

- **High enantioselectivity**
- **Fast run times**
- **Rugged, long-lived columns**
- **Easy scale-up to preparative**
- **Allow direct/indirect resolution of enantiomeric amines, amino acids, hydroxy acids, alcohols, carboxylic acids, ketones, ethers, and esters**



Hundreds of applications demonstrate the performance of Chirex phases for a multitude of pharmaceutical and agrochemical compounds. For a complete list, please contact your Phenomenex technical consultant.

Chiral separations are extremely important to the pharmaceutical and biotechnology industries, as well as most other areas of natural products chemistry. Optically active therapeutic drugs require selective and sensitive techniques. Government regulations also continue to spur and require the development of rapid, accurate and reproducible methods for the analysis and purification of enantiomeric compounds.

The challenge is to provide selective yet versatile HPLC columns for both trace analysis and the purification of bulk drug.

Phenomenex meets these challenges with Chirex brand HPLC columns. Chirex is available in 7 different stationary phases. These chemically rugged, versatile columns are used for the direct and indirect resolution of enantiomeric amines, alcohols, carboxylic acids, hydroxy acids, amino acids, ketones, lactones, ethers, esters, and other biologically active compounds.

Which Chirex Stationary Phase?

Stationary phase selection depends on presence/absence of chemical groupings in the chiral molecule.

Chirex Column Selection Guide

Presence of Chemical Groupings in Chiral Molecule							Recommended Columns:	
Class	Aromatic	-N-	-COOH	-OH	Other	Comment	First Choice	Second Choice
Group 1	Y	Y	Y			Aromatic α-amino acids, α-hydroxy acids	3126	3001
Group 2	Y	Y		Y			3022 or 3020	3014
Group 3	Y	Y			Y		3014 or 3020	3022
Group 4	Y		Y					3001
Group 5	Y			Y			3001 or 3014	3020 or 3022
Group 6	Y				Y		3001	3019 or 3020
Group 7		Y	Y			Aliphatic α-amino acids, α-hydroxy acids and their derivatives	3126	
Group 8			Y				3126	
Group 9					Y		3014	3019 or 3020
Group 10					Y	Asymmetric other than carbon. Chiral center at N,S,P,B, etc	3014	



For broader enantioselectivity, see Lux on p. 301

Ordering Information

5 μm Starter Columns (mm)				
Phase	Chirex Phase Description	Bond Type	Linkage Type	50 x 4.6
3014	(S)-VAL and (R)-NEA	Covalent	Urea	00B-3014-E0
3020	(S)-LEU and (R)-NEA	Covalent	Urea	00B-3020-E0
3126	(D)-Penicillamine	Ion-Metal	Lig Exchange	00B-3126-E0



Preparative Columns and Bulk Media are available in 15 and 30 μm particle sizes. Call for information on pricing and availability. Detailed notes on Care and Use, as well as performance testing, are provided with each column.



For Chiral Column Performance Check Standards, see p. 425

5 μm Analytical and Guard Columns (mm)				Guards		
Phase	Chirex Phase Description	Bond Type	Linkage Type	150 x 4.6	250 x 4.6	30 x 4.6
3001	(R)-PGLY and DNB	Covalent	Amide	00F-3001-E0	—	—
3011	(S)-LEU and DNB	Covalent	Urea	—	00G-3011-E0	—
3014	(S)-VAL and (R)-NEA	Covalent	Urea	—	00G-3014-E0	—
3019	(S)-LEU and (S)-NEA	Covalent	Urea	—	00G-3019-E0	—
3022	(S)-ICA and (R)-NEA	Covalent	Urea	00F-3022-E0	00G-3022-E0	—
3126	(D)-Penicillamine	Ion-Metal	Lig Ex	00F-3126-E0	00G-3126-E0	03A-3126-E0



Chiral HPLC of Amino Acids

- Pirkle-concept and Ligand Exchange type columns
- High enantioselectivity
- Excellent efficiency

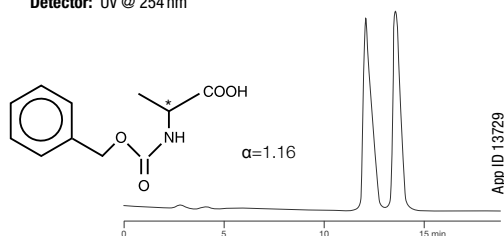
Separations of Amino Acid Derivatives

Compound	Chirex Phase	Separation Factor (α)	App ID No.
N-FMOC Derivatives (9-Fluorenylmethyloxycarbonyl)			
N-FMOC-Leucine	3011	1.20	13800
N-FMOC-Phenylalanine	3011	1.10	13796
N-FMOC-Valine	3011	1.12	13798
Z-Derivatives (Benzyloxycarbonyl)			
Z-Alanine	3011	1.16	13729
Z-Leucine	3011	1.17	13731
Z-Norvaline	3011	1.13	13755
Z-Serine	3011	1.09	13758
Z-Valine	3011	1.13	13753
N-Acetyl Derivatives			
N-Acetylalanine	3126	1.17	14052
N-Acetylleucine	3126	1.39	14058
N-Acetylmethionine	3126	1.27	13728
N-Acetylvaline	3126	1.50	14055
N-Formyl Derivatives			
N-Formylvaline	3126	1.37	13721
N-Formylmethionine	3126	1.25	13722
N-Dansyl Derivatives (5-5-Dimethyl-aminonaphthalene-1-sulfonyl derivative)			
N-Dansylnorvaline	3011	1.24	13766
N-Dansylphenylalanine	3011	1.27	13771
N-Dansylvaline	3011	1.28	13763
PTH Derivatives (Phenylthiohydantoin)			
PTH-Valine	3014	1.12	13921

i Separation potential of some other amino acid derivatives:
(Recommended columns: Chirex 3011, 3014)
CBZ-Derivatives (carbobenzoxy; benzyloxycarbonyl);
IC-Derivatives (phenylisocyanate);
Dabsyl Derivatives (4-4-dimethylaminoazobenzene-4'-sulfonyl)

Z-Alanine

Column: Chirex 3011
Dimensions: 250 x 4.0 mm
Part No.: 00G-3011-00
Mobile Phase: 0.01 M Ammonium Acetate in Methanol
Flow Rate: 1.0 mL/min
Detector: UV @ 254 nm



Chirex HPLC columns are an excellent choice for underivatized and derivatized amino acids.

Separations of Underivatized "Free" Amino Acids

Compound	Chirex Phase	Separation Factor (α)	App ID No
Alanine	3126	1.66	14004
Alanylglycine	3126	2.26	14080
Alanylglycyl-glycine	3126	1.62	14082
Alloisoleucine	3126	1.67	14038
Allothreonine	3126	1.19	14046
Arginine	3126	2.15	14027
Asparagine	3126	1.10	14049
Aspartic acid	3126	1.42	14019
Baclofen	3126	1.23	13785
p-Boronophenylalanine	3126	1.36	13790
2-amino-n-Butyric acid	3126	1.80	14034
Cystine	3126	2.47	14085
2,6-Diaminopimelic acid	3126	2.77	14066
3-(3,4-Dihydroxyphenyl)-alanine (DOPA)	3126	1.22	13750
Glutamic acid	3126	1.11	14047
Glutamine	3126	1.71	14022
Glycylalanine	3126	1.78	14079
Glycylvaline	3126	1.69	14081
Histidine	3126	1.32	13745
Isoleucine	3126	1.70	14035
Leucine	3126	1.56	14009
Leucylglycyl-glycine	3126	1.36	14083
Lysine	3126	1.83	14018
Methionine	3126	1.42	14024
α-Methyl Leucine	3126	1.59	14457
α-Methyl Tryptophan	3126	1.18	14456
Naphthylglycine	3126	1.42	13789
Norvaline	3126	1.95	14029
Ornithine	3126	1.38	14041
Phenylalanine	3126	1.44	13740
Phenylglycine	3126	1.78	13748
Pipecolic acid	3126	1.77	14031
Proline	3126	2.50	14011
Serine	3126	1.17	14016
Threonine	3126	1.20	14043
dl-Threo-3-phenylserine	3126	1.15	13787
Tryptophan	3126	1.11	13737
Tyrosine	3126	1.34	13743
Valine	3126	1.91	14006

i Alpha (α)= Separation Factor = k_2/k_1

Baclofen

Column: Chirex 3126
Dimensions: 150 x 4.6 mm
Part No.: 00F-3126-EQ
Mobile Phase: 2 mM Copper (II) sulfate in water / Isopropanol (85:15)
Flow Rate: 1.0 mL/min
Detector: UV @ 254 nm

