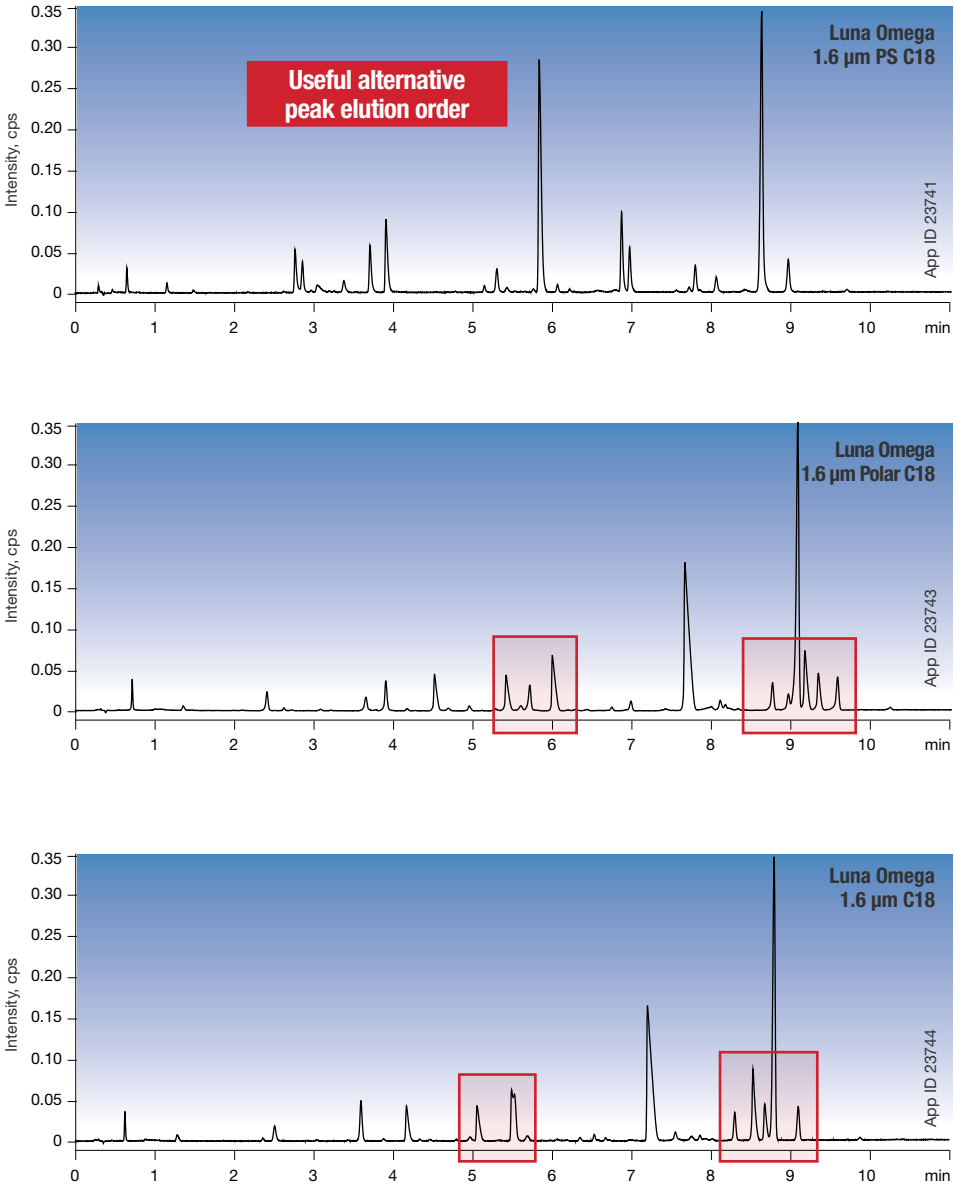


Comparative separations may not be representative of all applications.

Method Development Flexibility

The combination of available Luna Omega stationary phases represent an outstanding tool set for the separation of acids, bases, neutrals or mixtures. Use the C18 to focus on hydrophobic interactions or the mixed-mode functionality of the Polar C18 and PS C18 to get enhanced retention of both polars and non-polars.

Pharmaceutical Drug Impurity Profile



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
Luna Omega 1.6 µm Polar C18
Luna Omega 1.6 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	5
10	40

Flow Rate: 0.4 mL/min

Temperature: 22 °C

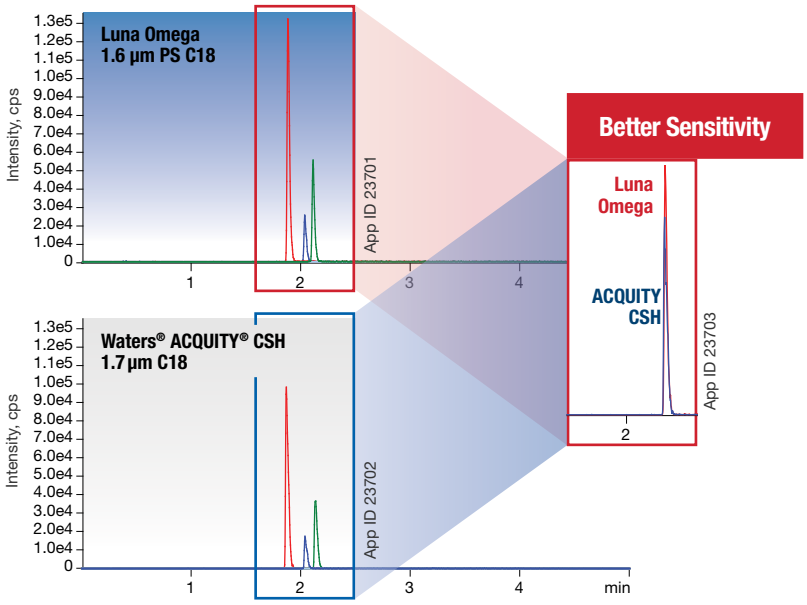
Detection: UV @ 254 nm

Sample: Proprietary drug impurity profile

Improving Existing Basic Compound Methods

Luna Omega PS C18 is a brilliant UHPLC stationary phase with a distinctive selectivity profile that can spur new method development. At the same time, this versatile phase can also upgrade existing methods by way of increases in sensitivity and efficiency levels to help resolve closely eluting peaks.

Peptides by LC/MS



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
ACQUITY CSH 1.7 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	3
3	95
3.1	3
5	3

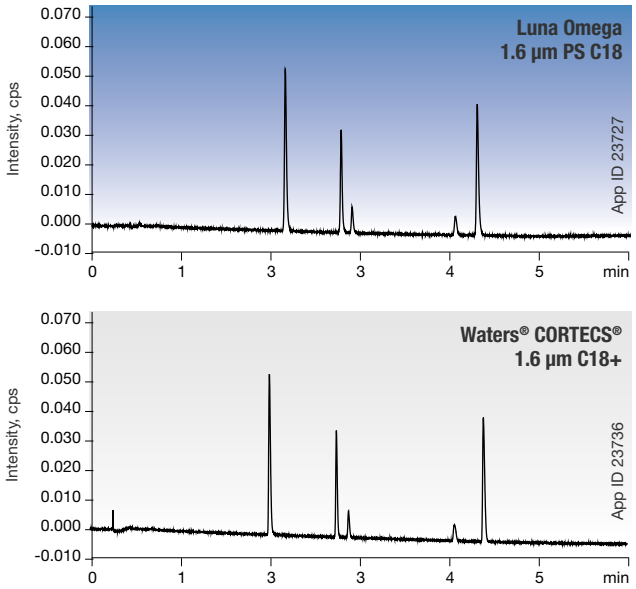
Flow Rate: 0.4 mL/min

Temperature: 22 °C

Detection: MS/MS (SCIEX API 4000™)

Sample: 1. Angiotensin II
2. Met-Enkephalin
3. Leu-Enkephalin

Beta-Blockers



Conditions for all columns:

Columns: Luna Omega 1.6 µm PS C18
CORTECS 1.6 µm C18+

Dimension: 50 x 2.1 mm

Mobile Phase: A: 10 mM Ammonium Formate pH 3.0
B: Acetonitrile

Gradient:

Time (min)	% B
0	2
6	35

Flow Rate: 0.4 mL/min

Temperature: 22 °C

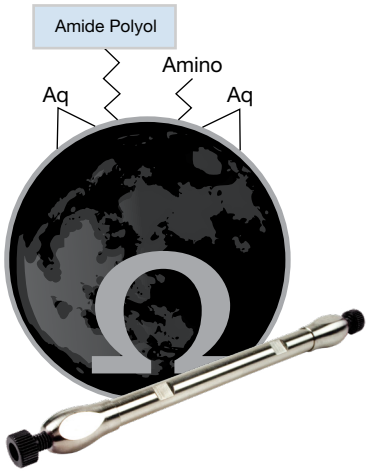
Detection: UV @ 280 nm

Sample: 1. Pindolol
2. Timolol
3. Metoprolol
4. Labetolol
5. Propranolol

Comparative separations may not be representative of all applications.

Selectivity highlight
Luna Omega SUGAR

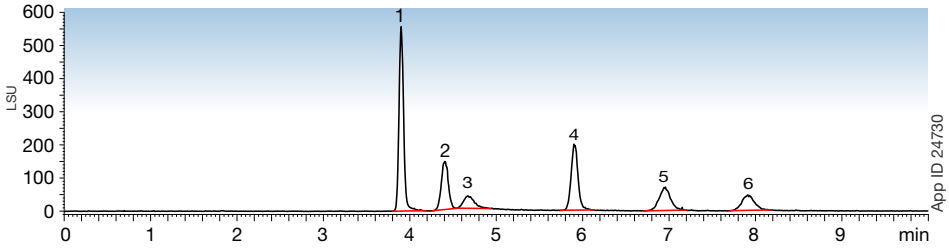
Selectivity Highlight Luna Omega SUGAR



Luna Omega SUGAR breaks ground as it combines the performance benefits of thermally modified fully porous particles with a novel HILIC stationary phase that excels at polar compound retention and selectivity.

- Improved carbohydrate retention and separation with multifunctional selectivity that contains amide/amino stationary phase and polar endcapping
- Enhanced lifetime with highly robust and efficient thermally modified fully porous particle
- QC tested for sugars to ensure reliable quality

Phase	amide polyol/amino
Particle Size	3 µm
Pore Size	100 Å
pH Range	2.0 - 7.0
Carbon load	<2
Surface Area	260 m^2/g
Pressure Limit	1034 bar/15 000 psi
USP Listing	L8



Column: Luna Omega 3 µm SUGAR
Dimension: 150 x 4.6 mm
Part No.: 00F-4775-E0
Mobile Phase: Acetonitrile/Water (75:25)
Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: ELSD

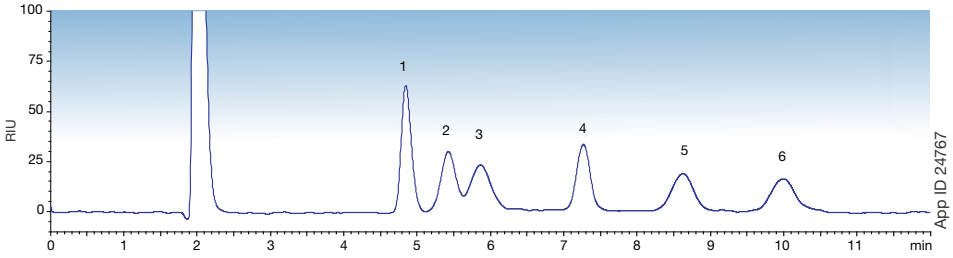
Sample: 1. Fructose
2. Glucose
3. Galactose
4. Sucrose
5. Maltose
6. Lactose

Novel nitrogen containing stationary phase that greatly increases the retention of sugars and sugar alcohols under HILIC conditions

Exceptional Retention and Separation

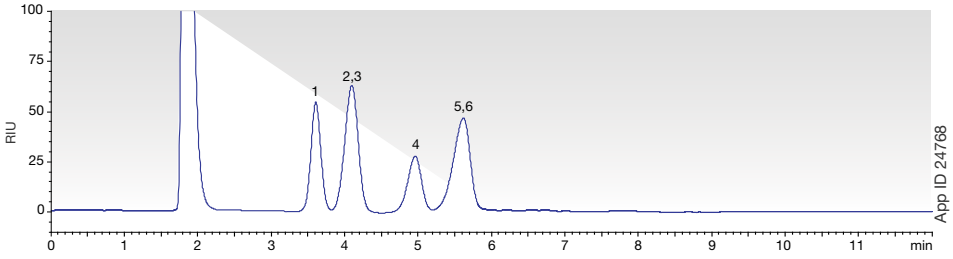
Luna Omega SUGAR greatly improves upon the retention and separation capabilities of traditional fully porous, core-shell, and hybrid materials, while also allowing for greater peak response! All this while also ensuring that customers do not need to depend on buffers or ion pair agents to get adequate separation at the cost of losing signal.

Luna Omega 3 µm SUGAR

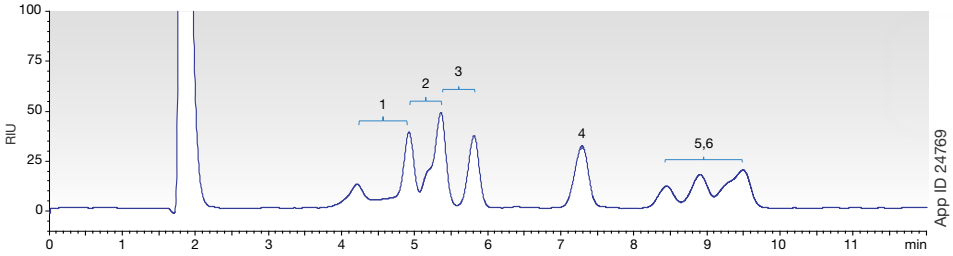


Excellent Simple Sugar Separation!

Fully Porous 3 µm NH2



Hybrid Fully Porous 3.5 µm Amide



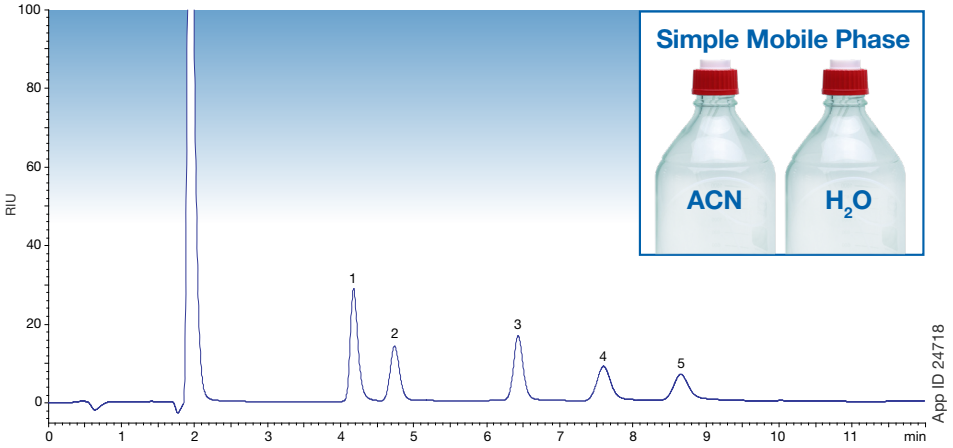
Peak Splitting and Poor Resolution!

Conditions for all columns:

Column: Luna Omega 3 µm SUGAR
Fully Porous 3 µm NH2
Hybrid Fully Porous 3.5 µm Amide
Dimension: 150 x 4.6 mm
Mobile Phase: Acetonitrile/Water (75:25)
Flow Rate: 1 mL/min
Temperature: 25 °C
Detection: RI
Sample: 1. Fructose
2. Glucose
3. Galactose
4. Sucrose
5. Maltose
6. Lactose

Simplified HILIC Conditions for RI or ELSD

Why make things tough? While making the new Luna Omega SUGAR we focused on simplified HILIC mobile phase systems that would work with all common detectors including RI, ELSD, and MS. Additionally, the high organic content decreases interference as non-polar compounds and contaminants are forced to elute early in the run.



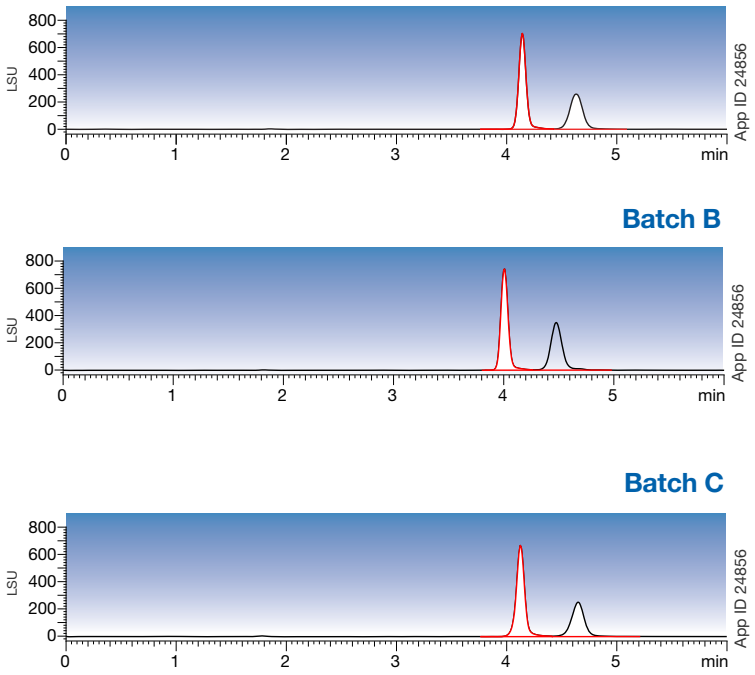
Column: Luna Omega 3 µm SUGAR
Dimension: 150 x 4.6 mm
Part No.: 00F-4775-E0
Mobile Phase: Acetonitrile/Water (75:25)
Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: RI
Sample: 1. Fructose
2. Glucose
3. Sucrose
4. Maltose
5. Lactose

Comparative separations may not be representative of all applications.

High Reproducibility

Luna Omega SUGAR media and columns are designed to be consistent and incredibly accurate tools for sugar analysis by HPLC and UHPLC. Each batch and column is specifically tested for the analysis of simple sugars to confirm proper selectivity, alongside a large number of other tests to ensure performance, particle quality, dependability, and overall reproducibility.

Zante Currants



Conditions for all columns:

Column: Luna Omega 3 µm SUGAR
Dimension: 150 x 4.6 mm
Part No.: 00F-4775-E0
Mobile Phase: Acetonitrile/Water (75:25)
Flow Rate: 1 mL/min
Temperature: 35 °C
Detection: ELSD
Sample: 1. Fructose
2. Glucose

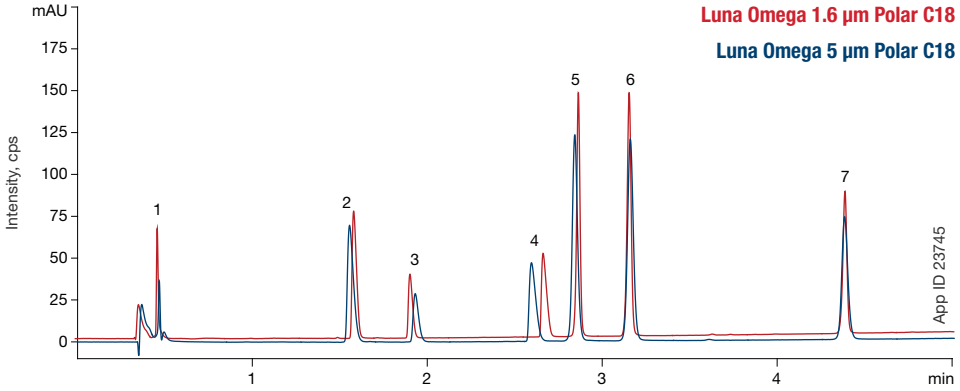
Sample Preparation with Phenex™ Nylon Syringe Filter

1. 5 g of each material (Goji Berries, Zante Currants, and Turkish Apricots) frozen at -80 °C for 1 hour
2. Use spice grinder to homogenize the samples
3. Place the material in a 250 mL beaker and add 50 mL of DI water and heat to 50 °C with a stir-bar for 30 minutes
4. Add 50 mL of Chloroform and mix on high for 15 min at 50 °C
5. Let solution come to rest at room temperature to allow two phases to form
6. Decant top (aqueous) layer to centrifuge tube, dispose of bottom layer
7. Centrifuge at 6000 RPM
8. Decant into new 20 mL scintillation vials
9. Filter using 0.45 µm Phenex Nylon syringe filter
10. Inject 5 µL

UHPLC to HPLC to PREP Scalability

With direct selectivity scalability from Luna Omega 1.6 µm to 5 µm you can fluidly transfer methods from UHPLC platforms to HPLC and preparative instrumentation. Additionally, you can easily go in reverse and use a Luna Omega 1.6 µm to analyze fractions taken from a Luna Omega 5 µm preparative column.

Direct Scalability 1.6 µm to 5 µm



Conditions for all columns:

Columns: Luna Omega 1.6 µm Polar C18
Luna Omega 5 µm Polar 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	5
5	95

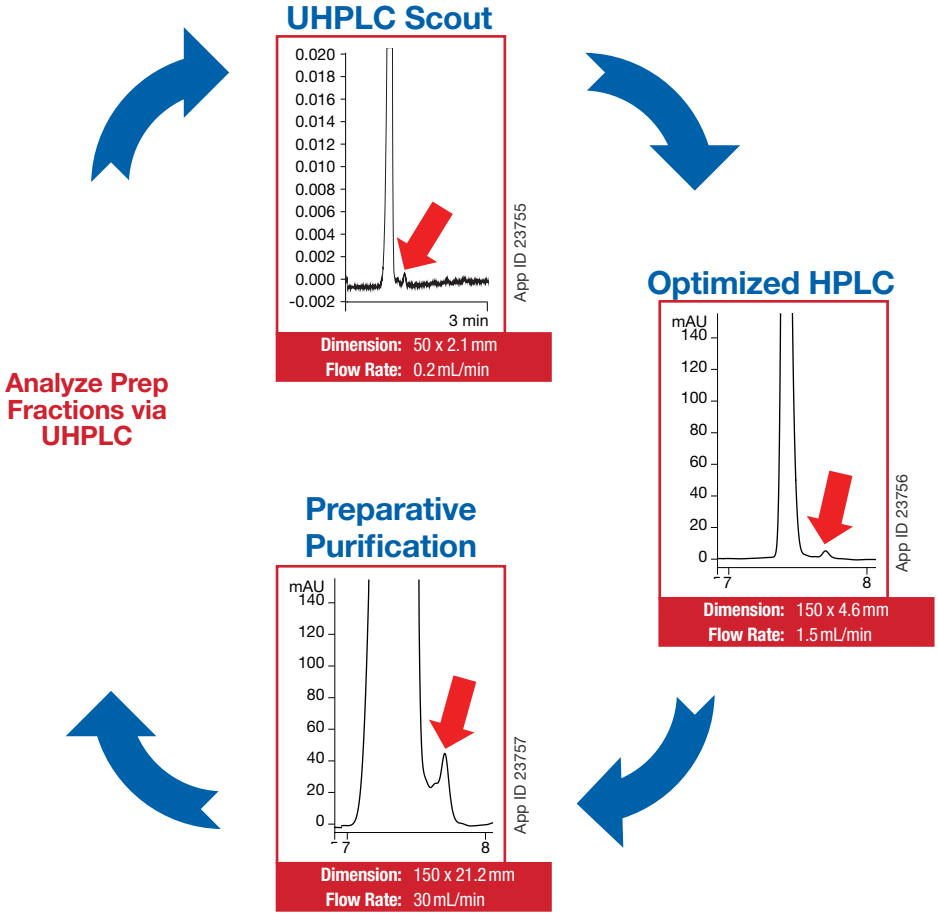
Flow Rate: 0.4 mL/min

Temperature: 30 °C

Detection: UV @ 254 nm

Sample: 1. Uracil
2. Pindolol
3. Chlorpheniramine
4. Nortriptyline
5. 3-Methyl-4-nitrobenzoic acid
6. 5-Methyl salicylaldehyde
7. Hexanophenone

UHPLC to HPLC to PREP



Conditions for all columns (as noted):

Columns: Luna Omega 5 µm PS C18

Mobile Phase: A: Water with 0.1% TFA
B: Acetonitrile with 0.1% TFA

Gradient:

Time (min)	% B
0	10
15	90

Temperature: 22 °C

Detection: UV @ 254 nm

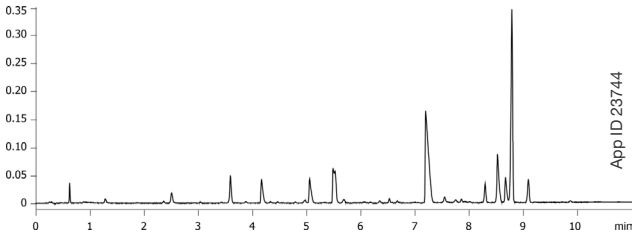
Sample: 1. Impurity
2. Proprietary API
3. Impurity

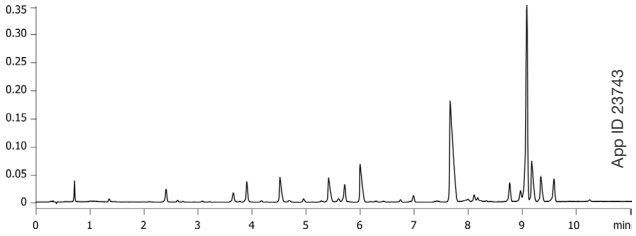
Comparative separations may not be representative of all applications.

Complementary UHPLC Work Horses

Combine the versatile interaction mechanisms of the Luna Omega C18 and Polar C18 to achieve successful separations and improve upon challenging existing methods.

Drug Impurity Profile





Conditions for all columns:

Columns: Luna Omega 1.6 µm C18
Luna Omega 1.6 µm Polar 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	5
10	40

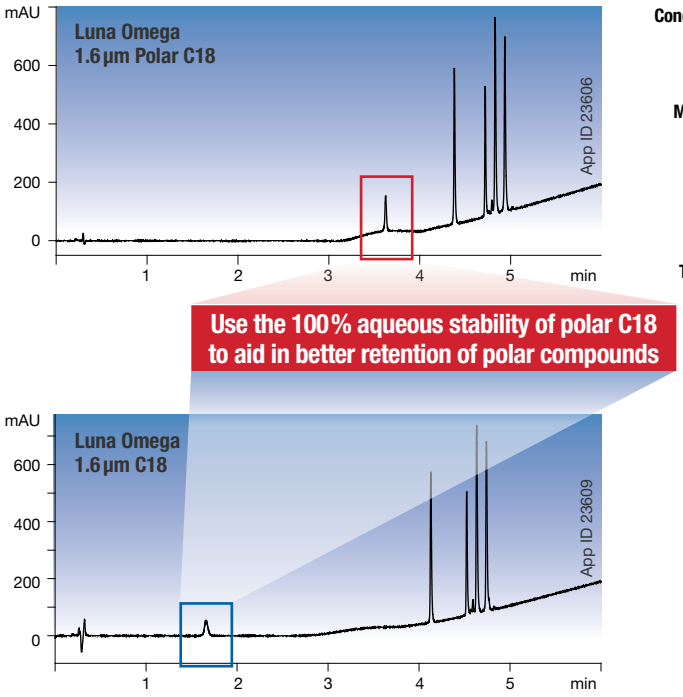
Flow Rate: 0.4 mL/min

Temperature: 22 °C

Detection: UV @ 254 nm

Greater Retention and alternative selectivity

Intact Peptides



Conditions for all columns except where noted:

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

Dimension: 50 x 2.1 mm

Mobile Phase: A: Water with 0.1 % TFA
B: Acetonitrile with 0.1 % TFA

Gradient:

Time (min)	% B
0	0
1	0
5	65

Flow Rate: 0.6 mL/min

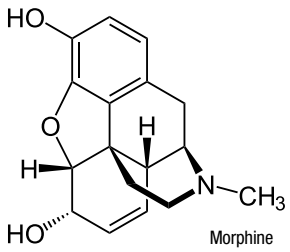
Temperature: 25 °C

Detection: UV @ 210 nm

Sample: 1. Gly-Tyr
2. Val-Tyr-Val
3. Met-Enkephalin
4. Leu-Enkephalin
5. Angiotensin II

Comparative separations may not be representative of all applications.

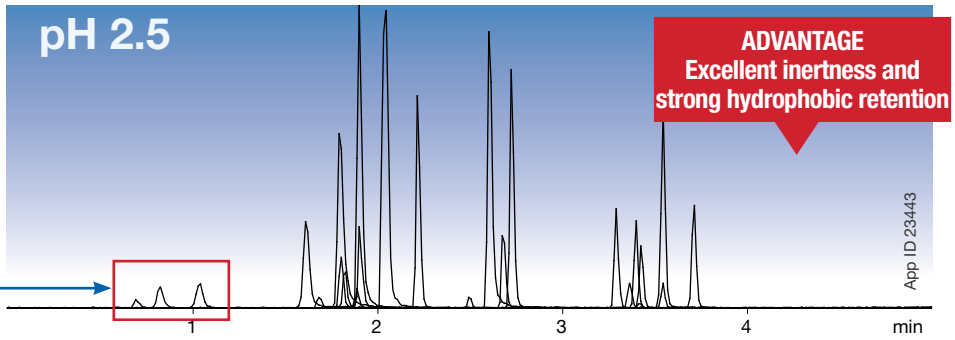
Luna Omega + Kinetex = Happy UHPLC



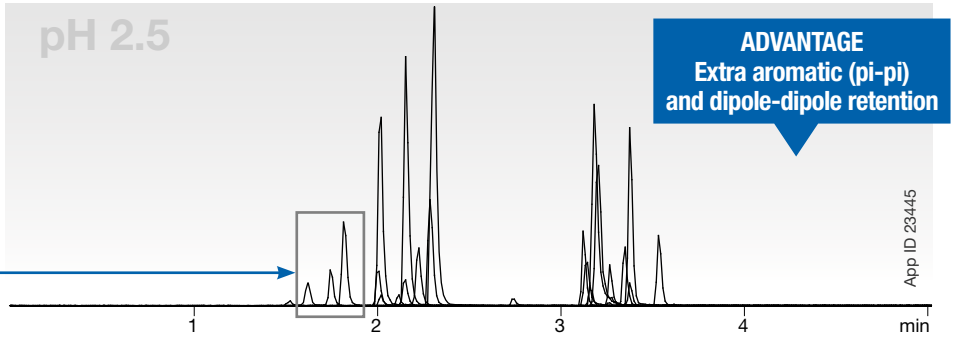
Drugs of Abuse Analysis

Combining orthogonal UHPLC particle morphologies and selectivities like the Luna Omega C18, Kinetex Biphenyl, and Kinetex EVO C18 will drastically increase your probability of separation success!

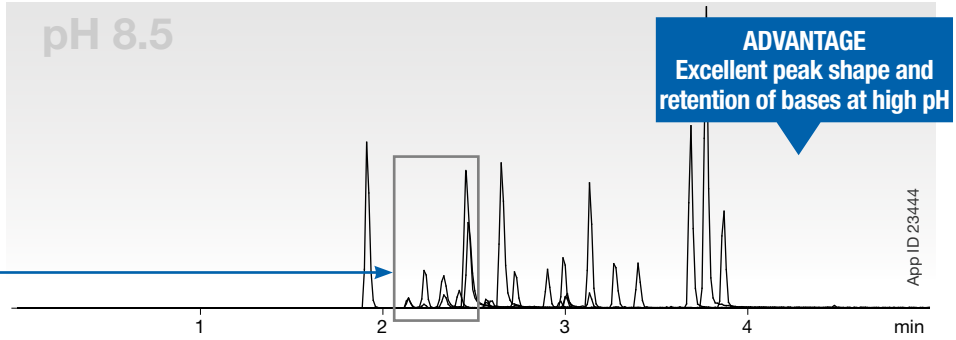
Luna® Omega 1.6 µm C18



Kinetex® 1.7 µm Biphenyl



Kinetex 1.7 µm EVO C18



Conditions for all columns except where noted:

Columns: Luna Omega 1.6 µm C18
Kinetex 1.7 µm Biphenyl
Kinetex 1.7 µm EVO C18

Dimension: 50 x 2.1 mm

Mobile Phase: **Luna Omega 1.6 µm C18 and Kinetex 1.7 µm Biphenyl**
A: 0.1 % Formic Acid in Water
B: 0.1 % Formic Acid in Acetonitrile
Kinetex 1.7 µm EVO C18
A: 10 mM Ammonium Bicarbonate pH 10
B: Acetonitrile

Gradient:	**Time (min)**	**% B**
	0	5
	4	95
	5	95
	5.1	5

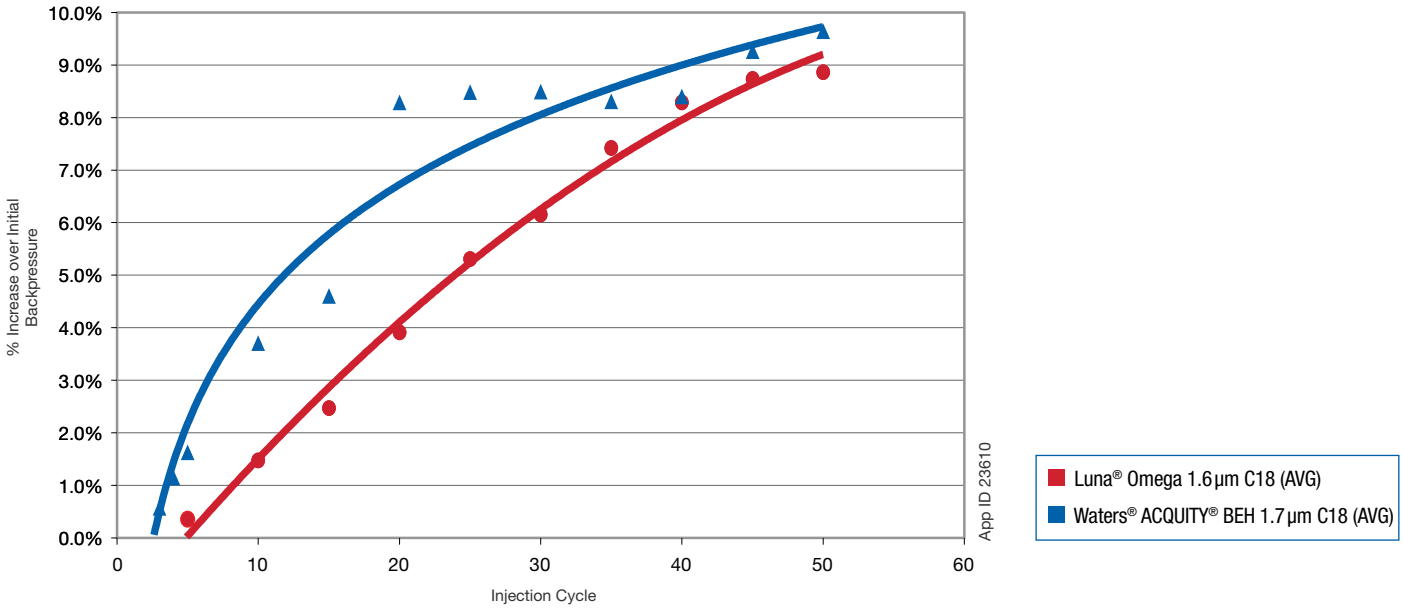
Flow Rate: 0.4 mL/min
Temperature: 40 °C
Detection: MS/MS (SCIEX API 4000™)
Sample: Drugs of Abuse

Comparative separations may not be representative of all applications.

Excellent Lifetime

Luna Omega 1.6 µm media was designed to be durable and withstand the high pressures and rigors of UHPLC work in combination with providing excellent performance.

Accelerated Lifetime Study



Conditions same for both 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
4	95
4.1	5

Flow Rate: 0.4 mL/min

Temperature: 25 °C

Detection: UV @ 210 nm

Sample: Protein Matrix

Extend UHPLC Column Lifetime Even More with SecurityGuard™ ULTRA

See page 34 for details

Comparative separations may not be representative of all applications.

Pharmaceutical Applications

Click Each!

Tech Note
Meeting System Suitability for USP Abacavir and Lamivudine Tablets Assay

Tech Note
Meeting System Suitability for USP Amlodipine, Valsartan and Hydrochlorothiazide Tablets Assay and Organic Impurities

Tech Note
Ph. Eur. Monograph 2898: Atazanavir Sulfate Assay, Related Substances, and Impurity K

Tech Note
Meeting System Suitability for USP Atazanavir Sulfate Assay, Organic Impurities, and Limit of Atazanavir Related Compound A

Tech Note
Separation of Budesonide Epimers per USP Monograph

Tech Note
Ph. Eur. Monograph 1651: Clarithromycin Assay and Related Substances

Tech Note
Separation of Desvenlafaxine Succinate and its Organic Impurities per USP Monograph

Tech Note
Separation of Doxapram Hydrochloride and its Organic Impurities per USP Monograph

Tech Note
Ph. Eur. Monograph 1425: Fosfomycin Trometamol Assay and Related Substances on Luna Omega 3 µm SUGAR Column

Tech Note
Separation of Gemifloxacin Mesylate and its Organic Impurities per USP Monograph using Luna Omega 5 µm C18 Column

Tech Note
Ph. Eur. Monograph 2217: Lamivudine Related Substances with Ph. Eur. Method Modernization

Pharmaceutical Applications

Click Each!

Tech Note
Ph. Eur. Monograph 401: Levothyroxine Sodium on Luna C18(2) and Luna Omega C18

Tech Note
Ph. Eur. Monograph 1593: Megestrol Acetate Assay and Related Substances on Luna Omega 3 µm C18 Column

Tech Note
USP Paliperidone Assay and Organic Impurities on Luna Omega 3 µm Polar C18

Tech Note
Modernization of USP and Ph. Eur. Method – Pantoprazole Sodium Sesquihydrate Organic Impurities

Tech Note
Separation of Plerixafor and its Organic Impurities per USP Monograph

Tech Note
Separation of Quercetin and its Organic Impurities per USP Monograph

Tech Note
Ph. Eur. Monograph 1368: Ramipril Related Substances on Nucleosil® 3 µm C18. Luna™ 3 µm C18)2, Luna Omega 3 µm C18 and Gemini™ 3 µm NX-C18 Column

Tech Note
Separation of Rivaroxaban and its Organic Impurities per USP Monograph

Tech Note
Separation of Tacrolimus and its Organic Impurities per USP Monograph

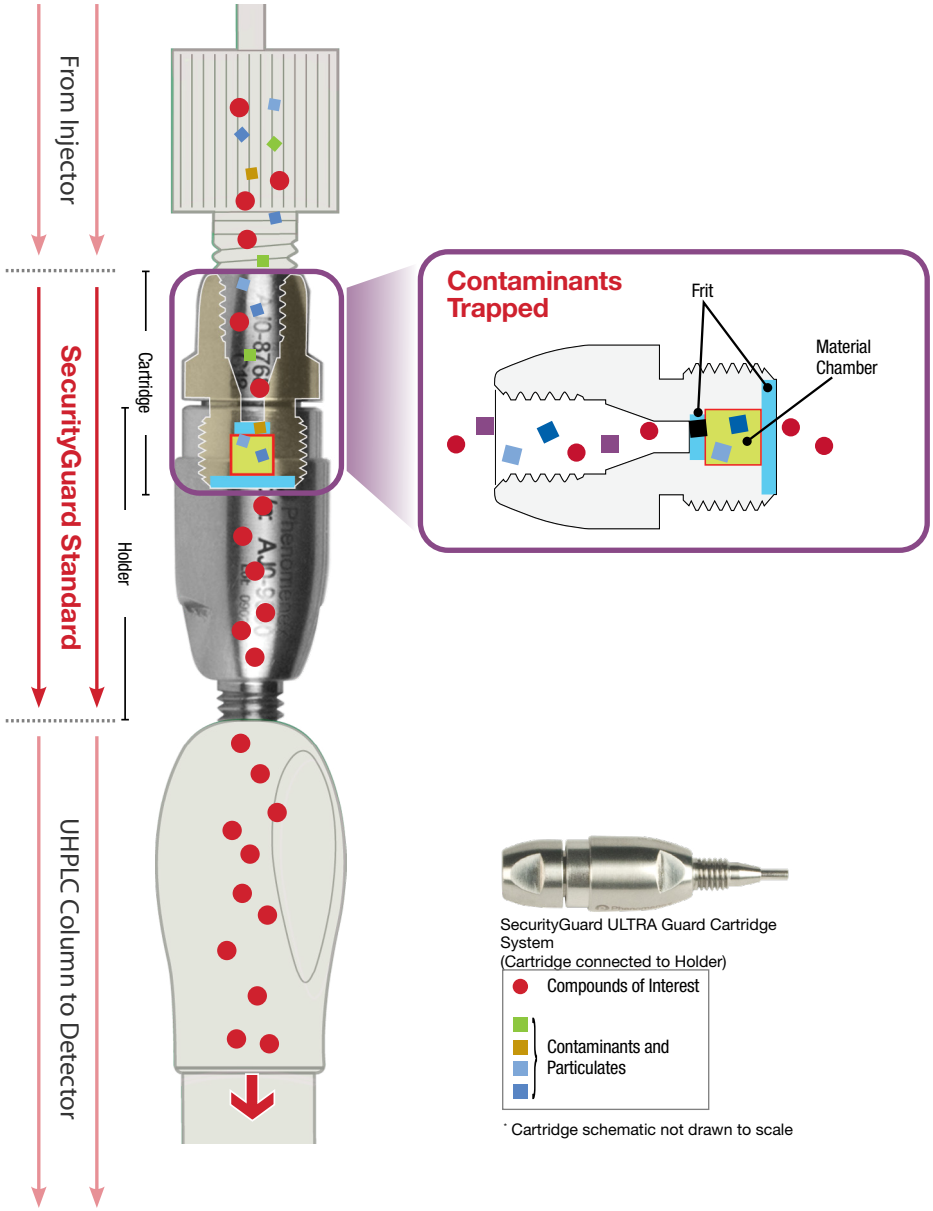
Tech Note
Meeting System Suitability for USP Tigecycline Assay

Tech Note
Separation of Zolmitriptan and its Organic Impurities per USP Monograph

Protect any UHPLC Column

Protect your UHPLC column, including Luna Omega 1.6 µm columns, from damaging contaminants and microparticulates with the SecurityGuard ULTRA guard cartridge system!

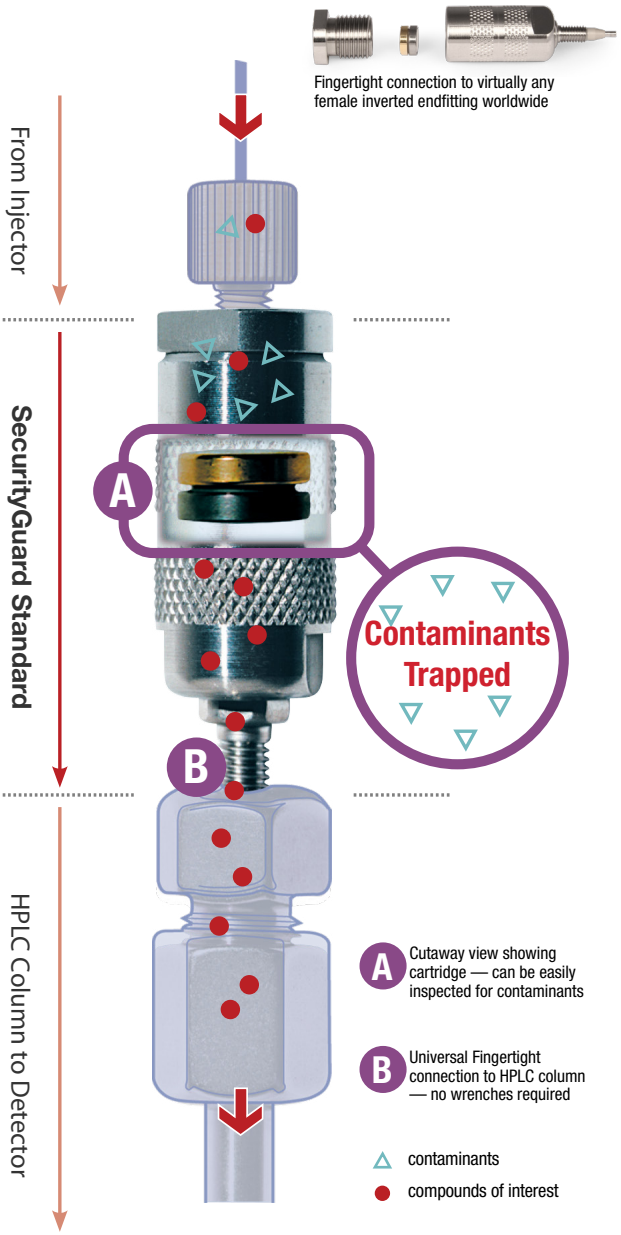
- Simple to use
- Extend column lifetime
- Pressure rated to 20,000 psi (1,378 bar)
- Fits virtually all manufacturers' columns 2.1 to 4.6 mm ID

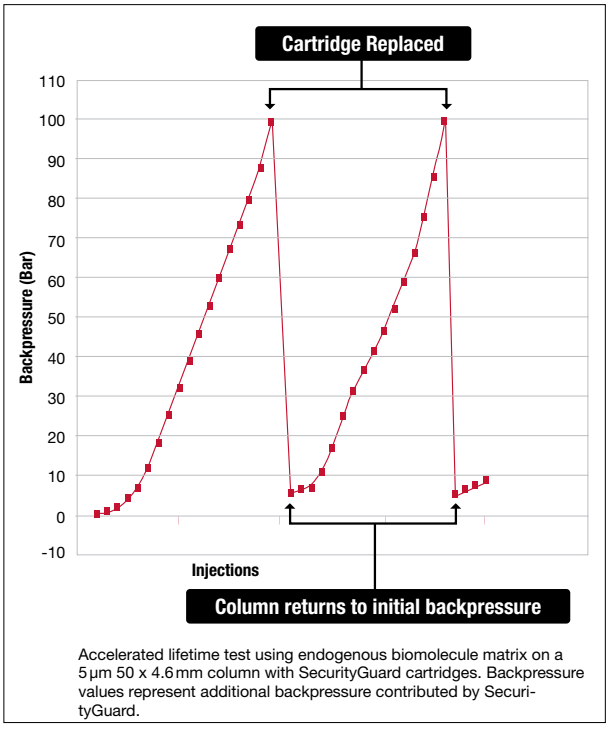


Protect any HPLC Column

The easiest way to extend column performance is to prevent contaminants and particulates from getting into your Luna Omega 5 µm column with the SecurityGuard Standard guard cartridge system.

- Protects and extends column lifetimes
- Virtually no change in chromatography
- Simple to use





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

The SecurityGuard analytical cartridge holder (patented) directly finger-tightens into virtually any manufacturer's column endfitting. Contaminants are retained by an inexpensive disposable cartridge instead of damaging your valuable HPLC and SFC column investment. Simply replace SecurityGuard cartridges instead of your expensive columns. In this graph, once the expired SecurityGuard cartridge was replaced, the pressure immediately dropped and the column performance was restored allowing for extended column use.

Luna and Luna Omega Column Characteristics

Luna Omega Phases	Description	Particle Sizes (µm)	Pore Size (Å)	Surface Area (m^2/g)	Carbon Load (%)	pH Stability	Reversed Phase	Normal Phase	HILIC	IEX
C18	C18 ligand optimized for improved peak shape	1.6	100	260	11	1.5 - 8.5*	☾			
Polar C18	Enhanced selectivity/retention for polar analytes without diminishing useful non-polar retention	1.6, 3, 5	100	260	9	1.5 - 8.5*	☾			
PS C18	Mixed-mode functionality offering enhanced retention of polar acids along with improved peak shape for strong bases	1.6, 3, 5	100	260	9	1.5 - 8.5*	☾			
SUGAR	Combined amide polyol/amino stationary phase with polar end-capping offers enhanced HILIC retention of sugars through multiple interaction mechanisms	3	100	260	<2	2.0 - 7.0			☾	

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

Luna Phases	Description	Particle Sizes (µm)	Pore Size (Å)	Surface Area (m2/g)	Carbon Load (%)	pH Stability	Reversed Phase	Normal Phase	HILIC	IEX
Silica(2)	Unbonded silica	3, 5, 10, 10-*PREP*, 15	100	400	—	2.0 - 7.5		☾	☾	
C5	5 Carbon ligand	5, 10	100	440	12.5	1.5 - 9.0*	☾			
C8(2)	C8 ligand optimized for improved peak shape	3, 5, 10, 10-*PREP*, 15	100	400	13.5	1.5 - 9.0*	☾			
C18(2)	C18 ligand optimized for improved peak shape	2.5, 3, 5, 10, 10-*PREP*, 15	100	400	17.5	1.5 - 9.0*	☾			
CN	Versatile CN phase	3, 5, 10	100	400	7.0	1.5 - 7.0	☾	☾		
NH_2	Rugged and reproducible NH_2	3, 5, 10	100	400	9.5	1.5 - 11	☾	☾	☾	☾
Phenyl-Hexyl	Phenyl phase attached to C6 (hexyl) ligand	3, 5, 10, 10-*PREP*, 15	100	400	17.5	1.5 - 9.0*	☾			
SCX	Benzene sulfonic acid	5, 10	100	400	Binding Capacity: 0.15 meq/g	2.0 - 7.0				☾
HILIC	Reproducible, cross-linked diol	3, 5	200	200	5.7	1.5 - 8.0			☾	
PFP(2)	Pentafluorophenyl with a C3 (propyl) linkage	3, 5	100	400	11.5	1.5 - 8.0	☾		☾	

* pH range is 1.5 - 9 under gradient conditions. pH range is 1.5 - 10 under isocratic conditions.

Ordering Information

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

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

For 5 µm Luna Omega Micro LC Columns, Traps, and Fittings, see page 223-225.

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

‡ 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

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

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