Affordable Chiral Columns, Brilliant Separation Power

- Guaranteed alternatives to CHIRALCEL® and CHIRALPAK® columns

Lux Amylose-1
Guaranteed Alternative to CHIRALPAK® AD® Columns
Polysaccharide Chiral Columns
Dependable. Scalable. Affordable.

- Stable in Normal Phase (NP), Polar Organic (PO), Reversed Phase (RP), and Supercritical Fluid Chromatography (SFC) conditions
- 3 µm and 5 µm for packed columns, and 10 µm and 20 µm bulk media for scale-up
- High efficiency, high loading capacity, and outstanding durability

Lux Chiral Stationary Phases

| Lux Chiral-1 | Amylose tris(3,5-dimethylphenylcarbamate) | 6 |
| Lux Chiral-2 | Amylose tris(5-chloro-2-methylphenylcarbamate) | 7 |
| Lux Cellulose-1 | Cellulose tris(3,5-dimethylphenylcarbamate) | 8 |
| Lux Cellulose-2 | Cellulose tris(3-chloro-4-methylphenylcarbamate) | 9 |
| Lux Cellulose-3 | Cellulose tris(4-methylbenzoate) | 10 |
| Lux Cellulose-4 | Cellulose tris(4-chloro-3-methylphenylcarbamate) | 11 |

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“Lux Axia preparative columns are wonderful! I regularly use Lux chiral stationary phase Cellulose-2 and Cellulose-4 and less frequently, the Lux Amylose-2. In our community of chiral analysis/purification scientists, there are some who use the CC4 column instead of the *equivalent* Lux Cellulose-4. On several occasions we’ve seen separation and good peak shape on the Lux Cellulose-4 that was completely missing from the CC4. Customer support and delivery times are always within a few days.”

Julia G. Christie, GlaxoSmithKline, USA.

If Lux analytical columns (≤ 4.6 mm ID) do not provide at least an equivalent or better chiral 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 Lux column for FREE.
Six Chiral Stationary Phases
With Brilliant Separation Power

Lux columns are guaranteed to perform as well or better than the equivalent DAICEL® Chiral Technologies column. Lux phases can also provide alternative selectivity to other chiral selectors for the most challenging chiral separations. Lux columns offer a wide and complementary range of enantioselectivity for even the most difficult chiral separations. Our six distinct Lux polysaccharide phases can resolve over 92% of your enantiomers.

NEW
3 µm and 5 µm

Lux Amylose-1
Amylose tris(3,5-dimethylphenylcarbamate)

Lux Amylose-2
Amylose tris(5-chloro-2-methylphenylcarbamate)

Lux Cellulose-1
Cellulose tris(3,5-dimethylphenylcarbamate)

Lux Cellulose-2
Cellulose tris(3-chloro-4-methylphenylcarbamate)

Lux Cellulose-3
Cellulose tris(4-methylbenzoate)

Lux Cellulose-4
Cellulose tris(4-chloro-3-methylphenylcarbamate)

If you are using one of the DAICEL columns below:

<table>
<thead>
<tr>
<th>Guaranteed alternative:</th>
<th>Phase description for both columns:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lux Amylose-1</td>
<td>Amylose tris(3,5-dimethylphenylcarbamate)</td>
</tr>
<tr>
<td>Lux Amylose-2</td>
<td>Amylose tris(5-chloro-2-methylphenylcarbamate)</td>
</tr>
<tr>
<td>Lux Cellulose-1</td>
<td>Cellulose tris(3,5-dimethylphenylcarbamate)</td>
</tr>
<tr>
<td>Lux Cellulose-2</td>
<td>Cellulose tris(3-chloro-4-methylphenylcarbamate)</td>
</tr>
<tr>
<td>Lux Cellulose-3</td>
<td>Cellulose tris(4-methylbenzoate)</td>
</tr>
<tr>
<td>Lux Cellulose-4</td>
<td>Cellulose tris(4-chloro-3-methylphenylcarbamate)</td>
</tr>
</tbody>
</table>

*Based on 233 compounds screened on five Lux phases.

Many chiral screening groups use all 6 Lux phases on their primary screen to increase chances of locating the optimal enantiomeric separation.
Dependability
Batch-to-Batch, Column-to-Column

Your chiral separations depend upon consistent quantitation and consistent results. With the reliability of the Lux chiral column LC product line, you do not have to settle for the inconsistent results that many other polysaccharide CSPs show. Our highest standards of quality will ensure that you are fully satisfied with each and every Lux chiral column.

**Lux 5 µm Cellulose-1**

Conditions for all batches:
- **Dimensions:** 250 x 4.6 mm
- **Mobile Phase:** 0.1% Diethylamine in Hexane / 0.1% Diethylamine in Ethanol (80:20)
- **Flow Rate:** 1 mL/min
- **Detection:** UV @ 220 nm
- **Temperature:** Ambient
- **Sample:** Propranolol

**Batch A**
\( \alpha = 1.86 \)

**Batch B**
\( \alpha = 1.80 \)

**Batch C**
\( \alpha = 1.83 \)

**Quality Assurance**

Phenomenex’s quality management system is ISO 9001:2008 certified. This certification validates that all our processes are fully established, functional and meet international standards. Phenomenex’s employees believe that the implementation of our quality system is everyone’s responsibility. From the manufacturing of our products to their timely delivery and continued customer support, we are dedicated to continually improve our processes to consistently meet or exceed our customers’ expectations.

**QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV**

ISO 9001:2008
Lux Amylose-1
Dimethyl Amylose Chiral Selector

This universally trusted amylose phenylcarbamate derivative is absolutely essential to any chiral screen. Lux Amylose-1 is a guaranteed alternative to CHIRALPAK® AD®. Expect equivalent or better performance when using this Lux phase.

LUX PERFORMANCE ADVANTAGE

**Lux 5µm Amylose-1**

Conditions for both columns:
- Dimensions: 250 x 4.6 mm
- Mobile Phase: 0.1% Diethylamine in Hexane / 0.1% Diethylamine in IPA (60:40)
- Flow Rate: 1 mL/min
- Detection: UV @ 254 nm
- Temperature: Ambient

**CHIRALPAK® 5µm AD-H®**

Conditions for both columns:
- Dimensions: 250 x 4.6 mm
- Mobile Phase: 0.1% Formic acid in Hexane / 0.1% Formic acid in IPA (80:20)
- Flow Rate: 1 mL/min
- Detection: UV @ 220 nm
- Temperature: Ambient

**Comparative separations may not be representative of all applications.**

UPGRADE TO LUX

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Particle Size</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenomenex</td>
<td>00G-4732-E0</td>
<td>Lux Amylose-1</td>
<td>5µm</td>
<td>250 x 4.6</td>
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<tr>
<td>DAICEL</td>
<td>19325</td>
<td>CHIRALPAK AD-H</td>
<td>5µm</td>
<td>250 x 4.6</td>
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<tr>
<td>Phenomenex</td>
<td>00G-4732-P0-AX</td>
<td>Lux Amylose-1</td>
<td>5µm</td>
<td>250 x 21.2</td>
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<tr>
<td>DAICEL</td>
<td>19345</td>
<td>CHIRALPAK AD-H</td>
<td>5µm</td>
<td>250 x 20</td>
</tr>
</tbody>
</table>

Phenomenex | WEB: www.phenomenex.com
Lux Amylose-2
Chlorinated Amylose Chiral Selector

This first-to-market chlorinated amylose phenylcarbamate phase offers chiral recognition properties that greatly increase the chances of achieving chiral resolution.

LUX PERFORMANCE ADVANTAGE

<table>
<thead>
<tr>
<th>Lux 5 µm Amylose-2</th>
<th>CHIRALPAK® 5 µm AY-H®</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Graph" /></td>
<td><img src="image2" alt="Graph" /></td>
</tr>
</tbody>
</table>

- **Conditions for both columns:**
  - Dimensions: 250 x 4.6 mm
  - Mobile Phase: 0.1 % Diethylamine in Hexane / 0.1 % Diethylamine in Ethanol (80:20)
  - Flow Rate: 1 mL/min
  - Detection: UV @ 220 nm
  - Temperature: Ambient

- Amylose tris(5-chloro-2-methylphenylcarbamate)
Guaranteed alternative to CHIRALPAK® AY®, AY-H®, AY-3, AY-RH, and AY-3R

Comparative separations may not be representative of all applications.

UPGRADE TO LUX

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
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<th>Dimensions (mm)</th>
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<tr>
<td>DAICEL</td>
<td>47325</td>
<td>CHIRALPAK AY-H</td>
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<td>250 x 4.6</td>
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<tr>
<td>Phenomenex</td>
<td>00G-4472-P0-AX</td>
<td>Lux Amylose-2</td>
<td>5 µm</td>
<td>250 x 21.2</td>
</tr>
<tr>
<td>DAICEL</td>
<td>47345</td>
<td>CHIRALPAK AY-H</td>
<td>5 µm</td>
<td>250 x 20</td>
</tr>
</tbody>
</table>

Are you analyzing Anti-Allergic drugs?

Brompheniramine on Lux 5 µm Amylose-2 in NP

For additional Anti-Allergic Drug separations, request technote: TN-1143 Chromatographic Enantioseparation of 15 Racemic Anti-Allergic Drugs.
Lux Cellulose-1
Dimethyl Cellulose Chiral Selector

This universally trusted cellulose phenylcarbamate derivative is absolutely essential to any chiral screen. Lux Cellulose-1 is a guaranteed alternative to Chiralcel® OD-H®. Expect equivalent or better performance when using this Lux phase.

LUX PERFORMANCE ADVANTAGE

Lux 5 µm Cellulose-1

\[
\alpha = 1.38
\]

Conditions for both columns:
Dimensions: 250 x 4.6 mm
Mobile Phase: 0.1 % Diethylamine in Acetonitrile / 0.1 % Diethylamine in Isopropanol (95:5)
Flow Rate: 1 mL/min
Detection: UV @ 220 nm
Temperature: Ambient

CHIRALCEL® 5 µm OD-H®

\[
\alpha = 1.16
\]

Comparative separations may not be representative of all applications.

UPGRADE TO LUX

<table>
<thead>
<tr>
<th>Manufacturer</th>
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<td>CHIRALCEL OD-H</td>
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<td>Lux Cellulose-1</td>
<td>5 µm</td>
<td>250 x 21.2</td>
</tr>
<tr>
<td>DAICEL</td>
<td>14345</td>
<td>CHIRALCEL OD-H</td>
<td>5 µm</td>
<td>250 x 20</td>
</tr>
</tbody>
</table>

More column dimensions on page 22

Are you analyzing Beta Blockers?

Oxprenolol on Lux 5 µm Cellulose-1 in NP

\[
\alpha = 3.09
\]

For additional Beta Blocker separations, request technote: TN-1142 Chiral Separations of 15 Beta Blockers.
Lux Cellulose-2
Chlorinated Cellulose Carbamate Phase

This first-to-market halogenated cellulose phenylcarbamate derivative offers unique chiral recognition abilities that complement the rest of the Lux family of columns.

LUX PERFORMANCE ADVANTAGE

Lux 5 µm Cellulose-2

CHIRALCEL® 5 µm OZ-H®

Conditions for both columns:
- Dimensions: 250 x 4.6 mm
- Mobile Phase: 0.1 % Diethylamine in Hexane / 0.1 % Diethylamine in Ethanol (90:10)
- Flow Rate: 1 mL/min
- Detection: UV @ 220 nm
- Temperature: Ambient

Alprenolol

Comparative separations may not be representative of all applications.

UPGRADE TO LUX

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
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<th>Dimensions (mm)</th>
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<tr>
<td>DAICEL</td>
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<td>CHIRALCEL OZ-H</td>
<td>5 µm</td>
<td>250 x 4.6</td>
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<tr>
<td>Phenomenex</td>
<td>00G-4457-P0-AX</td>
<td>Lux Cellulose-2</td>
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<tr>
<td>DAICEL</td>
<td>42345</td>
<td>CHIRALCEL OZ-H</td>
<td>5 µm</td>
<td>250 x 20</td>
</tr>
</tbody>
</table>

More column dimensions on page 22

Are you analyzing Anti-Depressive and Anti-Anxiety Drugs?

Milnacipran on Lux 5 µm Cellulose-2 in RP

For additional Anti-Depressive y Anti-Anxiety Drug separations, request technote: TN-1146 Chromatographic Enantioseparation of 13 Racemic Anti-Depressive y Anti-Anxiety Drugs.
Lux Cellulose-3
Cellulose Ester Phase

This cellulose methylbenzoate derivative offers distinct and complementary chiral recognition abilities.

LUX PERFORMANCE ADVANTAGE

**Lux 5 μm Cellulose-3**

\[ \alpha = 1.18 \]

- **Conditions for both columns:**
  - **Dimensions:** 250 x 4.6 mm
  - **Mobile Phase:** 0.1 % Diethylamine in Hexane / 0.1 % Diethylamine in Ethanol (90:10)
  - **Flow Rate:** 1 mL/min
  - **Detection:** UV @ 220 nm
  - **Temperature:** Ambient

**CHIRALCEL® 5 μm OJ-H®**

\[ \alpha = 1.17 \]

Comparative separations may not be representative of all applications.

UPGRADE TO LUX

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
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<th>Particle Size</th>
<th>Dimensions (mm)</th>
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<tbody>
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<tr>
<td>DAICEL</td>
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<td>CHIRALCEL OJ-H</td>
<td>5 μm</td>
<td>250 x 4.6</td>
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<tr>
<td>Phenomenex</td>
<td>00G-4493-P0-AX</td>
<td>Lux Cellulose-3</td>
<td>5 μm</td>
<td>250 x 21.2</td>
</tr>
<tr>
<td>DAICEL</td>
<td>17345</td>
<td>CHIRALCEL OJ-H</td>
<td>5 μm</td>
<td>250 x 20</td>
</tr>
</tbody>
</table>

More column dimensions on page 22

Are you analyzing Pain Relievers?

Ketoprofen on Lux 5 μm Cellulose-3 in NP

\[ \alpha = 1.13 \]

For additional Pain Reliever separations, request technote:
TN-1144 Chromatographic Enantiopuriﬁcation of 12 Racemic Pain Relievers.
Lux Cellulose-4
Chlorinated Cellulose Carbamate Phase

This chlorinated cellulose phenylcarbamate derivative offers unique chiral recognition abilities. Expect a high hit percentage on screens with other chlorinated Lux phases.

LUX PERFORMANCE ADVANTAGE

Lux 5 µm Cellulose-4

CHIRALCEL® 5 µm OX-RH

Comparative separations may not be representative of all applications.

UPGRADE TO LUX

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Part Number</th>
<th>Description</th>
<th>Particle Size</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenomenex</td>
<td>00G-4491-E0</td>
<td>Lux Cellulose-4</td>
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<td>250 x 4.6</td>
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<tr>
<td>Phenomenex</td>
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<td>Lux Cellulose-4</td>
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<tr>
<td>DAICEL</td>
<td>63325</td>
<td>CHIRALCEL OX-H</td>
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<td>250 x 4.6</td>
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<tr>
<td>DAICEL</td>
<td>63345</td>
<td>CHIRALCEL OX-H</td>
<td>5 µm</td>
<td>250 x 20</td>
</tr>
</tbody>
</table>

More column dimensions on page 22

Are you analyzing Vasodilator Drugs?

Diltiazem on Lux 5 µm Cellulose-4 in NP

For additional Vasodilator Drug separations, request technote: TN-1145 Chromatographic Enantioseparation of 14 Racemic Vasodilator Drugs.
Maximize Chiral Purification Performance with Axia Packed Columns

- Longer Column Lifetimes
- Improved Column-to-Column Reproducibility
- Recover Higher Compound Purity

Axia packed preparative columns involve a single axial compression step unlike conventional packed preparative columns like DAICEL® CHIRALCEL® and CHIRALPAK® prep columns. During the Axia packing process, the packing piston is locked in place, eliminating any decompression and then re-compression of the media sorbent, thus maintaining media and column bed integrity.

**Conventional Packing Process Involves:**
Compression ➔ Decompression ➔ Re-compression ➔ Final Column

**Axia Packing Process Involves:**
Compression ➔ Final Column

“Axia packed column has a great efficiency for the separation of several classes of natural compounds. Due to its low back pressure and therefore high flow work conditions, time for conditioning the columns is sped up greatly!”

Sylvian Cretton - Europe
Axia™ Outperforms All Other Prep Columns

In the example below, the Axia packing technology shows substantial increase in column efficiency resulting in increased resolution over traditionally packed preparative columns. With increased resolution, you are able to increase your sample load enabling you to purify more target compound(s) per purification run. This equates to better throughput and economics.

Warfarin Chiral Purification in Normal Phase Mode

Conditions for both PREP columns:
- **Media:** Lux 5 µm Cellulose-1
- **Dimensions:** 150 x 21.2 mm
- **Mobile Phase:** Hexane/Ethanol (75:25)
- **Flow Rate:** 20 mL/ min
- **Temperature:** Ambient
- **Inj. Volume:** 2 mL

<table>
<thead>
<tr>
<th>Column (mm)</th>
<th>Analytical 150 x 4.6</th>
<th>Standard 150 x 21.2</th>
<th>Axia 150 x 21.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Loaded (mg)</td>
<td>2</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Resolution*</td>
<td>1.5</td>
<td>2.85</td>
<td>3.72</td>
</tr>
<tr>
<td>Plates (N)</td>
<td>117</td>
<td>535</td>
<td>760</td>
</tr>
</tbody>
</table>

*Resolution calculated with peak width at baseline and center retention time due to the overloaded peaks being off-scale.

We have used Phenomenex Axia prep-HPLC columns for several years and they consistently provide excellent separation and reproducibility for a variety of different compounds.

Jeremy R. Wolf. ABC Laboratories, USA.
Extreme Stability and Separating Power Under SFC Conditions

All Lux analytical and Axia™ preparative columns are compatible under both SFC and HPLC conditions. Unlike other manufacturers columns, a single Lux column works great for both running conditions. With a pressure stability up to 300 bar (4350 psi), you can feel confident about running at high operating pressures (if necessary). Lux media is SFC approved and versatile enough to satisfy all of your chiral separation needs.

Increase Successful Separation Potential By Using a Variety of Lux Columns

By using 7 chromatographic systems, which require three mobile phases (A, B, and C) and four Lux stationary phases (Cellulose-1, Cellulose-3, Cellulose-4, and Amylose-2), 55 of the 56 test group compounds are baseline separated.

**LUX PERFORMANCE ADVANTAGE**

**Lux 5µm Cellulose-1**

**CHIRALCEL® 5µm OD-H®**

Comparative separations may not be representative of all applications.

**SFC mobile phases used in this study**

<table>
<thead>
<tr>
<th>MP</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>( \text{CO}_2/(\text{MeOH} \text{ with 0.25 % IPA and 0.25 % TFA}) 90/10 )</td>
</tr>
<tr>
<td>B</td>
<td>( \text{CO}_2/(\text{MeOH} \text{ with 0.1 % IPA and 0.1 % TFA}) 80/20 )</td>
</tr>
<tr>
<td>C</td>
<td>( \text{CO}_2/(2\text{PrOH} \text{ with 0.5 % IPA and 0.5 % TFA}) 90/10 )</td>
</tr>
</tbody>
</table>

CO\(_2\) = carbon dioxide, MP = mobile phase, MeOH = methanol, 2PrOH = isopropanol/2-propanol, TFA = trifluoroacetic acid, IPA = isopropylamine. For acidic compounds, additive was TFA and for all other compounds (neutral, amphoteric, basic) IPA was used as additive.

Download Technical Note TN-9003 for more Chiral SFC tips.

www.phenomenex.com/LuxSFC
SFC Preparative Advantage Using Axia™ Packed Technology

With the additional efficiency provided by the Axia packed preparative columns, greater resolution between your enantiomers can be attained thus allowing for greater loadability during purifications.

**Analytical Baseline Separation**

**Polarimeter**

Lux Cellulose-1 offers great peak shape at 220 nm

**Analytical Overload Study**

**Polarimeter**

**Increased Load Study on Axia Preparative Column**

High loading capacity media along with stacking injections allow for increased yields
Closer stacked injections cannot be used due to the impurities eluting after the major enantiomers

**Conditions for all columns:**
- **Columns:** Lux 5 µm Cellulose-1
- **Mobile Phase:** Methanol with 0.1 % DEA/Carbon Dioxide (25:75)
- **Column Temperature:** 35 ºC
- **Polarimeter:** ALP-PDR-Chiral
- **Sample:** Terfenadine with ethanol dissolution solvent

**Dimensions:** 250 x 4.6 mm
**Flow Rate:** 2.5 mL/min
**Detection:** UV @ 220 nm
**Load:** 300 µg in 10 µL

**Dimensions:** 250 x 21.2 mm
**Flow Rate:** 50 mL/min
**Detection:** UV @ 220 nm
**Load:** 105 mg in 3.5 mL

**UV-VIS Analytical Baseline Separation**

**UV-VIS Analytical Overload Study**

**UV-VIS Increased Load Study on Axia Preparative Column**

**5x Load Increase**

**70x Load Increase**

**Phenomenex**

WEB: www.phenomenex.com
Save Time and Money with Less Frequent Column Replacement

The easiest way to extend column performance is to prevent contaminants and particulates from getting into your Lux column with the SecurityGuard Cartridge System.

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

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.

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

SecurityGuard isn’t only about column protection, it’s about lowering your cost per injection! When you increase the number of injections from a single preparative column you’re lowering your overall cost per injection. With SecurityGuard PREP, the inexpensive cartridge captures contaminants while the integrity of the prep column is maintained.

Forced Degradation Study

Axia™ Packed column with SecurityGuard PREP cartridge

Conditions
- Column: Luna® 10µm C18(2) Axia Packed
- Dimension: 50 x 21.2 mm
- Part No.: 008-4253-P0-AX
- Mobile Phase: A: 0.1% TFA in Water
  B: 0.1% TFA in Water / Acetonitrile (25:75)
- Gradient: Linear 93:7 (A/B) to 100 % B over 5 minutes
- Injection Volume: 420 µL
- Flow Rate: 60 mL/min
- Temperature: Ambient
- Detection: UV @ 270 nm
- Sample: 1. Nadolol
  2. Metoprolol
  3. Propranolol

Claudia Oschwald, Bayer, Germany.

I used about 10-12 Security-Guard Cartridges and received extremely long Axia column lifetimes (8000 injections). During this time the columns showed extremely good efficiency with no significant changes concerning the backpressure.”
**Free Chiral Screening with >90% Success Rate**

Join other chiral chromatographers from around the world who have achieved success with our in-house screening services.

**FREE Chiral Screening Services**
- Rapid 10 Day Screening From Receipt of Samples
- Screen All 6 Lux® Phases in Normal Phase, Reversed Phase, and Polar Organic Modes
- Over 90% Hit Ratio
- Detailed Report
- Easy Method Transfer
- Confidentiality Agreements Accepted Upon Request

**Preparative and Process Scale-Up**
- Media screening
- Small Scale Purification
- DAC Packing Assistance

Submit your FREE screening application today. Simply visit [www.phenomenex.com/ChiralScreening](http://www.phenomenex.com/ChiralScreening)

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"Our scientists at American Peptide have taken advantage of Phenomenex's column packing services, application development, and project-specific consultation services for some of our most challenging separations."

American Peptide Company, USA.

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“We requested two different chiral compounds be separated and purified. We received the first set of compounds at 99% e.e. within a week and the second set in 2 weeks, also at greater than 99% e.e. The second set was a difficult separation. We were very happy with the quality of the separation and the quick turnaround, which was tantamount. [PhenoLogix] did a great job of informing me on the progress and chemistry/separation issues that arose. I have recommended this service to other colleagues in the Pharmaceutical and BioTech industry here in San Diego and I look forward to using them again.”

Isabelle Okuda. Celgene Corporation, USA.
Helpful Chiral Resources

1. Online Chiral Application Search (2000+ Chiral Application)

   Search by: Application Structure
   www.phenomenex.com/ChiralStructureSearch

   Search by: Application Name
   www.phenomenex.com/ChiralNameSearch

2. Chiral and Prep Technical Notes
   • Detailed insight into difficult chiral separations

View them at:
www.phenomenex.com/LuxTechnotes

3. Chiral Column Selection Guide
   • Discover the 3 Easy Ways to Choose the best Chiral Column for your application

Visit:
www.phenomenex.com/LuxGuide

4. Simplified Chiral Method Development Poster
   • Method Development walk-through for both HPLC and SFC conditions
   • Convert your Lux column to different modes of chromatography

Visit:
www.phenomenex.com/LuxPoster
We suggest screening all six Lux phases to identify the optimal chiral separation.

### Normal Phase (NP)

- **Hexane/IPA (80:20)* or Hexane/EtOH (90:10)**
  - \( R_s > 1.5 \)
  - \( R_s < 1.5 \) or \( t_R > 20 \) min

### Polar Organic (PO)

- **CH\(_3\)CN:IPA 95:5***
  - \( R_s > 1.5 \)
  - \( R_s < 1.5 \)

### Reversed Phase (RP)

- **Acidic Compounds**
  1. CH\(_3\)CN: 0.1 % Formic Acid or 0.1 % Acetic Acid
  2. MeOH: 0.1 % Formic Acid or 0.1 % Acetic Acid

- **Neutral Compounds**
  1. CH\(_3\)CN: Water
  2. MeOH: Water

- **Basic Compounds**
  1. CH\(_3\)CN w/ 20 mM NH\(_4\)HCO\(_3\) + 0.1 % DEA
  2. MeOH w/ 20 mM NH\(_4\)HCO\(_3\) + 0.1 % DEA

Please contact your local Phenomenex representative for additional support.

**Notes:** This screening strategy can be started at any step depending on the properties of the racemates. A common dimension used in chiral screening is 250 x 4.6 mm. For faster screening, use shorter columns.

* Use 0.1 % DEA with basic and neutral compounds and 0.1 % HCOOH with acidic and neutral compounds

◊ Changing \( \% \) IPA in methanol can be occasionally beneficial

Key: IPA: Isopropanol; iPA: Isopropylamine; DEA: Diethylamine; MeOH: Methanol; CH\(_3\)CN: Acetonitrile; EtOH: Ethanol; CH\(_3\)COONH\(_4\): Ammonium acetate; HCOOH: Formic acid; NH\(_4\)HCO\(_3\): Ammonium bicarbonate; CO\(_2\): Carbon Dioxide

Phenomenex | WEB: www.phenomenex.com
**SFC Screen**

**Supercritical Fluid Chromatography (SFC)**

- **CO₂ : MeOH with 0.1 % iPA and TFA**
  - (t<sub>R</sub> > 20 min)
  - Increase organic modifier to decrease t<sub>R</sub>
  - (t<sub>R</sub> < 20 min)
  - R<sub>s</sub> > 1.5
  - R<sub>s</sub> < 1.5
- **CO₂ : EtOH with 0.1 % iPA and TFA**
  - R<sub>s</sub> > 1.5
  - R<sub>s</sub> < 1.5
- **EtOH, IPA, CH₃CN, Hexane**
  - R<sub>s</sub> > 1.5
  - R<sub>s</sub> < 1.5

*Can also use 0.1 % Formic Acid, 0.1 % NH₄OH, or 0.1 % TFA

**Solvent Considerations**

**Solvent Switching**

- **Lux columns are shipped in 90 % Hexane : 10 % IPA**

**Normal Phase**

- **Flush your column with ten column volumes of MeOH : EtOH 90:10 at a flow rate of 0.5 mL/min**
- Followed by your mobile phase for 10 column volumes.

**Polar Organic or Reversed Phase**

- **Flush your column with ten column volumes of MeOH : EtOH 90:10 at a flow rate of 0.5 mL/min**
- Followed by your mobile phase for 10 column volumes.

**Normal Phase**

- **Flush your column with ten column volumes of CO₂ : MeOH (80:20) or CO₂ : EtOH (80:20) at a flow rate of 0.5 mL/min**
- Followed by your mobile phase for 10 column volumes.

**COMPATIBLE**

<table>
<thead>
<tr>
<th>Polar Organic</th>
<th>MeOH</th>
<th>Acetonitrile</th>
<th>IPA</th>
<th>Mixtures of above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Phase</td>
<td>Alkane/alcohol mixtures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reversed Phase</td>
<td>Aqueous methanol/acetonitrile buffer and methanol/acetonitrile mixtures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFC</td>
<td>Supercritical CO₂</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**AVOID**

- Tetrahydrofuran
- Acetone
- Chlorinated hydrocarbons
- Ethylacetate
- Dimethylsulfoxide
- Dimethylformamide
- N-methylformamide
- Pyridine

**Once column is in reversed phase mode, it is not recommended to solvent switch.**

See column care and use notes at www.phenomenex.com/lux for more information.

We suggest screening all six Lux phases to identify the optimal chiral separation.

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Phenomenex | WEB: www.phenomenex.com
## Ordering Information

### Lux Chiral Columns

#### 2μm Minibore, MidBore™, and Analytical Columns (mm)

<table>
<thead>
<tr>
<th>SecurityGuard™ Cartridges (mm)</th>
<th>Phases</th>
<th>50 x 2.0</th>
<th>150 x 2.0</th>
<th>150 x 3.0</th>
<th>50 x 4.6</th>
<th>100 x 4.6</th>
<th>150 x 4.6</th>
<th>250 x 4.6</th>
<th>4 x 2.0*</th>
<th>4 x 3.0*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose-1</td>
<td>00B-4458-B0</td>
<td>00B-4458-B0</td>
<td>00F-4458-Y0</td>
<td>00B-4458-E0</td>
<td>00D-4458-E0</td>
<td>00F-4458-E0</td>
<td>00G-4458-E0</td>
<td>00G-4458-E0</td>
<td>AJ0-8402</td>
<td>AJ0-8403</td>
</tr>
<tr>
<td>Cellulose-2</td>
<td>00B-4456-B0</td>
<td>00B-4456-B0</td>
<td>00F-4456-Y0</td>
<td>00B-4456-E0</td>
<td>00D-4456-E0</td>
<td>00F-4456-E0</td>
<td>00G-4456-E0</td>
<td>00G-4456-E0</td>
<td>AJ0-8398</td>
<td>AJ0-8366</td>
</tr>
<tr>
<td>Cellulose-3</td>
<td>00B-4492-B0</td>
<td>00B-4492-B0</td>
<td>00F-4492-Y0</td>
<td>00B-4492-E0</td>
<td>00D-4492-E0</td>
<td>00F-4492-E0</td>
<td>00G-4492-E0</td>
<td>00G-4492-E0</td>
<td>AJ0-8621</td>
<td>AJ0-8622</td>
</tr>
<tr>
<td>Cellulose-4</td>
<td>00B-4490-B0</td>
<td>00B-4490-B0</td>
<td>00F-4490-Y0</td>
<td>00B-4490-E0</td>
<td>00D-4490-E0</td>
<td>00F-4490-E0</td>
<td>00G-4490-E0</td>
<td>00G-4490-E0</td>
<td>AJ0-8626</td>
<td>AJ0-8627</td>
</tr>
<tr>
<td>Amylose-1</td>
<td>00B-4729-B0</td>
<td>00B-4729-B0</td>
<td>00F-4729-Y0</td>
<td>00B-4729-E0</td>
<td>00D-4729-E0</td>
<td>00F-4729-E0</td>
<td>00G-4729-E0</td>
<td>00G-4729-E0</td>
<td>AJ0-9337</td>
<td>AJ0-9336</td>
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<tr>
<td>Amylose-2</td>
<td>00B-4471-B0</td>
<td>00B-4471-B0</td>
<td>00F-4471-Y0</td>
<td>00B-4471-E0</td>
<td>00D-4471-E0</td>
<td>00F-4471-E0</td>
<td>00G-4471-E0</td>
<td>00G-4471-E0</td>
<td>AJ0-8471</td>
<td>AJ0-8470</td>
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</table>

#### 5μm Minibore and Analytical Columns (mm)

<table>
<thead>
<tr>
<th>SecurityGuard™ Cartridges (mm)</th>
<th>Phases</th>
<th>50 x 2.0</th>
<th>50 x 4.6</th>
<th>100 x 4.6</th>
<th>150 x 4.6</th>
<th>250 x 4.6</th>
<th>4 x 2.0*</th>
<th>4 x 3.0*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose-1</td>
<td>00B-4459-B0</td>
<td>00B-4459-B0</td>
<td>00F-4459-E0</td>
<td>00D-4459-E0</td>
<td>00G-4459-E0</td>
<td>AJ0-8402</td>
<td>AJ0-8403</td>
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</tr>
<tr>
<td>Cellulose-2</td>
<td>00B-4457-B0</td>
<td>00B-4457-B0</td>
<td>00F-4457-E0</td>
<td>00D-4457-E0</td>
<td>00G-4457-E0</td>
<td>AJ0-8398</td>
<td>AJ0-8366</td>
<td></td>
</tr>
<tr>
<td>Cellulose-3</td>
<td>00B-4493-B0</td>
<td>00B-4493-B0</td>
<td>00F-4493-E0</td>
<td>00D-4493-E0</td>
<td>00G-4493-E0</td>
<td>AJ0-8621</td>
<td>AJ0-8622</td>
<td></td>
</tr>
<tr>
<td>Cellulose-4</td>
<td>00B-4491-B0</td>
<td>00B-4491-B0</td>
<td>00F-4491-E0</td>
<td>00D-4491-E0</td>
<td>00G-4491-E0</td>
<td>AJ0-8626</td>
<td>AJ0-8627</td>
<td></td>
</tr>
<tr>
<td>Amylose-1</td>
<td>00B-4732-B0</td>
<td>00B-4732-B0</td>
<td>00F-4732-E0</td>
<td>00D-4732-E0</td>
<td>00G-4732-E0</td>
<td>AJ0-9337</td>
<td>AJ0-9336</td>
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</tr>
<tr>
<td>Amylose-2</td>
<td>00B-4472-B0</td>
<td>00B-4472-B0</td>
<td>00F-4472-E0</td>
<td>00D-4472-E0</td>
<td>00G-4472-E0</td>
<td>AJ0-8471</td>
<td>AJ0-8470</td>
<td></td>
</tr>
</tbody>
</table>

#### 5µm Semi-Prep Columns (mm)

<table>
<thead>
<tr>
<th>SecurityGuard™ Cartridges (mm)</th>
<th>Phases</th>
<th>150 x 10.0</th>
<th>250 x 10.0</th>
<th>10 x 10.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose-1</td>
<td>00F-4459-N0</td>
<td>00G-4459-N0</td>
<td>AJ0-8404</td>
<td></td>
</tr>
<tr>
<td>Cellulose-2</td>
<td>00F-4457-N0</td>
<td>00G-4457-N0</td>
<td>AJ0-8399</td>
<td></td>
</tr>
<tr>
<td>Cellulose-3</td>
<td>–</td>
<td>00G-4493-N0</td>
<td>AJ0-8623</td>
<td></td>
</tr>
<tr>
<td>Cellulose-4</td>
<td>–</td>
<td>00G-4491-N0</td>
<td>AJ0-8628</td>
<td></td>
</tr>
<tr>
<td>Amylose-1</td>
<td>–</td>
<td>00G-4732-N0</td>
<td>AJ0-9344</td>
<td></td>
</tr>
<tr>
<td>Amylose-2</td>
<td>00F-4472-N0</td>
<td>00G-4472-N0</td>
<td>AJ0-8472</td>
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</tr>
</tbody>
</table>

#### 5µm Axis™ Packed Preparative Columns (mm)

<table>
<thead>
<tr>
<th>SecurityGuard™ Cartridges (mm)</th>
<th>Phases</th>
<th>150 x 21.2</th>
<th>250 x 21.2</th>
<th>250 x 30</th>
<th>250 x 50</th>
<th>4 x 21.2*</th>
<th>16 x 30*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose-1</td>
<td>00F-4459-PO-AX</td>
<td>00G-4459-PO-AX</td>
<td>00G-4459-00-AX</td>
<td>00G-4459-00-AX</td>
<td>AJ0-8405</td>
<td>AJ0-8406</td>
<td></td>
</tr>
<tr>
<td>Cellulose-2</td>
<td>00F-4457-PO-AX</td>
<td>00G-4457-PO-AX</td>
<td>00G-4457-00-AX</td>
<td>00G-4457-00-AX</td>
<td>AJ0-8400</td>
<td>AJ0-8401</td>
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</tr>
<tr>
<td>Cellulose-3</td>
<td>00F-4493-PO-AX</td>
<td>00G-4493-PO-AX</td>
<td>00G-4493-00-AX</td>
<td>00G-4493-00-AX</td>
<td>AJ0-8624</td>
<td>AJ0-8625</td>
<td></td>
</tr>
<tr>
<td>Cellulose-4</td>
<td>00F-4491-PO-AX</td>
<td>00G-4491-PO-AX</td>
<td>00G-4491-00-AX</td>
<td>00G-4491-00-AX</td>
<td>AJ0-8629</td>
<td>AJ0-8630</td>
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</tr>
<tr>
<td>Amylose-1</td>
<td>00F-4732-PO-AX</td>
<td>00G-4732-PO-AX</td>
<td>00G-4732-00-AX</td>
<td>00G-4732-00-AX</td>
<td>AJ0-9338</td>
<td>AJ0-9339</td>
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</tr>
<tr>
<td>Amylose-2</td>
<td>00F-4472-PO-AX</td>
<td>00G-4472-PO-AX</td>
<td>00G-4472-00-AX</td>
<td>00G-4472-00-AX</td>
<td>AJ0-8473</td>
<td>AJ0-8474</td>
<td></td>
</tr>
</tbody>
</table>

#### Column Performance Check Standard

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALJ-9344</td>
<td>Chiral Test Mix No. 5 (Lux)</td>
<td>ea</td>
<td></td>
</tr>
</tbody>
</table>

**Inquire for Lux 10 µm Cellulose-1 and Cellulose-2 columns.

### Bulk Media

<table>
<thead>
<tr>
<th>Phases</th>
<th>100 g</th>
<th>1 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cellulose-1</td>
<td>04G-4501</td>
<td>04K-4501</td>
</tr>
<tr>
<td>Cellulose-2</td>
<td>04G-4502</td>
<td>04K-4502</td>
</tr>
<tr>
<td>Cellulose-3</td>
<td>04G-4624</td>
<td>04G-4624</td>
</tr>
<tr>
<td>Cellulose-4</td>
<td>04G-4625</td>
<td>04G-4625</td>
</tr>
<tr>
<td>20 µm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cellulose-1</td>
<td>04G-4473</td>
<td>04G-4473</td>
</tr>
<tr>
<td>Cellulose-2</td>
<td>04G-4484</td>
<td>04G-4484</td>
</tr>
<tr>
<td>Cellulose-3</td>
<td>04G-4504</td>
<td>04G-4504</td>
</tr>
<tr>
<td>Cellulose-4</td>
<td>04G-4503</td>
<td>04G-4503</td>
</tr>
</tbody>
</table>

Please inquire for 20 µm Lux Amylose-2 media.

---

Lux Chiral Method Screening Kits are available. Please contact your Phenomenex representative for more information.
Ordering Information

Preparative Guard Cartridge Holders

For 21.2mm ID cartridges, use with 18 to 29mm ID columns

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ0-8223</td>
<td>HPLC Holder Kit for 21.2mm ID cartridges, includes column coupler</td>
<td>ea</td>
<td></td>
</tr>
<tr>
<td>AJ0-8617</td>
<td>SFC Holder Kit for 21.2mm ID cartridges, includes column coupler</td>
<td>ea</td>
<td></td>
</tr>
</tbody>
</table>

For 30.0mm ID cartridges, use with 30 to 49mm ID columns

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ0-8277</td>
<td>HPLC Holder Kit for 30.0mm ID cartridges, includes column coupler</td>
<td>ea</td>
<td></td>
</tr>
<tr>
<td>AJ0-8618</td>
<td>SFC Holder Kit for 30.0mm ID cartridges, includes column coupler</td>
<td>ea</td>
<td></td>
</tr>
</tbody>
</table>

Replacement Parts and Accessories

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Unit</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQ0-8374</td>
<td>PREP Coupler, SS w / PEEK Ferrule Inserts, 10-32 Threads, 1/16 in. OD x 0.020 in. ID</td>
<td>ea</td>
<td></td>
</tr>
<tr>
<td>AQ0-8375</td>
<td>Replacement Ferrule Inserts, for PREP Coupler, PEEK, 0.020 in. ID</td>
<td>10/pk</td>
<td></td>
</tr>
<tr>
<td>AQ0-8222</td>
<td>PREP Replacement O-Rings, Kalrez® For 15 x 21.2mm SG HPLC Holder, Size 2-021</td>
<td>2/pk</td>
<td></td>
</tr>
<tr>
<td>AQ0-8318</td>
<td>PREP Replacement O-Rings, Kalrez® For 15 x 30mm SG HPLC Holder, Size 2-025</td>
<td>2/pk</td>
<td></td>
</tr>
<tr>
<td>AQ0-8500</td>
<td>PREP Replacement O-Rings, Teflon® For 15 x 21.2mm SG SFC Holder, Size 2-021</td>
<td>2/pk</td>
<td></td>
</tr>
<tr>
<td>AQ0-8501</td>
<td>PREP Replacement O-Rings, Teflon® For 15 x 30mm SG SFC Holder, Size 2-025</td>
<td>2/pk</td>
<td></td>
</tr>
<tr>
<td>AT0-0465</td>
<td>Capillary S.S. Tubing, 0.020 in. ID x 0.062 in. (1/16 in.) OD x 10 cm length</td>
<td>5/pk</td>
<td></td>
</tr>
<tr>
<td>AT0-0466</td>
<td>Capillary S.S. Tubing, 0.020 in. ID x 0.062 in. (1/16 in.) OD x 20 cm length</td>
<td>5/pk</td>
<td></td>
</tr>
</tbody>
</table>

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Disclaimer
Comparative separations may not be representative of all applications. Columns used for comparison were manufactured by DAICEL Corporation. Phenomenex is in no way affiliated with DAICEL Corporation. Axia column and packing technology is patented by Phenomenex. U.S. Patent No. 7, 674, 383

SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362.

CAUTION: this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PREP or ULTRA holders, or to any cartridges.

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

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Polysaccharide Chiral Columns
Dependable. Scalable. Affordable.

Affordable Chiral Columns,
Brilliant Separation Power

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