

Choosing the right chiral column for your method development is exceptionally important. But where should you start? And what about all your other questions surrounding chirality? No need to worry!

See below for our customers top 5 frequently asked questions chiral columns. Then, if you need a road map of how to start your chiral LC method development, download our poster at the end of this article.

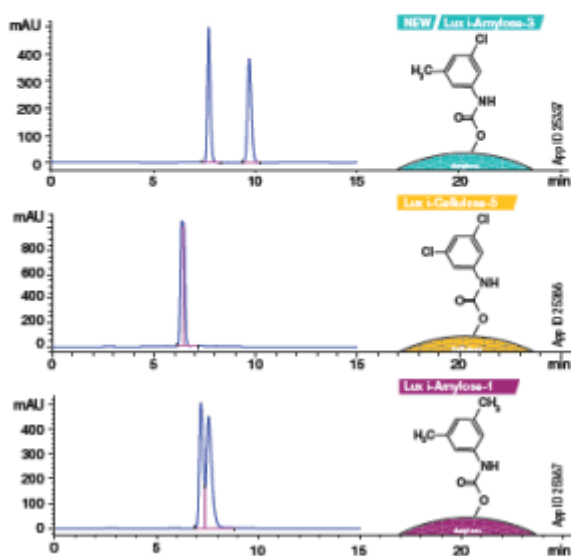
And if you have any more questions about simplified chirality, reach out to our technical experts via Live Chat 24/7. Click the following link to chat now: [Live Chat with Experts](#).

1. How can I reverse enantiomeric elution order?

Frequently Asked Chiral Questions

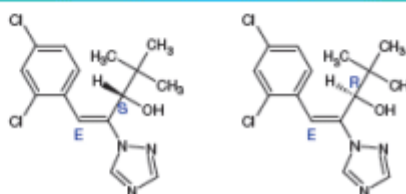
Q1: How can I reverse enantiomeric elution order?

Because of the intrinsic nature of enantiomers, it is difficult to predict selectivity and therefore the relative analyte elution order. However, the Lux polysaccharide chiral column portfolio contains a wide range of chiral stationary phases that can easily be screened for complementary or orthogonal selectivity. For instance, Lux i-Amylose-3 and i-Cellulose-5 have complementary but distinct selectivity in comparison to each other. In addition, the phase immobilization affords greater solvent flexibility, increasing the potential for enantioselectivity.



Columns: Lux 5 μ m i-Amylose-3
Lux 5 μ m i-Cellulose-5
Lux 5 μ m i-Amylose-1
Dimensions: 250 x 4.6 mm
Part No.: 00G-4779-E0
00G-4756-E0
00G-4762-E0
Mobile Phase: Water with 0.1 % Diethylamine/Acetonitrile (35:65)
Flow Rate: 1.0 mL/min
Injection Volume: 10 μ L (2 mg/mL)
Detection: UV @ 254 nm
Sample: 1. Diniconazole
2. Diniconazole

Enantiomers of Diniconazole

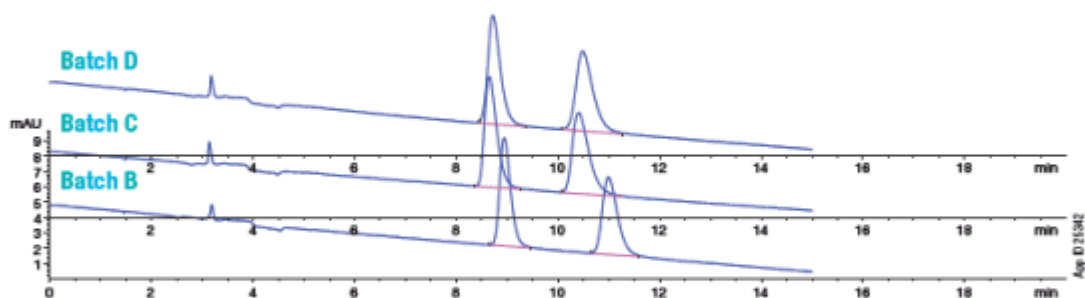


2. Why does Phenomenex use DEA over TEA as the primary basic modifier in application notes?

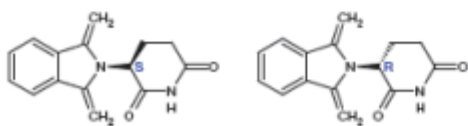
Frequently Asked Chiral Questions

Q2: Why does Phenomenex use DEA over TEA as the primary basic modifier in application notes?

Both DEA (diethylamine) and TEA (triethylamine) are widely published as good basic modifiers for improving peak shapes on polysaccharide-type chiral columns. We chose DEA for our initial screening data and have continued with it routinely to maintain consistency. TEA is also just as effective and commonly used by many customers successfully on our Lux® polysaccharide chiral columns.



Enantiomers of Thalidomide



Columns: Lux 5 µm i-Amylose-3
 Dimensions: 250 x 4.6 mm
 Part No.: 00G-4779-E0
 Mobile Phase: Acetonitrile with 0.1 % Diethylamine
 Flow Rate: 1.0 mL/min
 Injection Volume: 10 µL (2 ng/mL)
 Detection: UV @ 254 nm
 Sample: 1. Thalidomide
 2. Thalidomide

Need a chiral method right now?

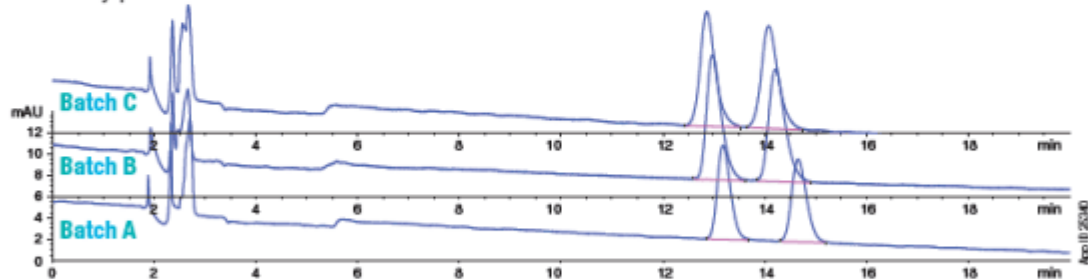
Start your chiral method search by an analyte name or structure search in seconds here:
www.phenomenex.com/lux

3. How does the aromaticity of chiral compounds affect selectivity?

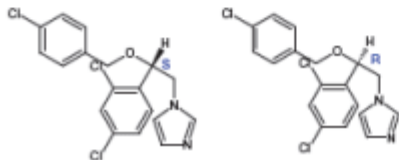
Frequently Asked Chiral Questions

Q3: How does the aromaticity of chiral compounds affect selectivity?

In chiral compounds, the proximity of aromatic groups to the stereocenter is typically linked to the ease of enantiomeric resolution. For instance, the separations of enantiomers in which the aromatic functionality is 4 or more atoms away from the stereocenter can be challenging and chromatographically uncommon. Enantioselectivity is most effective when the distances between the aromatic group and stereocenter are equivalent in both chiral conformations. If the aromatic group of the compound has electron withdrawing groups like halogens or oxygen it will be more electron deficient and will interact more effectively with electron-rich aromatic groups of the chiral stationary phase.



Enantiomers of Econazole



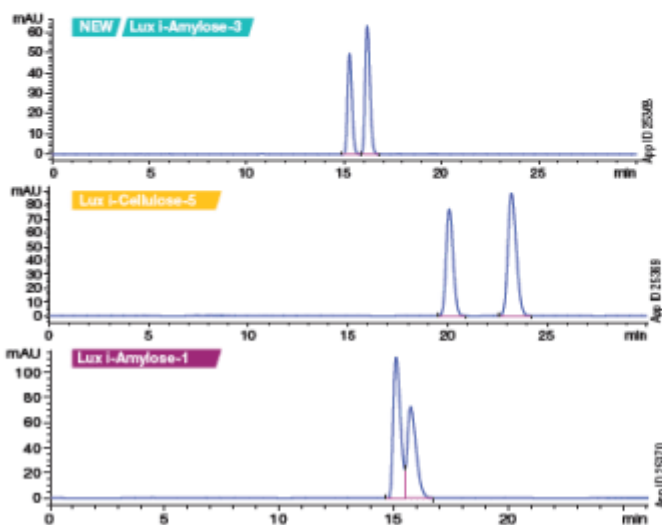
Columns: Lux® 5 µm I-Amylose-3
 Dimensions: 250 x 4.6 mm
 Part No.: 000-4779-E0
 Mobile Phase: Water with 5 mM Ammonium Acetate + 0.05 % Formic Acid/Acetonitrile (85:35)
 Flow Rate: 1.0 mL/min
 Injection Volume: 10 µL (2 mg/mL)
 Detection: UV @ 254 nm
 Sample: 1. Econazole
 2. Econazole

4. What is the difference between Amylose and Cellulose polysaccharide backbones?

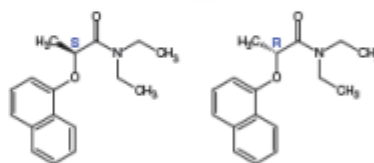
Frequently Asked Chiral Questions

Q4: What is the difference between Amylose and Cellulose polysaccharide backbones?

Both backbones form 3-dimensional helical structures that are well suited to provide grooves and cavities for potential steric interactions, Hydrogen bonding, dipole-dipole, and π - π based interactions. However, the structure for amylose is considered more tightly coiled in comparison to the looser cellulose structure which may accommodate interactions differently. Practically, this difference can result in distinct selectivity for amylose and cellulose even if with an identical chiral selector, as the 3-dimensional orientation around the CSP will differ.



Enantiomers of Napropamide



Columns: Lux® 5 μ m I-Amylose-3
Lux 5 μ m I-Cellulose-5
Lux 5 μ m I-Amylose-1

Dimensions: 250 x 4.6 mm

Part No.: 006-4779-E0
006-4750-E0
006-4762-E0

Mobile Phase: Water with 5 mM Ammonium Acetate + 0.05% Formic Acid/Acetonitrile (53:47)

Flow Rate: 1.0 mL/min

Injection Volume: 10 μ L (2 mg/mL)

Detection: UV @ 254 nm

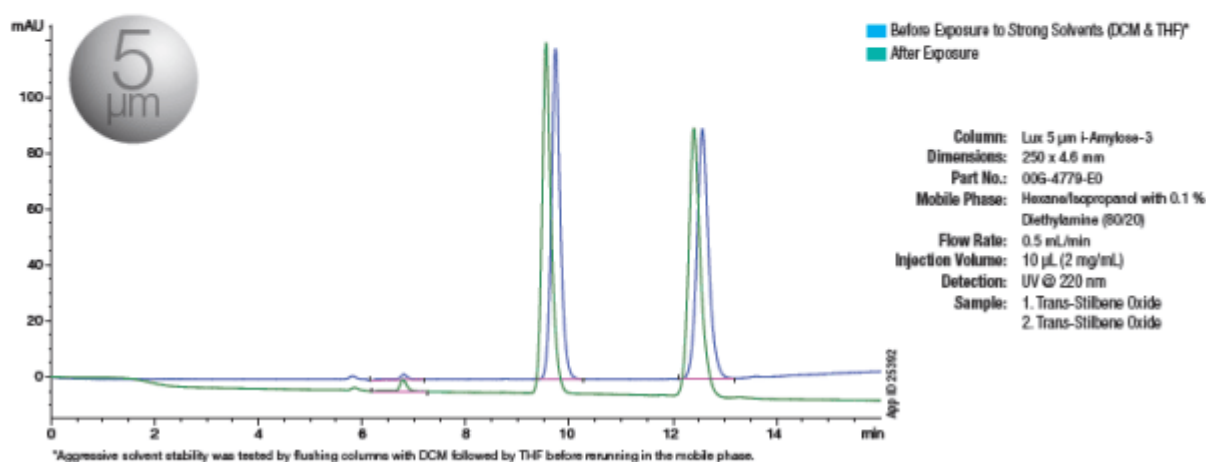
Sample: 1. Napropamide
2. Napropamide

5. What separation modes can Lux polysaccharide chiral columns operate in?

Frequently Asked Chiral Questions

Q5: What separation modes can Lux[®] polysaccharide chiral columns operate in?

Lux chiral columns can be used in reversed phase, normal phase, polar organic, polar ionic and SFC conditions. However, the immobilization and bonding technology used within the Lux I-Amylose-3, I-Cellulose-5 and I-Amylose-1 columns promotes stability in strong organic solvents, which affords you the ability to expand your chiral separation success with even more solvent systems.













Optimize your chiral separation and chiral purification with Lux[®] polysaccharide chiral HPLC columns. The Lux family of amylose and cellulose chiral selectors provides a variety of complementary selectivities that allow you to screen for the most effective chiral separation under Reversed Phase, Polar Organic, Normal Phase, and SFC conditions. With numerous publications in peer reviewed journals and countless applications being developed, Lux chiral HPLC columns are rapidly becoming the premier choice for simplified chiral purification and chiral separation worldwide.

To find the chiral column right for your method development, download the PDF below:

Chiral LC Method Development Poster

Simplified Chiral HPLC/SFC Column Screening Strategies



Immobilized			Coated					
Lux 1-Amylose-1 <small>(2,6-dimethylamylose)</small>	Lux 1-Amylose-3 <small>(2,6-trimethylamylose)</small>	Lux 1-Cellobiose-6 <small>(2,6-dimethylcellobiose)</small>	Lux Amylose-1 <small>(2,6-dimethylamylose)</small>	Lux Amylose-2 <small>(2,6-trimethylamylose)</small>	Lux Cellobiose-1 <small>(2,6-dimethylcellobiose)</small>	Lux Cellobiose-2 <small>(2,6-trimethylcellobiose)</small>	Lux Cellobiose-3 <small>(2,6-trimethylcellobiose)</small>	Lux Cellobiose-4 <small>(2,6-trimethylcellobiose)</small>
								
Recommended eluents in CHIRALCEL 30 and 30.3	Recommended eluents in CHIRALCEL 30 and 30.3	Recommended eluents in CHIRALCEL 30 and 30.3	Recommended eluents in CHIRALCEL 30, 30.3, 30.3P, 30.3P-2R	Recommended eluents in CHIRALCEL 30, 30.3, 30.3P, 30.3P-2R	Recommended eluents in CHIRALCEL 30, 30.3, 30.3P, 30.3P-2R	Recommended eluents in CHIRALCEL 30, 30.3, 30.3P, 30.3P-2R	Recommended eluents in CHIRALCEL 30, 30.3, 30.3P, 30.3P-2R	Recommended eluents in CHIRALCEL 30, 30.3, 30.3P, 30.3P-2R

HPLC Screen

Normal Phase (NP)

Hexane/IPA 90:10* or Hexane/EtOH 90:10*

$R_f < 1.5$ or $k_f > 20$ min → Adjust % IPA or EtOH, $k_f < 20$ min

$R_f > 1.5$ → Try Polar Organic or Reversed Phase conditions

Polar Organic (PO)

CH₂Cl₂/IPA 95:5* → $R_f > 1.5$ → MeOH/IPA 90:10** → $R_f > 1.5$

CH₂Cl₂/IPA 95:5* → $R_f < 1.5$ → MeOH/IPA 90:10** → $R_f < 1.5$

Reversed Phase (RP)

Acidic Compounds
1. CH₂Cl₂/0.1% Formic Acid or 0.1% Acetic Acid
2. MeOH/0.1% Formic Acid or 0.1% Acetic Acid

Neutral Compounds
1. CH₂Cl₂/Water
2. MeOH/Water

Basic Compounds
1. CH₂Cl₂/w/ 20 mM NH₄HCO₂ + 0.1% DEA
2. MeOH/w/ 20 mM NH₄HCO₂ + 0.1% DEA

$R_f > 1.5$ → Please contact your local Phenomenex representative for additional support.

$R_f < 1.5$ → Please contact your local Phenomenex representative for additional support.

Solvent Considerations

Solvent Switching
Lux columns are shipped in 90% Hexane : 10% IPA

Normal Phase → Try your column with the column eluent of choice (IPA or Hexane) and see if you get a peak.

Polar Phase → Try your column with the column eluent of choice (IPA or Hexane) and see if you get a peak.

Normal Phase → Try your column with the column eluent of choice (IPA or Hexane) and see if you get a peak.

* Do not use polar phase columns in non-polar phase mode. It is not recommended to elute with water.
See column data and also visit www.phenomenex.com/lux for more information.

Tip

We suggest initially screening all three immobilized Lux phases because of greater solvent flexibility.

* Hexane/IPA 90:10* or Hexane/EtOH 90:10*
** Do not use polar phase columns in non-polar phase mode. It is not recommended to elute with water.
*** Do not use IPA with basic and neutral compounds and 0.1% H₂O with acidic and neutral compounds.
**** Changing IP in acetonitrile can be occasionally beneficial.
* See Lux Immobilized SFC Chiral/Amide Multi-Methane Chiral/Amide SFC/MS/MS
** See Lux Immobilized SFC Chiral/Amide Multi-Methane Chiral/Amide SFC/MS/MS

Why Choose Lux Chiral Columns?

• Stable in normal phase, polar organic,

Simplified Chiral HPLC-SFC Column Screening Strategies PosterDownload

We hope that these questions helped you with your chiral method development! If not, and you still have more questions, please reach out and ask them through our **Live Chat with Experts**.

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