

One of the World's Leading HPLC Columns

Develop or Improve your HPLC Method

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

If Luna analytical columns do not provide at least an equivalent separation as compared to a competing column of the same particle size, similar phase and dimensions, send in your comparative data within 45 days and keep the Luna column for FREE.

Material Characteristics

Packing Material	Particle Shape/Size (µm)	Pore Size (Å)	Surface Area (m²/g)	Carbon Load %	Calculated Bonded Phase Coverage (µmole/m²)	End Capping	pH Stability
Luna Silica(2)	Spher. 3, 5, 10, 10-PREP, 15	100	400	0	—	No	2.0 - 7.5
Luna C5	Spher. 5,10	100	440	12.5	7.85	Yes	1.5 - 10*
Luna C8	Spher. 5,10	100	440	14.75	5.50	Yes	1.5 - 10*
Luna C8(2)	Spher. 3, 5, 10, 10-PREP, 15	100	400	13.5	5.50	Yes	1.5 - 10*
Luna C18	Spher. 5,10	100	440	19	3.00	Yes	1.5 - 10*
Luna C18(2)	Spher. 2.5, 3, 5, 10, 10-PREP, 15	100	400	17.5	3.00	Yes	1.5 - 10*
Luna Phenyl-Hexyl	Spher. 3, 5, 10, 10-PREP, 15	100	400	17.5	4.00	Yes	1.5 - 10*
Luna CN	Spher. 3, 5, 10	100	400	7.0	3.80	Yes	1.5 - 7.0
Luna NH ₂	Spher. 3, 5, 10	100	400	9.5	5.80	No	1.5 - 11
Luna SCX	Spher. 5,10	100	400	Binding Capacity: 0.15 meq/g		No	2.0 - 7.0
Luna HILIC	Spher. 3, 5	200	200	5.7	4.30	No	1.5 - 8.0
Luna PFP(2)	Spher. 3, 5	100	400	11.5	2.20	Yes	1.5 - 8.0

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

USP Phases for Virtually Every Application

Luna Bonded Phase Selectivity Chart

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

Luna® is a registered trademark of Phenomenex, Inc.



Try Gemini®-NX for even longer column lifetimes (see page 165).



Luna Silica

A Backbone and Phase Designed for Long Column Lifetimes

Luna columns' excellent performance is not simply the result of ultra-pure metal-free silica (99.99 % purity). Meticulous care is given to the quality control of surface smoothness, pore structure and pore consistency to ensure particles of uniform structure and enhanced mechanical strength. Either bonded or unbonded, Luna silica produces highly advanced HPLC columns:

- Low percentage of "fines" from damaged silica leading to lower backpressures and enhanced column performance and lifetimes
- High column bed stability enhanced by particle shape uniformity

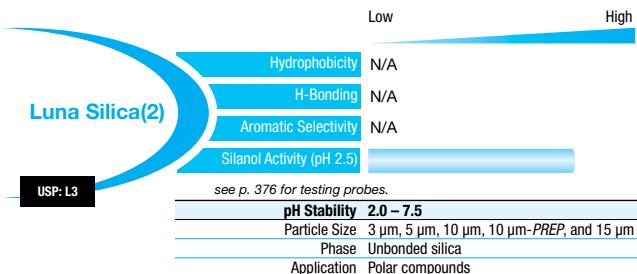
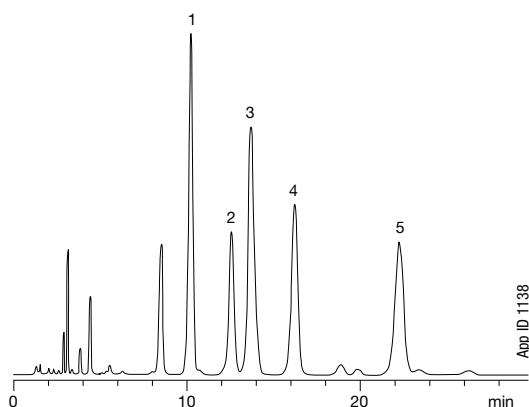
Incredible Silica Smoothness

Luna silica is extremely smooth and spherical. For bonded phases, this provides a uniform bonding surface for consistent and even bonded phase coverage. The likelihood of silica particle shearing and breakage during bonding and packing is very low; thus, Luna columns have high efficiencies and long column lifetimes.

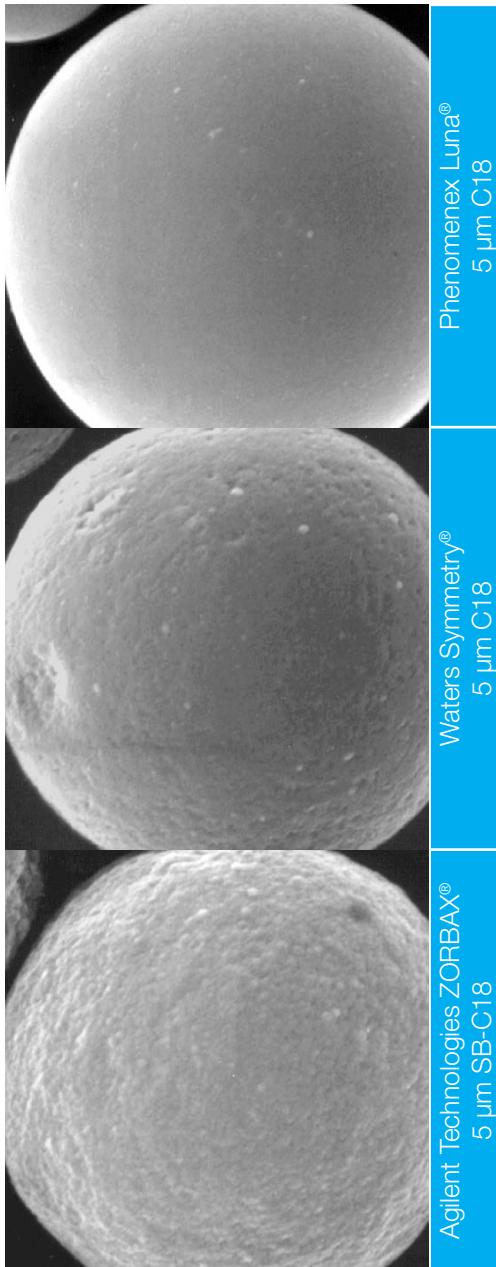
- Recommended for preparative and bulk packing into DAC systems, see page 312 for more information

Natural Products (Kava Kava)

Column: Luna 5 µm Silica(2)
Dimensions: 150 x 4.6 mm
Part No.: 00F-4274-E0
Mobile Phase: Hexane/Dioxane (85:15)
Flow Rate: 1.5 mL/min
Detection: UV @ 230 nm
Sample: 1. Dihydrokawain
 2. Yangonin
 3. Kawaia
 4. Dihydromethysticin
 5. Methysticin



Compare Surface Smoothness



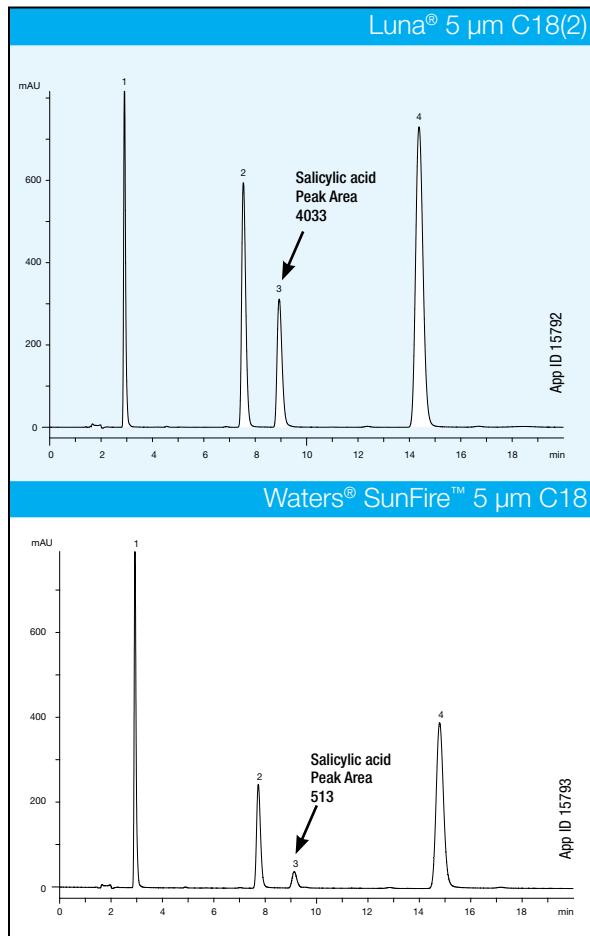
Luna C18(2), C8(2), C5

Your Starting Point for Reversed Phase Methods

The Luna column has found a place as one of the world's top reversed phase columns because it provides a measurable improvement over many HPLC columns for two important chromatographic properties: resolution and peak shape. The high efficiencies and bonded phase surface coverage provide for sharp peaks. The result:

- Free exposed silanols virtually eliminated by complete bonding and endcapping
- Sharp peak shape for good method sensitivity
- pH stable from 1.5 to 10.0 for over 10000 hours

C18 Column Comparison**



** The comparative data presented here may not be representative for all applications.

Aromatic Acids

Columns: Luna 5 μm C18(2) 100 Å
SunFire 5 μm C18 100 Å

Conditions for all columns:

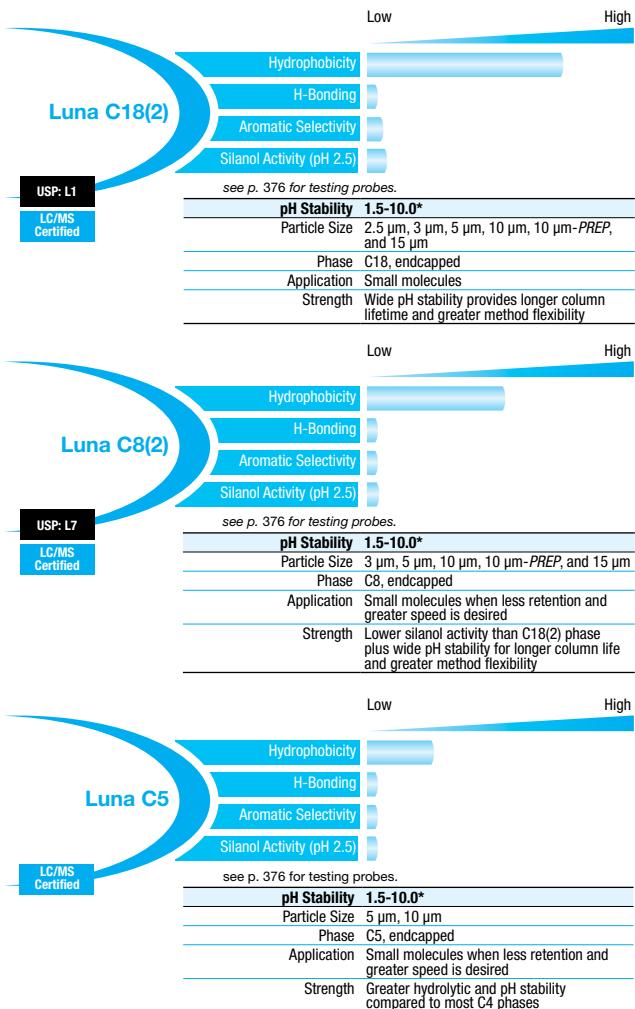
Dimensions: 150 x 4.6 mm

Mobile Phase: 20 mM Phosphate buffer, pH 2.5 / Acetonitrile (75:25)

Flow Rate: 1.0 mL/min

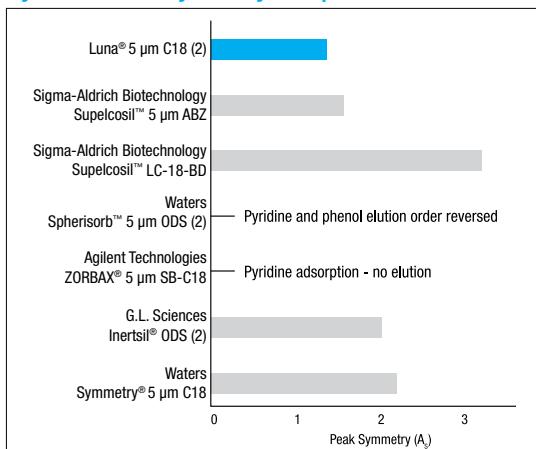
Detection: UV @ 254 nm

Sample: 1. p-Hydroxybenzoic acid 3. Salicylic acid
2. Benzoic acid 4. p-Toluic acid



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

Pyridine Peak Asymmetry Comparison**



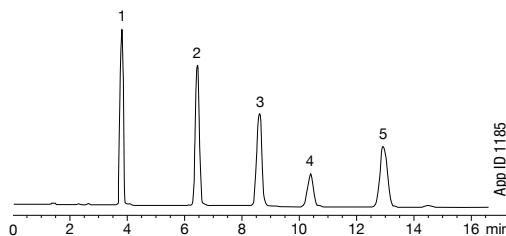
Comparison of 7 different 5 μm reversed phase columns. This survey measures the degree of silanol activity on the surface of each silica. In this survey, Luna 5 μm C18(2) material demonstrates the lowest silanol activity.

**The comparative data presented here may not be representative for all applications.

Luna C18(2), C8(2), C5 (cont'd)

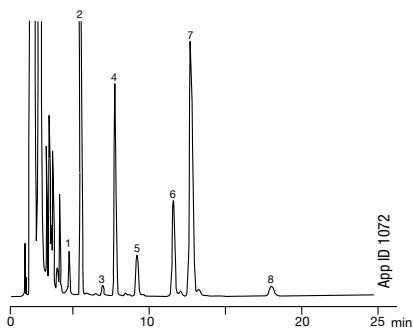
Steroids

Column: Luna 5 μm C18(2)
Dimensions: 150 x 4.6 mm
Part No.: 00F-4252-E0
Mobile Phase: 0.1 % H_3PO_4 /Acetonitrile/Methanol (54:35:11)
Flow Rate: 0.75 mL/min
Detection: UV @ 254 nm
Sample: 1. Hydrocortisone
 2. Corticosterone
 3. 11- α -Hydroxyprogesterone
 4. Cortisone Acetate
 5. 11-Ketoprogesterone



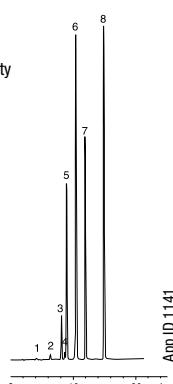
Saw Palmetto Berry, p-Bromophenacyl Esters

Column: Luna 3 μm C8(2)
Dimensions: 150 x 4.6 mm
Part No.: 00F-4248-E0
Mobile Phase: Acetonitrile/Water (87:13)
Flow Rate: 1.5 mL/min
Temperature: 25 °C
Detection: UV @ 254 nm
Sample: 1. Capric Acid
 2. Lauric Acid
 3. Linolenic Acid
 4. Myristic Acid
 5. Linoleic Acid
 6. Palmitic Acid
 7. Oleic Acid
 8. Stearic Acid



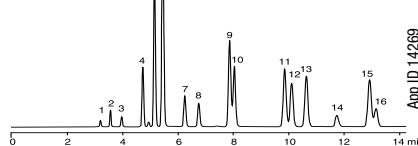
Pharmaceutical Preservatives

Column: Luna 5 μm C5
Dimensions: 150 x 4.6 mm
Part No.: 00F-4043-E0
Mobile Phase: A: 0.5 % Acetic acid in water/acetonitrile (80:20)
 B: 0.5 % Acetic acid in water/acetonitrile (20:80)
Gradient: A/B (100:0) to A/B (0:100) in 30 min
Flow Rate: 1 mL/min
Temperature: 25 °C
Detection: UV @ 254 nm
Sample: 1. Propylparaben impurity
 2. Benzyl alcohol
 3. Phenol
 4. Benzoic acid
 5. Methylparaben
 6. Benzaldehyde
 7. Ethylparaben
 8. Propylparaben



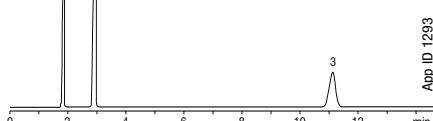
Polynuclear Aromatic Hydrocarbons: EPA Method 8310

Column: Luna 5 μm C18 (2)
Dimensions: 250 x 4.6 mm
Part No.: 00G-4252-E0
Mobile Phase: A: Water
 B: Acetonitrile
Gradient: A/B (25:75) to 100 % B in 25 min
Flow Rate: 2.0 mL/min
Temperature: 22 °C
Detection: UV @ 254 nm
Sample: 1. Naphthalene
 2. Acenaphthylene
 3. Fluorene
 4. Phenanthrene
 5. Anthracene
 6. Fluoranthene
 7. Pyrene
 8. Benz[a]anthracene
 9. Chrysene
 10. Benzo[e]pyrene
 11. Benzo[b]fluoranthene
 12. Benzo[k]fluoranthene
 13. Benzo[a]pyrene
 14. Dibenz[a,h]anthracene
 15. Benzo[g,h,i]perylene
 16. Indeno[1,2,3-c,d]pyrene



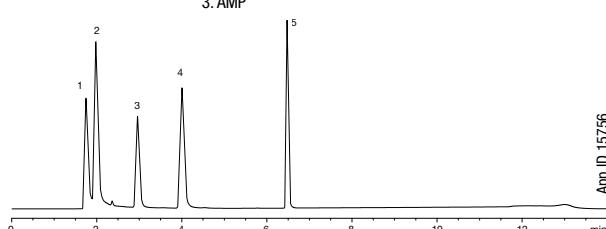
Acetaminophen, USP Method

Column: Luna 5 μm C18(2)
Dimensions: 150 x 4.6 mm
Part No.: 00F-4252-E0
Mobile Phase: Water/Methanol/Acetic Acid (69:28:3)
Flow Rate: 1.5 mL/min
Detection: UV @ 275 nm
Sample: 1. Acetaminophen
 2. Caffeine
 3. Benzoic Acid



Adenine Family

Column: Luna 5 μm C18(2)
Dimensions: 150 x 4.6 mm
Part No.: 00F-4252-E0
Mobile Phase: A: 20 mM Ammonium acetate, pH 4.5
 B: Acetonitrile
Gradient: A/B (97:3) to (60:40) in 10 min
Flow Rate: 1 mL/min
Temperature: Ambient
Detection: UV@ 260 nm
Sample: 1. ATP
 2. ADP
 3. AMP
 4. Adenine
 5. Adenosine

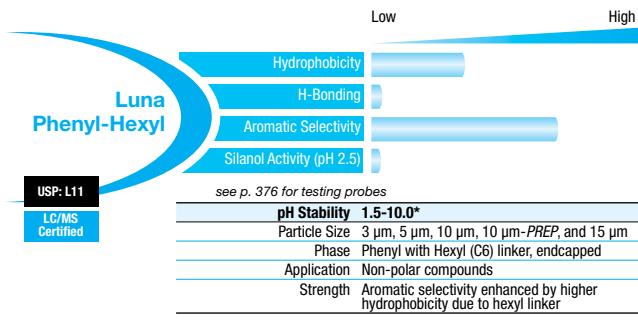


Luna Phenyl-Hexyl

Engineered for Stability

Luna Phenyl-Hexyl columns provide separations not achievable on C18 or C8 columns; such as increased retention for polar, aromatic compounds as well as reversals in analyte elution order. Luna Phenyl-Hexyl columns are a reproducible, extremely stable phenyl phase. Most phenyl phases use a short propyl (3 carbon) linker, which limits phase stability. The Phenyl-Hexyl bonded phase employs a phenyl ring with a hexyl (6 carbon) linker and is densely bonded to Luna silica surface. Dense bonding and the hexyl linker reduce bonded phase hydrolysis and increases chemical stability. The result:

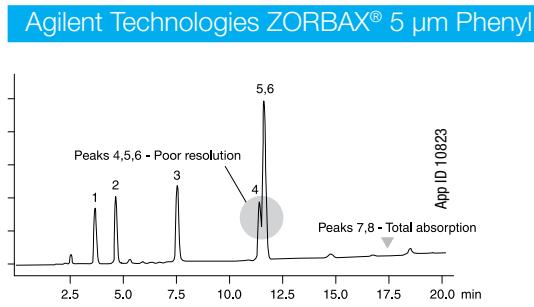
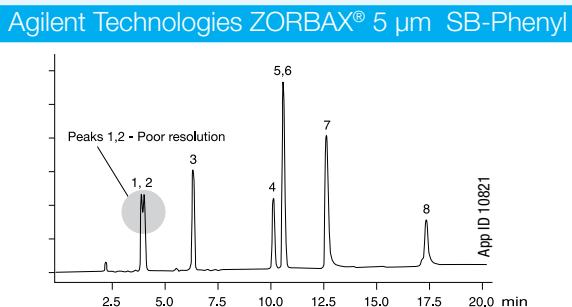
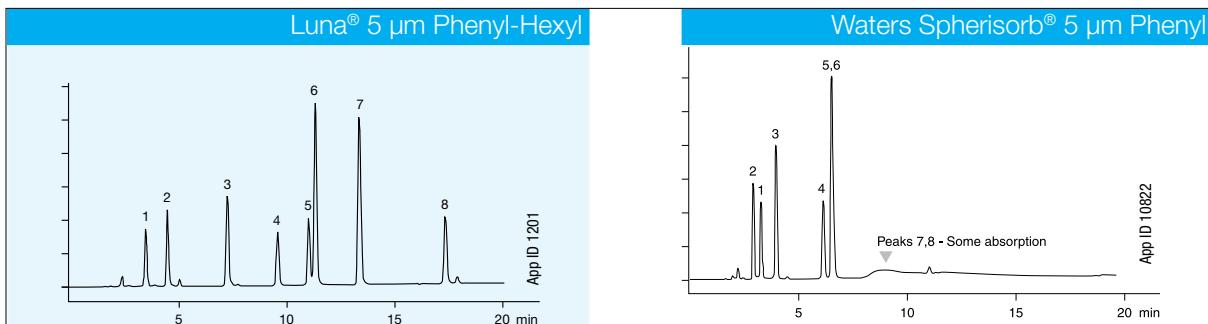
- Highly reproducible and stable phenyl phase
- Dual selectivity of both phenyl phase and a short alkyl phase (C5 or C8)
- Excellent retention of aromatic and polar, amine compounds
- Recommended for US EPA Method 8330B for explosives analysis
- 1.5 to 10 pH stability for over 10000 hours



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



Chromatographic Comparisons of Phenyl Columns**



Antibacterials

Conditions for all columns:

Dimensions: 150 x 4.6 mm

Mobile Phase: A: 20 mM KH₂PO₄, pH 2.5

B: Acetonitrile

Gradient: Start A/B (80:20) to A/B (75:25) in 5 min, go to A/B (55:45) in 15 min

Flow Rate: 1.0 mL/min

Detection: UV @ 254 nm

Sample: 1. Carbadox

2. Thiamphenicol

3. Furazolidone

4. Oxolinic Acid

5. Sulfadimethoxine

6. Sulfaquinoxaline

7. Nalidixic Acid

8. Piromidic Acid

**The comparative data presented here may not be representative for all applications.

Luna CN (cyano)

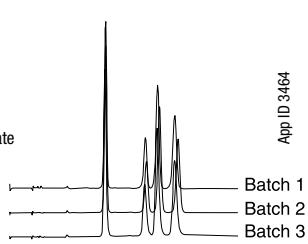
Proven Reproducibility

For carboxyl, carbonyl and amine containing compounds, Luna CN columns offer a unique polar selectivity in reversed phase and normal phase mode. Luna CN columns provide sharp peaks and great reproducibility run-to-run, column-to-column and batch-to-batch. The smooth silica allows for a more uniform bonding with improved resistance to bonded phase hydrolysis to produce one of the most stable CN phases. The result:

- Improved peak shapes
- One of the most stable CN columns under reversed phase or normal phase conditions.
- pH stable from 1.5 to 7.0

Batch-to-Batch Reproducibility

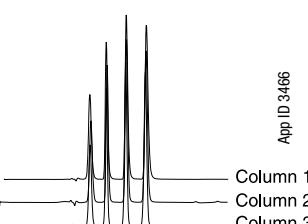
Column: Luna® 5 μ m CN
Dimensions: 150 x 4.6 mm
Mobile Phase: A: Hexane, B: Methylene chloride/Methanol(80:20), A/B (80:20)
Flow Rate: 2.0 mL/min
Detection: UV @ 254 nm
Injection: 1.0 μ L
Temperature: Ambient
Sample: 1. Hydrocortisone
 2. Prednisone
 3. Cortisone
 4. Hydrocortisone Acetate



App ID 3464

Column-to-Column Reproducibility

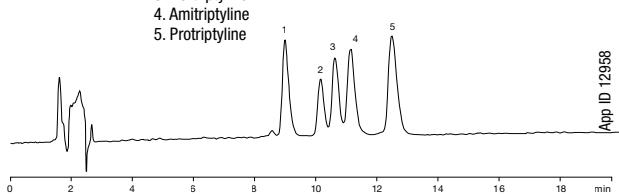
Column: Luna® 5 μ m CN
Dimensions: 150 x 4.6 mm
Mobile Phase: A: Hexane, B: Methylene chloride/Methanol(80:20), A/B (95:5)
Flow Rate: 1.0 mL/min
Injection: 5 μ L
Detection: UV @ 254 nm
Temperature: Ambient
Sample: 1. Dimethyl phthalate
 2. Diethyl phthalate
 3. Dibutyl phthalate
 4. Dioctyl phthalate



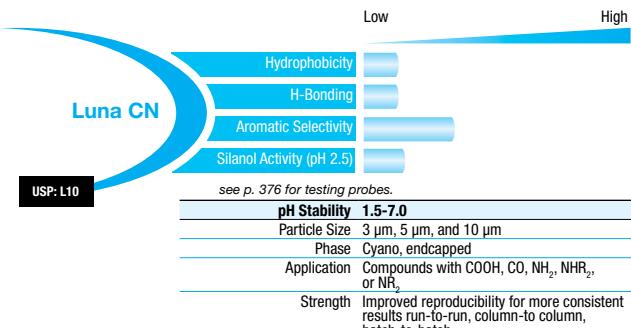
App ID 3466

Reversed Phase Conditions

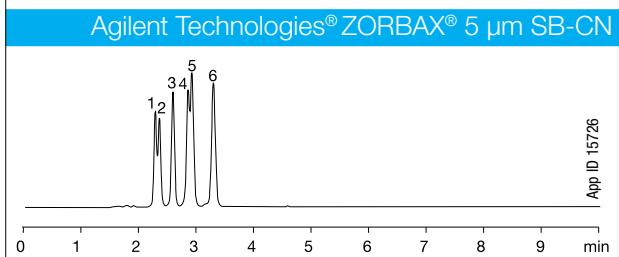
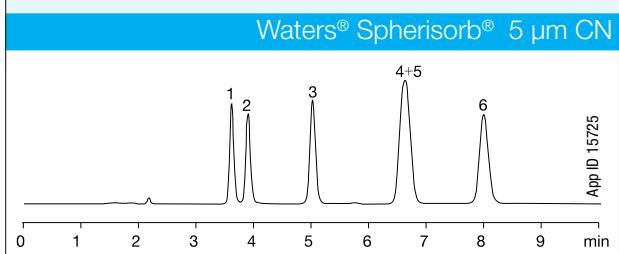
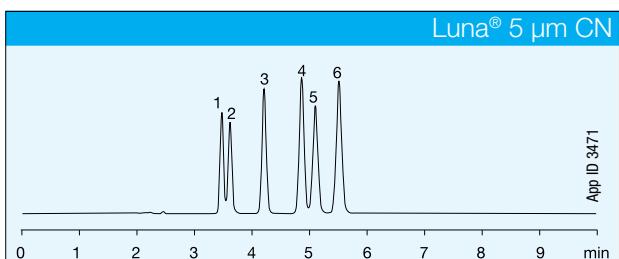
Column: Luna® 5 μ m CN
Dimensions: 150 x 4.6 mm
Mobile Phase: A: Acetonitrile, B: 20 mM Potassium phosphate pH 4.0, A/B (35:65)
Flow Rate: 1.0 mL/min
Detection: UV @ 210 nm
Sample: Tricyclic Antidepressants
 1. Doxepin
 2. Desipramine
 3. Nortriptyline
 4. Amitriptyline
 5. Protriptyline



App ID 12988



CN Column Comparison**



Normal Phase Conditions

Conditions for all columns:
Dimensions: 150 x 4.6 mm
Mobile Phase: A: Hexane, B: Methylene chloride/Methanol (80:20), A/B (99:1)
Flow Rate: 1.0 mL/min
Detection: UV @ 254 nm
Temperature: Ambient
Sample: Phthalate Esters
 1. Di-n-octyl phthalate
 2. Bis (2-Ethylhexyl) phthalate
 3. Butylbenzyl phthalate
 4. Di-n-butyl phthalate
 5. Diethyl phthalate
 6. Dimethyl phthalate

**The comparative data presented here may not be representative for all applications.

Luna NH₂ (amino)

Developed for Ruggedness

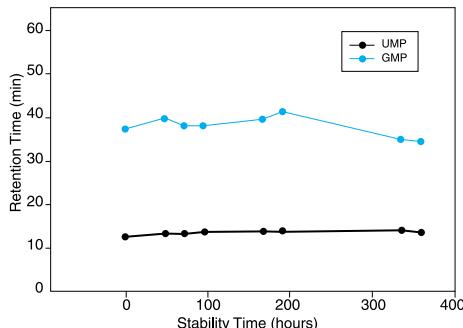
Luna NH₂ columns retain hydrogen-bonding compounds under three separation modes: Reversed Phase, Normal Phase, and Ion-Exchange. Luna NH₂ columns provide reproducible retention and selectivity with improved column lifetime. Amino columns can be problematic as the bonded phase easily hydrolyses off the silica, shortening retention time over the life of the column. The bonded phase stability of Luna NH₂ columns are illustrated by 1.5 to 11.0 pH stability and 100 % aqueous mobile phase stability. The result:

- Increased bonded phase stability improves reproducibility and column lifetime
- Excellent retention of simple sugars, complex sugars, sugar alcohols and other hydrogen-bonding compounds under Reversed Phase, Normal Phase, Ion Exchange conditions
- pH stable from 1.5 to 11.0
- Stable in 100 % aqueous mobile phases

Stability in 100 % Aqueous Mobile Phase

Column: Luna 5 μm NH₂
Dimensions: 250 x 4.6 mm
Part No.: 00G-4378-E0

Mobile Phase: 20 mM Potassium Phosphate Buffer pH 2.7
Flow Rate: 1.5 mL/min
Detector: UV @ 254 nm
Temperature: Ambient
Injection: 2.5 μL
Conditions: Continuously flushed at 1.0 mL/min using 100 % 20 mM Potassium Phosphate Buffer pH 2.7 between injections

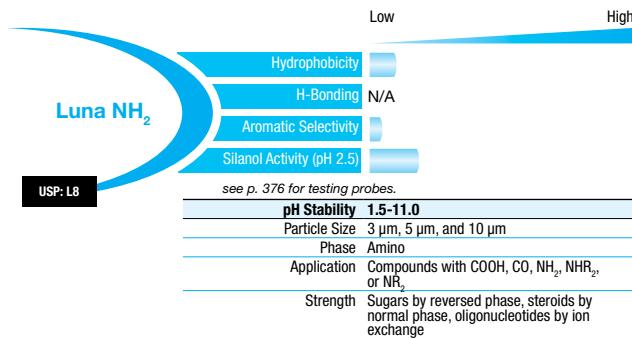
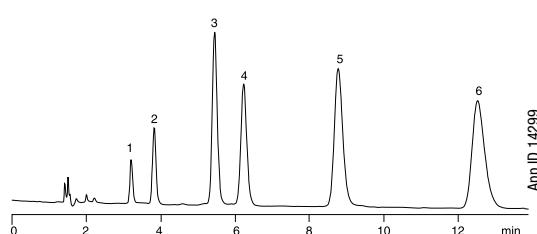


Steroids

Column: Luna 5 μm NH₂
Dimensions: 250 x 4.6 mm
Part No.: 00G-4378-E0

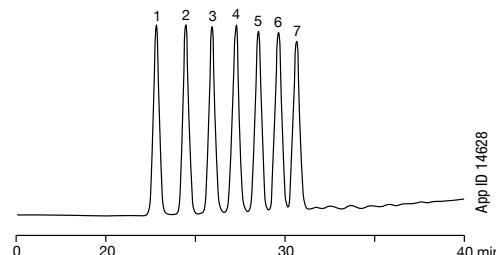
Mobile Phase: Hexane/Ethanol (85:15)
Flow Rate: 2 mL/min
Temperature: 22 °C
Detection: UV @ 240 nm

Sample: 1. 11-Ketoprogesterone
2. 11-Hydroxyprogesterone
3. Cortisone Acetate
4. Prednisolone 21-Acetate
5. Cortisone
6. Prednisolone



12-18mer poly-DT Oligonucleotide

Column: Luna 5 μm NH₂
Dimensions: 150 x 4.6 mm
Part No.: 00F-4378-E0
Mobile Phase: A: 20 mM Sodium Phosphate, 10 % Acetonitrile, pH 7.0
B: 20 mM Sodium Phosphate, 10 % Acetonitrile,
1 M Sodium Chloride, pH 7.0
Gradient: A/B (75:25) to A/B (5:95) in 50 minutes
Flow Rate: 1 mL/min
Temperature: 40 °C
Detection: UV @ 260 nm
Sample: 12-18mer poly-DT oligonucleotide standard

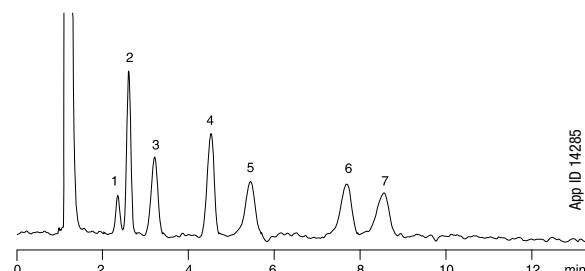


Simple Sugars

Column: Luna 5 μm NH₂
Dimensions: 250 x 4.6 mm
Part No.: 00G-4378-E0

Mobile Phase: Acetonitrile/Water (80:20)
Flow Rate: 3 mL/min

Temperature: 40 °C
Detection: RI
Sample: 1. Xylose 5. Maltose
2. Fructose 6. Melezitose
3. Glucose 7. Raffinose
4. Sucrose



Luna SCX (strong cation exchange)

Develop Robust Methods

Luna SCX columns provide excellent resolution and peak shape of basic, cationic compounds. However, most SCX columns show poor peak shape and bad resolution causing many chromatographers to ignore this important phase for small molecule method development, until now. Luna SCX columns contain a benzene sulfonic acid ligand providing ion-exchange reversed phase, and aromatic interactions. Such interaction make Luna SCX columns great as a first dimension of 2D LC applications as well as improved resolution for small molecules. The result:

- **Resolving power and sharp peak shape to separate complex cationic/basic and nitrogen containing compounds**
- **5 and 10 µm columns and bulk media for analytical through preparative separations**
- **Benzene sulfonic acid ligand provides mixed-mode interaction improving separation for 2D peptide applications**

Childrens Tylenol Cold Syrup

Column: Luna 5 µm SCX

Dimensions: 150 x 4.6 mm

Part No.: 00F-4398-E0

Mobile Phase: 50 mM KH₂PO₄, pH 2.5/Acetonitrile (35:65)

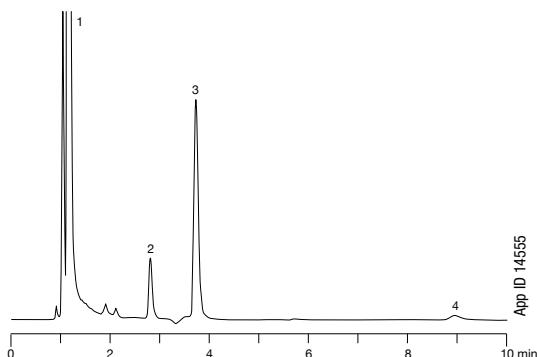
Injection Volume: 1 µL

Flow Rate: 1.5 mL/min

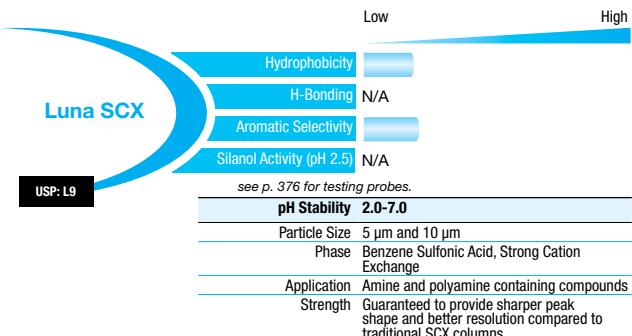
Detection: UV @ 210 nm

Sample Prep: Dissolve 1 part Childrens Tylenol Cold in 10 parts Methanol

- Sample:**
1. Acetaminophen
 2. Pseudoephedrine
 3. Dextromethorphan
 4. Chlorpheniramine



SCX Method Development and pH: The standard operating pH range for Luna SCX columns is 2.0 to 7.0. Most SCX methods are typically run between pH 2.0 and 5.0 for optimal performance. This ensures that nitrogen-containing analytes, especially those with adjacent conjugated system are protonated. Running in highly acidic (pH < 2.0) or basic (pH > 7.0) mobile phases may cause this phase to undergo degradation, as is common for all silica-based SCX phases.



Peptides

Column: Luna 5 µm SCX

Dimensions: 150 x 4.6 mm

Part No.: 00F-4398-E0

Mobile Phase: A: 20 mM Potassium Phosphate, 25 % Acetonitrile, pH 2.5

B: 20 mM Potassium Phosphate, 25 % Acetonitrile, 400 mM Potassium Chloride, pH 2.5

Gradient: A/B (95:5) to A/B (10:90) in 45 minutes

Flow Rate: 1 mL/min

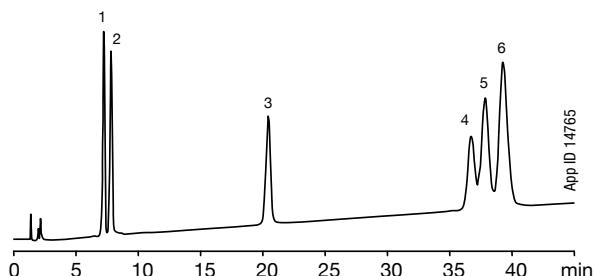
Temperature: 35 °C

Detection: UV @ 215 nm

Injection Volume: 2 µL (5 µg on column)

Sample: Peptide Mixture - Substance P

1. Fragment 5-11 (+1)
2. Fragment 4-11 (+1)
3. Fragment 2-11 (+2)
4. Fragment 1-9 (+3)
5. Intact (+3)
6. (ARG-PHE-TRP-LEU) (+3)



Tryptic Digest of Bovine Cytochrome c

Column: Luna 5 µm SCX

Dimensions: 150 x 4.6 mm

Part No.: 00F-4398-E0

Mobile Phase: A: 20 mM Potassium Phosphate, pH 2.5 / 25 % Acetonitrile

B: 20 mM Potassium Phosphate, pH 2.5 / 25 % Acetonitrile / 350 mM Potassium Chloride

Gradient: 100 % A to 100 % B in 50 minutes

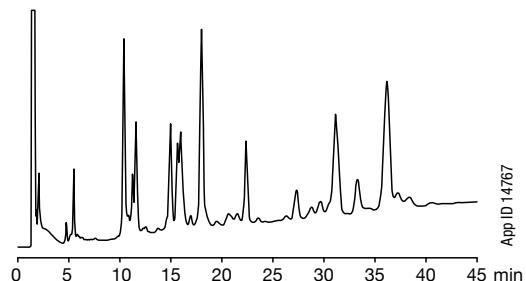
Flow Rate: 1 mL/min

Temperature: 35 °C

Detection: UV @ 215 nm

Injection Volume: 50 µL (20 µg on column)

Sample: Bovine Cytochrome c trypsin digest



Luna HILIC

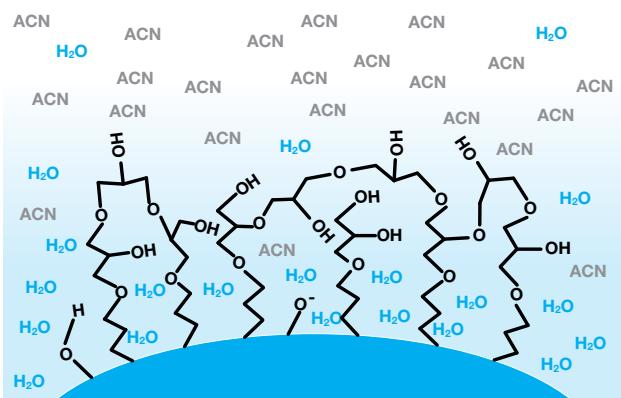
Increase MS Sensitivity and Retention for Polar Compounds

Luna HILIC columns retain a water-enriched layer on the surface of the silica. This water layer facilitates the transfer of polar compounds onto the stationary phase for increased retention.

Hydrophilic Interaction Liquid Chromatography (HILIC) is a separation mode. Separation is achieved through the partitioning of polar solutes from the high concentration, water-miscible, organic mobile phase into the hydrophilic surface environment. Polar solutes exhibit increased retention and elute in the order of increasing hydrophilicity.

Finally, reproducible, robust HILIC separations!

- Made for retention of polar compounds
- Increase mass spectrometry sensitivity
- Increase laboratory throughput and productivity



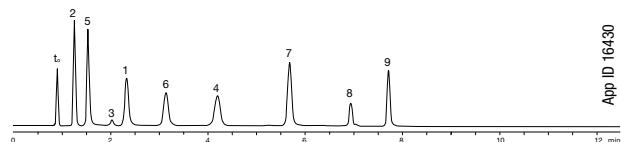
Ganciclovir & Acyclovir on Luna HILIC

HILIC uses a solvent system that is the reverse of what is common in reversed phase, thus peak elution order is reversed on the Luna HILIC column.

Polar / Hydrophilic compounds that are particularly difficult to retain, even on polar-embedded reversed phase columns, will enjoy maximum retention on Luna HILIC columns.

Vitamin Mix on Luna HILIC

Vitamins provide an excellent platform to demonstrate the benefits of HILIC. The effect of increased polar compound retention can be easily seen in this application.



Column: Luna 5 μ m HILIC

Dimensions: 150 x 4.6 mm

Part No.: 00F-4450-E0

Mobile Phase: A: Acetonitrile

B: Water

C: 100 mM Ammonium Acetate, pH 5.8

Gradient: A/B/C (90:5:5) for 2.5 min to A/B/C (50:45:5) in 7.5 min, hold for 2.5 min. Re-equilibrate @ A/B/C (90:5:5) for 7.5 min

Flow Rate: 2.0 mL/min

Detection: UV @ 260 nm

Sample: 1. p-Aminobenzoic Acid pK_a 4.7, H^+pK_a 2.7 logP 0.83

2. Nicotinamide H^+pK_a 3.35 logP -0.37

3. Riboflavin pK_a 10.2 logP -1.46

4. Nicotinic Acid pK_a 4.7, H^+pK_a 3.0 logP 0.36

5. Pyridoxine H^+pK_a 5.6, pK_a 8.6 logP -0.77

6. Thiamine H^+pK_a 5.5 logP -4.6

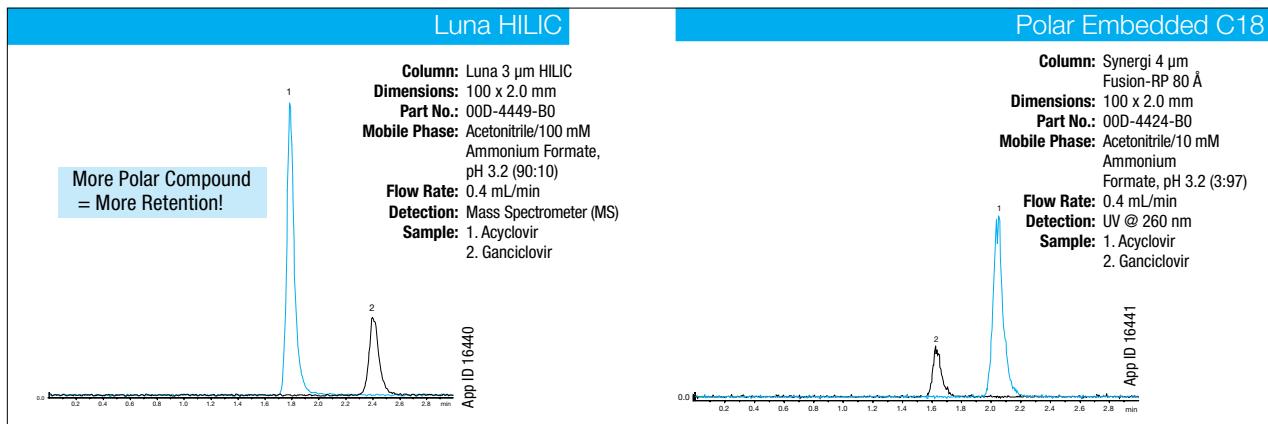
7. Ascorbic Acid pK_a 4.1, 11.2 logP -1.85

8. Cyanocobalamin pK_a 1.59 logP -0.90

9. Folic Acid pK_a 2.7, 4.1, 8.9 logP -0.02



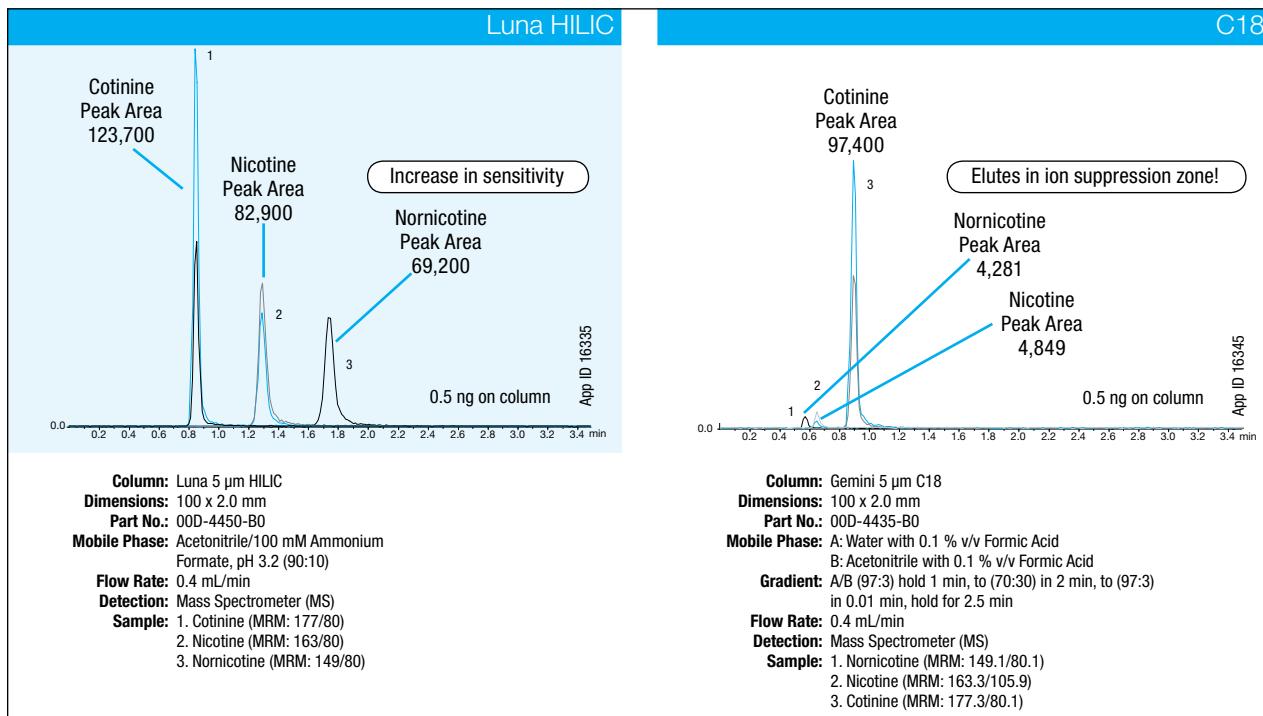
HPLC — LUNA



Luna HILIC (cont'd) Improved MS Sensitivity

The increased retention in HILIC allows elution of the analytes outside the suppression region and thus increased detector sensitivity. In addition, the Luna HILIC column also resolved the compounds with the reverse order of that seen in reversed phase LC.

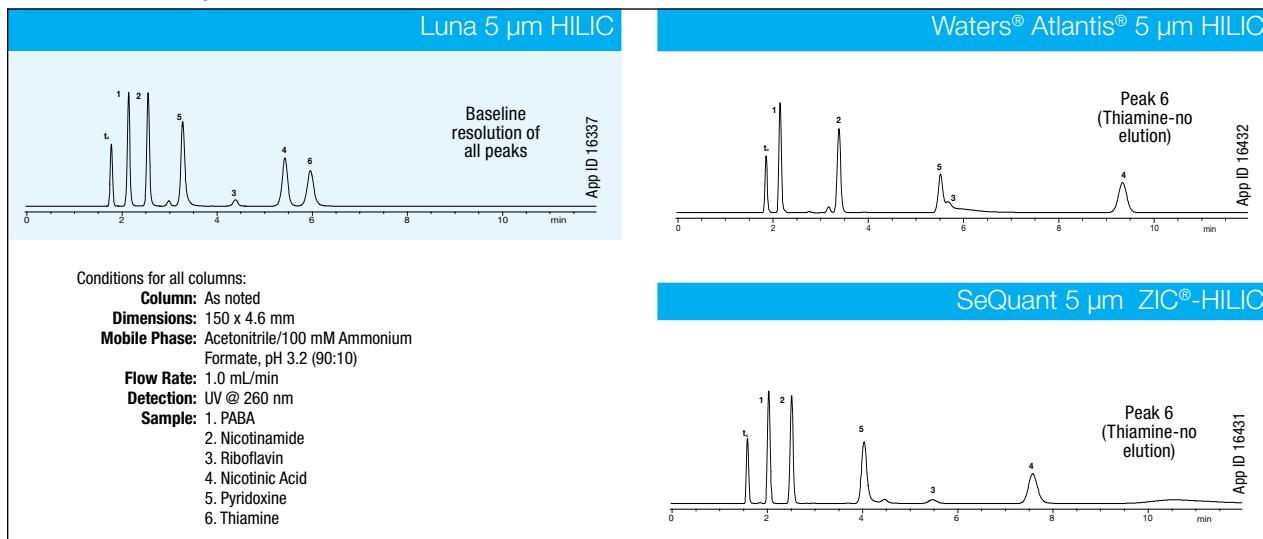
Nicotine and Metabolites



Unique HILIC Selectivity

Not all HILIC columns are alike, Luna HILIC columns deliver on the exacting standards you have come to trust from the Luna product line.

HILIC Column Comparison**



** The comparative data presented here may not be representative for all applications.

Luna PFP(2)

Powerful Selectivity for Reversed Phase Methods

Luna PFP(2) columns provide remarkable selectivity for highly polar compounds, complex natural products, isomers, and other closely related compounds. This is achieved by using a pentafluorophenyl with a propyl linkage which provides multiple retention mechanisms different to other reversed phase media.

- Achieve excellent selectivity using four mechanisms of solute/stationary phase interactions
- Extremely discerning for halogenated, aromatic and conjugated compounds
- Provides orthogonal selectivity even using traditional reversed phase mobile phase systems

Luna PFP(2) Selectivity is achieved through 4 of the 5 mechanisms of interaction

- Hydrogen Bonding
- Dipole-Dipole Interactions
- Aromatic and π - π Interactions
- Hydrophobic

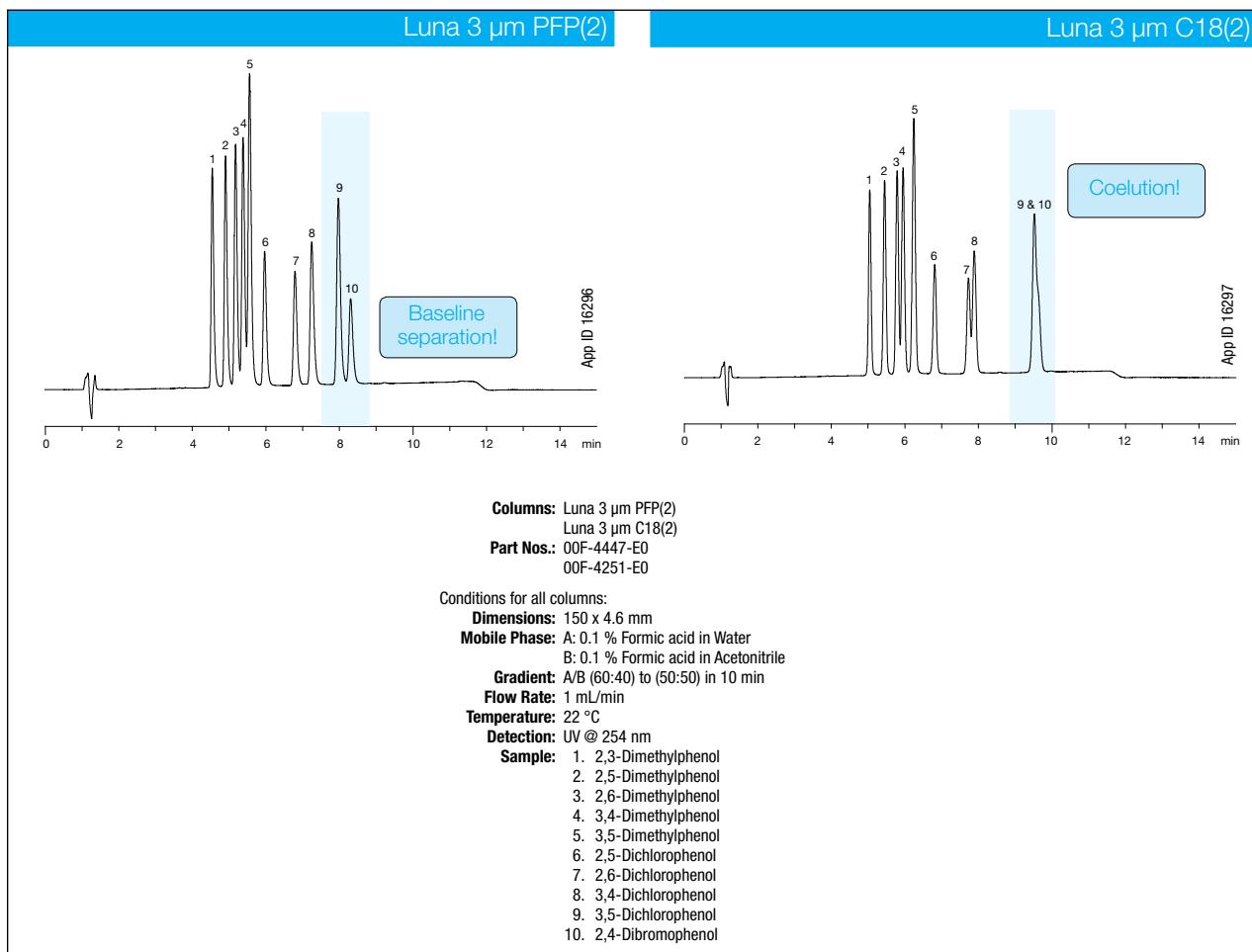


A typical alkyl phase (C18, C8) achieves selectivity through only 1 mechanism of interaction.



Positional Isomers of Halogenated Phenols

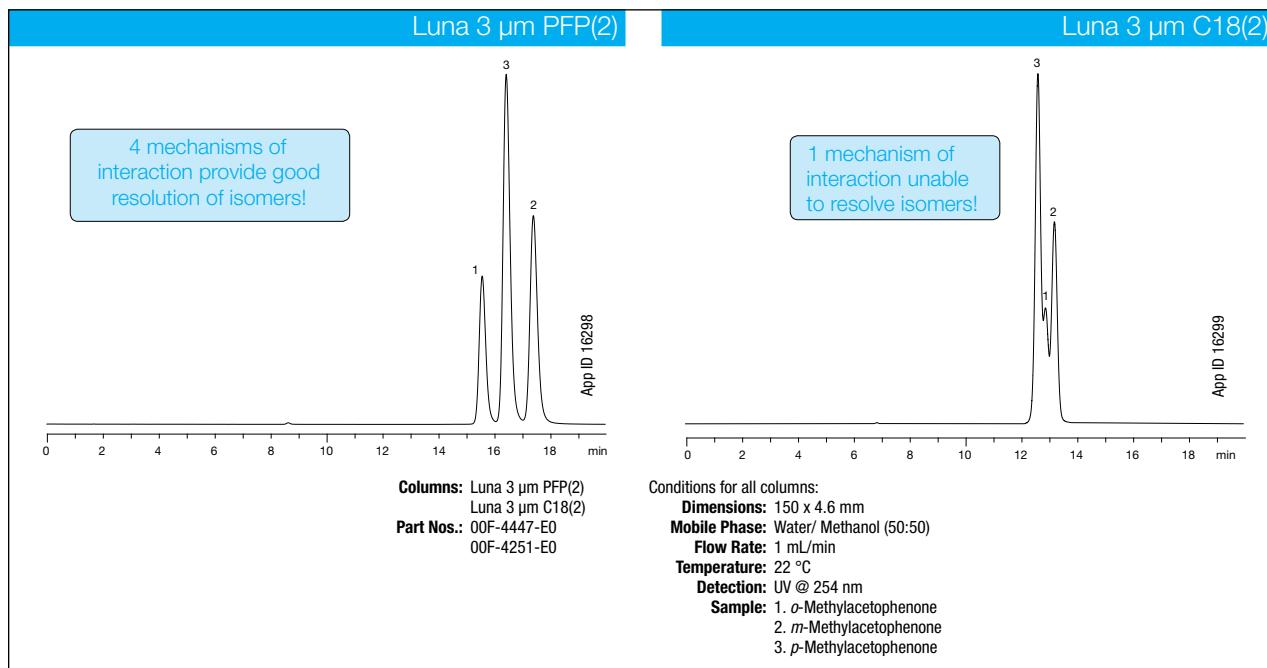
Halogens can radically increase the polarity of a compound, thus decreasing typical retention characteristics. Luna PFP(2) columns retain, discriminate, and separate halogens easily.



Luna PFP(2) (cont'd)

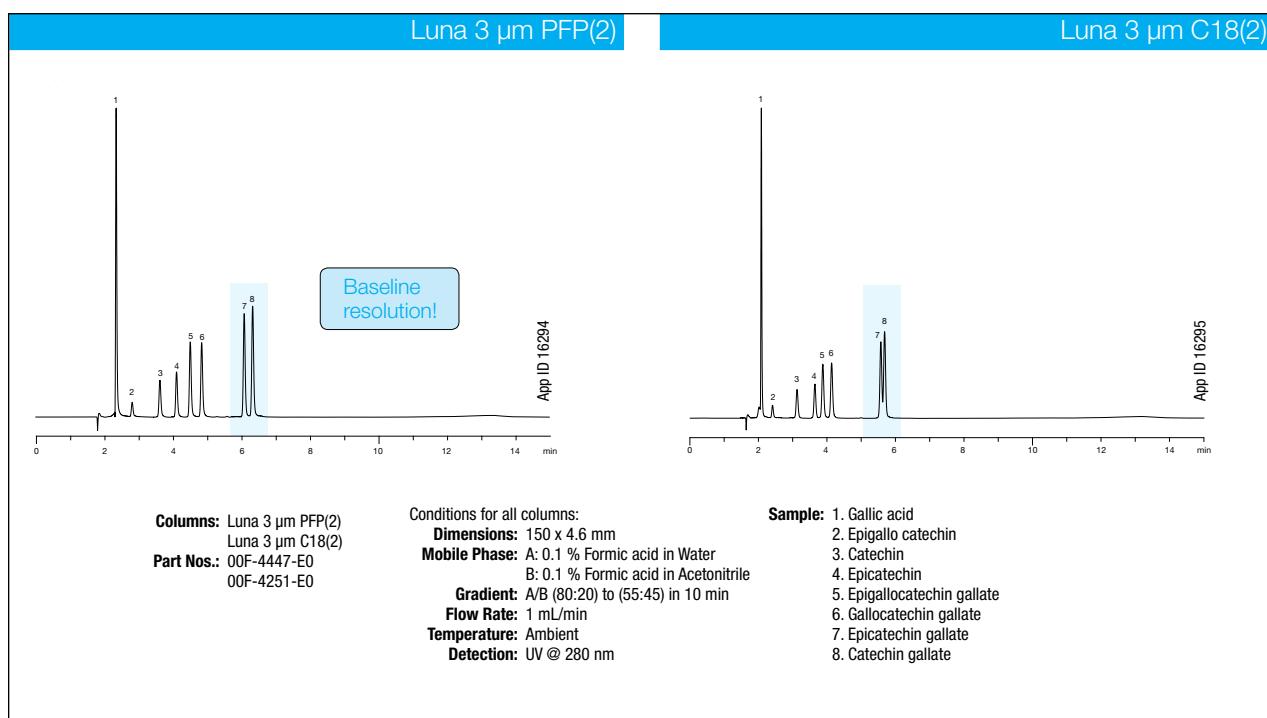
Positional Isomers of Methylacetophenone

Positional changes on an analyte of interest may effect the compound's dipole moment. This change can be readily noticed by the highly electronegative fluorine (F) atom and other retention mechanisms.



Catechins

The presence of the aromatic benzene ring in Luna PFP(2) columns increase the relative attraction between the stationary phase and aromatic analytes, leading to increased retention for these types of compounds.



Ordering Information**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



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

3 µm and 5 µm Capillary Columns (mm)

Phases	50 x 0.30	150 x 0.30	250 x 0.30	50 x 0.50	150 x 0.50	250 x 0.50
3 µm C8(2)	00B-4248-AC	00F-4248-AC	00G-4248-AC	00B-4248-AF	00F-4248-AF	00G-4248-AF
3 µm C18(2)	00B-4251-AC	00F-4251-AC	00G-4251-AC	00B-4251-AF	00F-4251-AF	00G-4251-AF
5 µm C8(2)	00B-4249-AC	00F-4249-AC	00G-4249-AC	00B-4249-AF	00F-4249-AF	00G-4249-AF
5 µm C18(2)	00B-4252-AC	00F-4252-AC	00G-4252-AC	00B-4252-AF	00F-4252-AF	00G-4252-AF
5 µm Phenyl-Hexyl	00B-4257-AC	00F-4257-AC	—	00B-4257-AF	00F-4257-AF	—

3 and 5 µm Luna Capillary Guard Columns (mm)

Phases	20 x 0.30	20 x 0.50
3 µm C8(2)	03M-4248-AC	03M-4248-AF
3 µm C18(2)	03M-4251-AC	03M-4251-AF
5 µm C8(2)	03M-4249-AC	03M-4249-AF
5 µm C18(2)	03M-4252-AC	03M-4252-AF



For Fused Silica Capillary Adapter, see p. 349

MercuryMS™ LC/MS Cartridges (mm)

3 µm	Phase	Columns (mm)					
		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	00N-4248-D0-CE	00M-4248-B0-CE	00M-4248-D0-CE	00M-4248-B0	00M-4248-D0
5 µm							
Luna	C18(2)	00N-4252-B0-CE	—	00M-4252-B0-CE	00M-4252-D0-CE	—	—
Luna	C8(2)	00N-4249-B0-CE	—	00M-4249-B0-CE	00M-4249-D0-CE	—	—

MercuryMS™ Cartridge Holders

Direct-Connect Holder



Standard Holder

Ordering Information**Direct-Connect Cartridge Holders**

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

Standard Cartridge Holders

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

Ordering Information**3 µm Microbore and Minibore Columns (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
Silica(2)	—	—	00A-4162-B0	00B-4162-B0	00D-4162-B0	00F-4162-B0	/10pk
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
NH ₂	—	00F-4377-A0	00A-4377-B0	00B-4377-B0	00D-4377-B0	00F-4377-B0	AJ0-4301
HILIC	—	—	—	00B-4449-B0	00D-4449-B0	00F-4449-B0	AJ0-8328
PFP(2)	—	—	00A-4447-B0	00B-4447-B0	00D-4447-B0	00F-4447-B0	AJ0-8326

for ID: 2.0-3.0 mm

MercuryMS™ Screening Kits

These convenient screening kits allow quick, easy and economical evaluation of multiple phases. Each kit contains one cartridge of each available phase and a standard holder. Available in either 3 µm or 5 µm Luna with 2.5 µm Syngeri.

**Ordering Information****Screening Kits**

	20 x 2.0 mm Kit	20 x 4.0 mm Kit
Kit A includes 1 ea of:	KH0-7333	KH0-7334
Luna 3 µm C18(2) Cartridge Luna 3 µm C8(2) Cartridge Syngeri 2.5 µm Max-RP Cartridge Syngeri 2.5 µm Hydro-RP Cartridge 20 mm Standard Cartridge Holder		
Kit B includes 1 ea of:	KH0-7335	KH0-7336
Luna 5 µm C18(2) Cartridge Luna 5 µm C8(2) Cartridge Syngeri 2.5 µm Max-RP Cartridge Syngeri 2.5 µm Hydro-RP Cartridge 20 mm Standard Cartridge Holder		

Ordering Information

Phases	3 µm Analytical Columns (mm)								SecurityGuard™ Cartridges (mm)	
	30 x 3.0	50 x 3.0	150 x 3.0	30 x 4.6	50 x 4.6	75 x 4.6	100 x 4.6	150 x 4.6	4 x 2.0*	4 x 3.0*
Silica(2)	—	—	00F-4162-Y0	—	00B-4162-E0	—	00D-4162-E0	00F-4162-E0	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
NH ₂	—	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

Phases	5 µm Microbore and Minibore Columns (mm)							SecurityGuard™ Cartridges (mm)	
	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)	—	—	—	—	00B-4274-B0	00F-4274-B0	00G-4274-B0	AJ0-4347	
C5	—	—	—	00A-4043-B0	00B-4043-B0	00F-4043-B0	—	AJ0-4292	
C8	—	—	—	00A-4040-B0	00B-4040-B0	00F-4040-B0	—	AJ0-4289	
C8(2)	00B-4249-A0	00F-4249-A0	00G-4249-A0	00A-4249-B0	00B-4249-B0	00F-4249-B0	00G-4249-B0	AJ0-4289	
C18	—	—	—	00A-4041-B0	00B-4041-B0	00F-4041-B0	00G-4041-B0	AJ0-4286	
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	—	—	—	00A-4255-B0	00B-4255-B0	00F-4255-B0	00G-4255-B0	AJ0-4304	
Phenyl-Hexyl	00B-4257-A0	00F-4257-A0	00G-4257-A0	00A-4257-B0	00B-4257-B0	00F-4257-B0	00G-4257-B0	AJ0-4350	
NH ₂	—	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

Phases	5 µm Analytical Columns (mm)								SecurityGuard™ Cartridges (mm)	
	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*	/10pk	/10pk
Silica(2)	—	—	—	—	—	00B-4274-E0	—	AJ0-4347	AJ0-4348	
C5	—	—	—	00F-4043-Y0	—	00B-4043-E0	—	AJ0-4292	AJ0-4290	
C8	—	—	00F-4040-Y0	00G-4040-Y0	00A-4040-E0	00B-4040-E0	00C-4040-E0	AJ0-4289	AJ0-4290	
C8(2)	—	00B-4249-Y0	00F-4249-Y0	00G-4249-Y0	00A-4249-E0	00B-4249-E0	00C-4249-E0	AJ0-4289	AJ0-4290	
C18	—	—	00F-4041-Y0	00G-4041-Y0	00A-4041-E0	00B-4041-E0	00C-4041-E0	AJ0-4286	AJ0-4287	
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	00A-4257-Y0	00B-4257-Y0	00F-4257-Y0	00G-4257-Y0	00A-4257-E0	00B-4257-E0	00C-4257-E0	AJ0-4350	AJ0-4351	
NH ₂	—	00B-4378-Y0	00F-4378-Y0	00G-4378-Y0	00A-4378-E0	00B-4378-E0	00C-4378-E0	AJ0-4301	AJ0-4302	
SCX	—	—	—	—	—	00B-4398-E0	—	AJ0-4307	AJ0-4308	
HILIC	—	—	00F-4450-Y0	—	—	—	—	AJ0-8328	AJ0-8329	
PFP(2)	—	00B-4448-Y0	00F-4448-Y0	—	00A-4448-E0	00B-4448-E0	—	AJ0-8326	AJ0-8327	

for ID: 2.0-3.0 mm 3.2-8.0 mm

Phases	5 µm Analytical and Semi-Prep Columns (mm)							SecurityGuard™ Cartridges (mm)	
	100 x 4.6	150 x 4.6	250 x 4.6	250 x 10	250 x 15	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	—	—	AJ0-4293	AJ0-7372		
C8	00D-4040-E0	00F-4040-E0	00G-4040-E0	00G-4040-N0	—	AJ0-4290	AJ0-7222		
C8(2)	00D-4249-E0	00F-4249-E0	00G-4249-E0	00G-4249-N0	—	AJ0-4290	AJ0-7222		
C18	00D-4041-E0	00F-4041-E0	00G-4041-E0	00G-4041-N0	—	AJ0-4287	AJ0-7221		
C18(2)	00D-4252-E0	00F-4252-E0	00G-4252-E0	00G-4252-N0	00G-4252-AK	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	—		
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

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

[‡]SemiPrep SecurityGuard™ Cartridges require holder, Part No.: AJ0-7220

Ordering Information (Continued)

If Luna analytical columns do not provide at least an equivalent separation as compared to a competing column of the same particle size, similar phase, and dimensions, send in your comparative data within 45 days and keep the Luna column for FREE.

Ordering Information

Axia™ Packed Preparative Columns (mm)									SecurityGuard™ Cartridges (mm)		
Phases	50 x 21.2	100 x 21.2	150 x 21.2	250 x 21.2	50 x 30	100 x 30	250 x 30	15 x 21.2**	15 x 30♦	/ea	/ea
5 µm											
Silica(2)	00B-4274-P0-AX	00D-4274-P0-AX	00F-4274-P0-AX	00G-4274-P0-AX	00B-4274-U0-AX	00D-4274-U0-AX	00G-4274-U0-AX	AJ0-7229	AJ0-8312	—	—
C5	—	—	00F-4043-P0-AX	—	—	—	—	—	—	—	—
C8	00B-4040-P0-AX	00D-4040-P0-AX	00F-4040-P0-AX	00G-4040-P0-AX	00B-4040-U0-AX	00D-4040-U0-AX	00G-4040-U0-AX	AJ0-7840	AJ0-8302	—	—
C8(2)	00B-4249-P0-AX	00D-4249-P0-AX	00F-4249-P0-AX	—	00B-4249-U0-AX	00D-4249-U0-AX	—	AJ0-7840	AJ0-8302	—	—
C18	—	—	—	—	—	00D-4435-U0-AX	—	AJ0-7839	AJ0-8301	—	—
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	00B-4255-P0-AX	—	00F-4255-P0-AX	00G-4255-P0-AX	—	00D-4255-U0-AX	—	AJ0-8220	AJ0-8311	—	—
Phenyl-Hexyl	00B-4257-P0-AX	00D-4257-P0-AX	00F-4257-P0-AX	—	00B-4257-U0-AX	00D-4257-U0-AX	—	AJ0-7841	AJ0-8303	—	—
NH ₂	—	00D-4378-P0-EX	00F-4378-P0-AX	00G-4378-P0-AX	—	—	00G-4378-U0-AX	AJ0-8162	AJ0-8309	—	—
PFP(2)	00B-4448-P0-AX	00D-4448-P0-AX	00F-4448-P0-AX	00G-4448-P0-AX	00B-4448-U0-AX	00D-4448-U0-AX	00G-4448-U0-AX	AJ0-8377	AJ0-8378	—	—
HILIC	00B-4450-P0-AX	00D-4450-P0-AX	00F-4450-P0-AX	00G-4450-P0-AX	—	—	00G-4450-U0-AX	—	—	—	—

for ID: 18-29 mm 30-49 mm



Axia™ Packed Preparative Columns (mm) (continued)									SecurityGuard™ Cartridges (mm)		
Phases	50 x 21.2	100 x 21.2	250 x 21.2	50 x 30	250 x 30	50 x 50	250 x 50	15 x 21.2**	15 x 30♦	/ea	/ea
10 µm											
Silica(2)	—	00D-4091-P0-AX	00G-4091-P0-AX	—	00G-4091-U0-AX	—	—	AJ0-7229	AJ0-8312	—	—
C5	—	00D-4092-P0-AX	00G-4092-P0-AX	—	—	—	00G-4092-V0-AX	—	—	AJ0-7840	AJ0-8302
C8	—	—	00G-4093-P0-AX	—	—	—	—	AJ0-7840	AJ0-8302	—	—
C8(2)	00B-4250-P0-AX	—	00G-4250-P0-AX	00B-4250-U0-AX	00G-4250-U0-AX	—	00G-4250-V0-AX	AJ0-7840	AJ0-8302	—	—
C18	—	—	00G-4094-P0-AX	—	—	—	—	AJ0-7839	AJ0-8301	—	—
C18(2)	00B-4253-P0-AX	00D-4253-P0-AX	00G-4253-P0-AX	00B-4253-U0-AX	00G-4253-U0-AX	00B-4253-V0-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	00B-4285-V0-AX	—	AJ0-7841	AJ0-8303	—	—
NH ₂	—	00D-4379-P0-AX	00G-4379-P0-AX	—	—	—	—	AJ0-8162	AJ0-8309	—	—

for ID: 18-29 mm 30-49 mm

10 µm Semi-Prep Columns (mm)			SecurityGuard™ Cartridges (mm)	
Phases	250 x 4.6	250 x 10	4 x 3.0*	10 x 10†
			/10 pk	/3 pk
Silica(2)	00G-4091-E0	00G-4091-N0	AJ0-4348	AJ0-7223
C5	00G-4092-E0	00G-4092-N0	AJ0-4293	AJ0-7372
C8	00G-4093-E0	00G-4093-N0	AJ0-4290	AJ0-7222
C8(2)	00G-4250-E0	00G-4250-N0	AJ0-4290	AJ0-7222
C18	00G-4094-E0	00G-4094-N0	AJ0-4287	AJ0-7221
C18(2)	00G-4253-E0	00G-4253-N0	AJ0-4287	AJ0-7221
CN	00G-4300-E0	00G-4300-N0	AJ0-4305	AJ0-7313
Phenyl-Hexyl	00G-4285-E0	00G-4285-N0	AJ0-4351	AJ0-7314
NH ₂	00G-4379-E0	00G-4379-N0	AJ0-4302	AJ0-7364
SCX	00G-4401-E0	00G-4401-N0	AJ0-4308	AJ0-7369

for ID: 3.2-8.0 mm 9-16 mm

*SecurityGuard™ Analytical Cartridges require holder, Part No.: KJ0-4282
†SemiPrep SecurityGuard™ Cartridges require holder, Part No.: AJ0-7220
**PREP SecurityGuard™ Cartridges require holder, Part No.: AJ0-8223
♦PREP SecurityGuard™ Cartridges require holder, Part No.: AJ0-8277



15 µm Pilot Scale Columns (mm)

Phases	250 x 4.6
Silica(2)	00G-4271-E0
C8(2)	00G-4272-E0
C18(2)	00G-4273-E0
Phenyl-Hexyl	00G-4286-E0

See our latest developments in High-throughput Purifications starting on page 304

For more dimensions and phases of Axia packed preparative columns, see pp. 310-311

For SecurityGuard Cartridge Holders and Cartridges, see p. 244

For Bulk Media, see p. 312



Method development column kits and method validation column kits are available. Contact Phenomenex for details.



Improve analyte sensitivity and reduce baseline noise with Strata SPE tubes and well plates, see p. 42 for more information