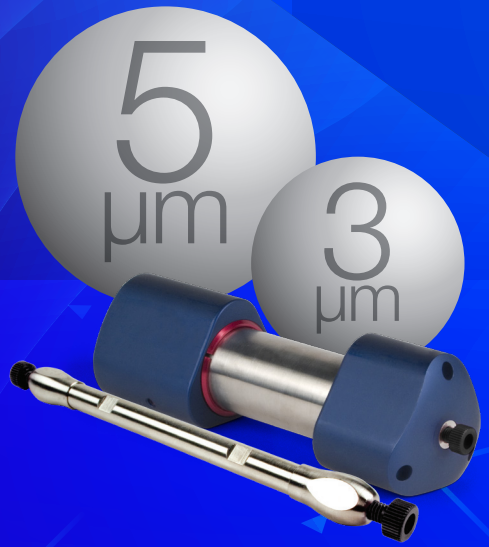
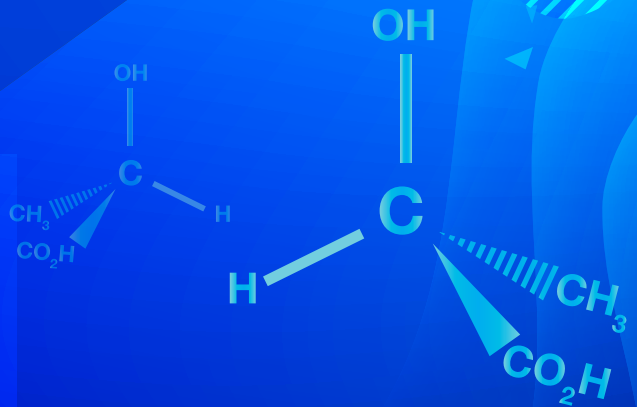
5 Frequently Asked Question About Lux® Chiral Columns





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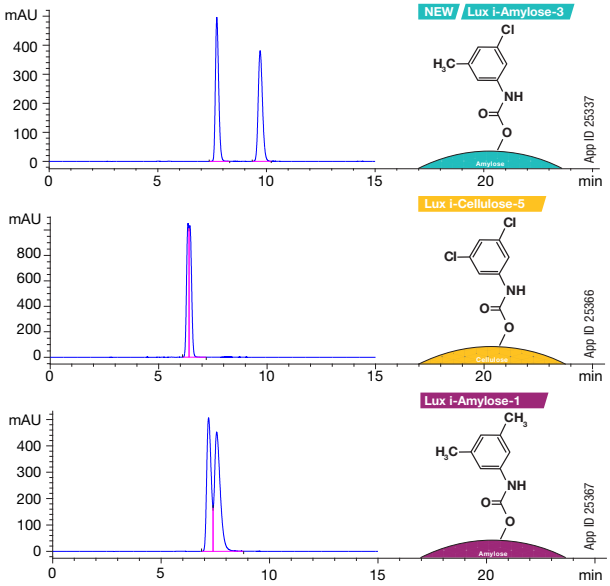
GR67960419

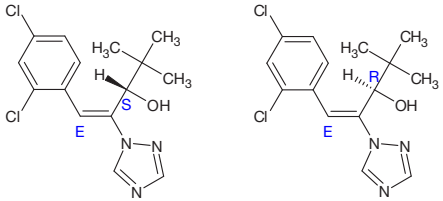
Q1: How can I reverse enantiomeric elution order?

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.



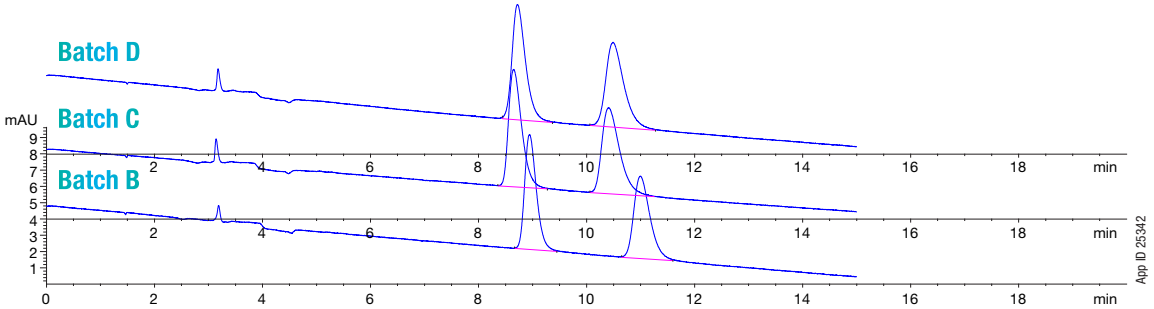
Columns:	Lux 5 µm i-Amylose-3 Lux 5 µm i-Cellulose-5 Lux 5 µm i-Amylose-1
Dimensions:	250 x 4.6 mm
Part No.:	00G-4779-E0 00G-4756-E0 00G-4762-E0
Mobile Phase:	Water with 0.1 % Diethylamine/Acetonitrile (35:65)
Flow Rate:	1.0 mL/min
Injection Volume:	10 µL (2 mg/mL)
Detection:	UV @ 254 nm
Sample:	1. Diniconazole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

Enantiomers of Diniconazole

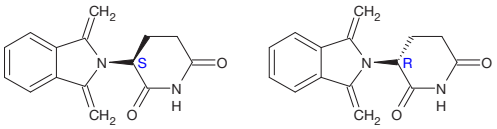


Q2: Why does Phenomenex use DEA over TEA as the primary basic modifier in application notes?

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.



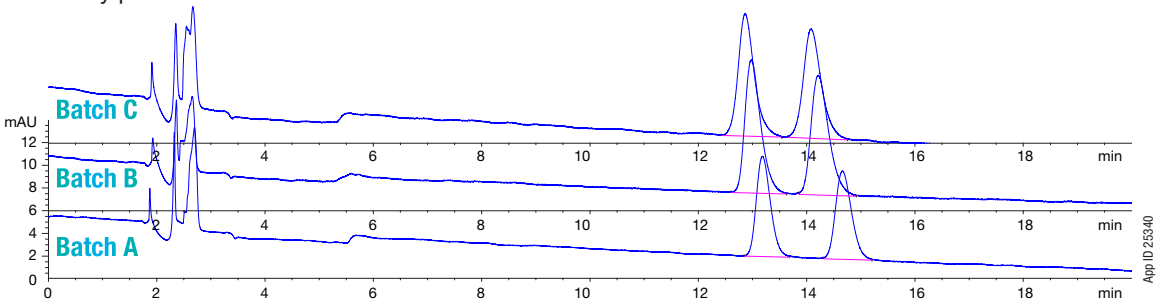
Enantiomers of Thalidomide



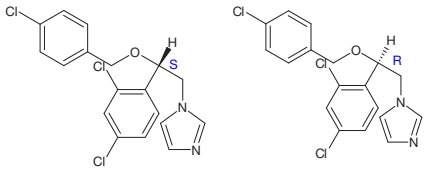
Columns:	Lux 5 µm i-Amylose-3
Dimensions:	250 x 4.6 mm
Part No.:	00G-4779-E0
Mobile Phase:	Acetonitrile with 0.1 % Diethylamine
Flow Rate:	1.0 mL/min
Injection Volume:	10 µL (2 mg/mL)
Detection:	UV @ 254 nm
Sample:	1. Thalidomide 2. Thalidomide

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.



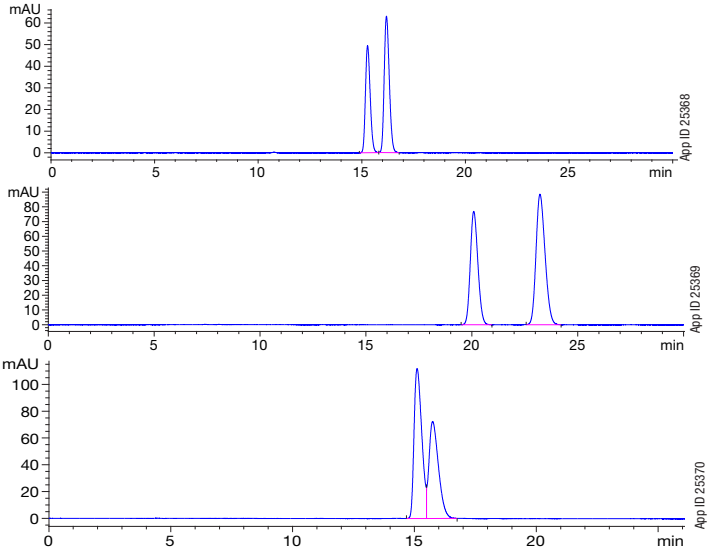
Enantiomers of Econazole



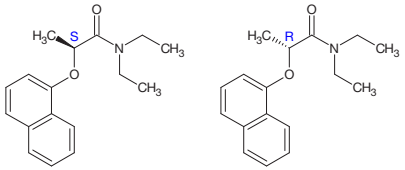
Columns:	Lux® 5 µm i-Amylose-3
Dimensions:	250 x 4.6 mm
Part No.:	00G-4779-E0
Mobile Phase:	Water with 5 mM Ammonium Acetate + 0.05 % Formic Acid/Acetonitrile (65:35)
Flow Rate:	1.0 mL/min
Injection Volume:	10 µL (2 mg/mL)
Detection:	UV @ 254 nm
Sample:	1. Econazole 2. Econazole

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.



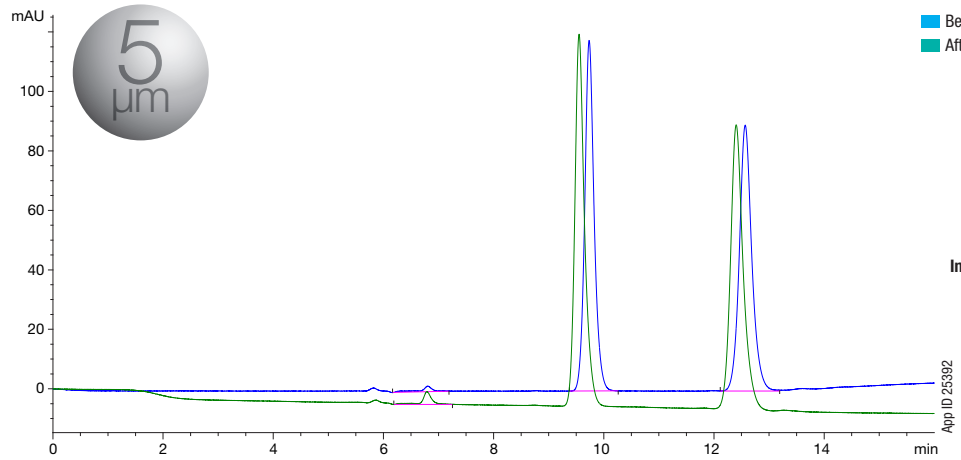
Enantiomers of Napropamide



Columns:	Lux® 5 µm i-Amylose-3 Lux 5 µm i-Cellulose-5 Lux 5 µm i-Amylose-1
Dimensions:	250 x 4.6 mm
Part No.:	00G-4779-E0 00G-4756-E0 00G-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 µL (2 mg/mL)
Detection:	UV @ 254 nm
Sample:	1. Napropamide 2. Napropamide

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.



Column: Lux 5 µm i-Amylose-3
Dimensions: 250 x 4.6 mm
Part No.: 00G-4779-E0
Mobile Phase: Hexane/Isopropanol with 0.1 % Diethylamine (80/20)
Flow Rate: 0.5 mL/min
Injection Volume: 10 µL (2 mg/mL)
Detection: UV @ 220 nm
Sample: 1. Trans-Stilbene Oxide
2. Trans-Stilbene Oxide

*Aggressive solvent stability was tested by flushing columns with DCM followed by THF before rerunning in the mobile phase.