

CHIRAL **H P L C** COLUMNS
CHIREXTM



World-Class Chiral Separation Tools Meeting Your Demands for:

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. New 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 12 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. The table below describes the 12 different chiral stationary phases available in the CHIREX line.

CHIREX™ Chiral Stationary Phase Descriptions

Amide Type	<p>(R)-phenylglycine and 3,5-dinitrobenzoic acid amide linkage, electron acceptor designed for the separation of:</p> <ul style="list-style-type: none"> • carboxylic acids, alcohols, esters • sulphoxides 	3001	<p>(S)-proline and (S)-1-(α-naphthyl)ethylamine urea linkage, electron donor designed for the separation of:</p> <ul style="list-style-type: none"> • amines, alcohols and amino acids • underivatized β-blockers • aromatic amines • pesticides 	3017
Amide Type	<p>(R)-1-naphthylglycine and 3,5-dinitrobenzoic acid amide linkage, electron acceptor designed for the separation of:</p> <ul style="list-style-type: none"> • carboxylic acids, alcohols, esters • non-steroidal anti-inflammatory agents 	3005	<p>(S)-proline and (R)-1-(α-naphthyl)ethylamine urea linkage, electron donor designed for the separation of:</p> <ul style="list-style-type: none"> • amines, alcohols and amino acids • underivatized β-blockers • aromatic amines • pesticides 	3018
Urea Type	<p>(S)-valine and 3,5-dinitroaniline urea linkage, electron acceptor designed for the separation of:</p> <ul style="list-style-type: none"> • carboxylic acids, amino acid derivatives • hydroxy acids • Dabsyl and Dansyl derivatives of amino acids 	3010	<p>(S)-tert-leucine and (S)-1-(α-naphthyl)ethylamine urea linkage, electron donor designed for the separation of:</p> <ul style="list-style-type: none"> • esters, amino alcohols • underivatized β-blockers • aromatic amines • cyano alcohols • pesticides 	3019
Urea Type	<p>(S)-tert-leucine and 3,5-dinitroaniline urea linkage, electron acceptor designed for the separation of:</p> <ul style="list-style-type: none"> • carboxylic acids, amino acid derivatives 	3011	<p>(S)-tert-leucine and (R)-1-(α-naphthyl)ethylamine urea linkage, electron donor designed for the separation of:</p> <ul style="list-style-type: none"> • amines, amino alcohols, alcohols • underivatized β-blockers • aromatic amines • cyano alcohols • pesticides 	3020
Urea Type	<p>(R)-phenylglycine and 3,5-dinitroaniline urea linkage, electron acceptor designed for the separation of:</p> <ul style="list-style-type: none"> • carboxylic acids, amino acid derivatives 	3012	<p>(S)-indoline-2-carboxylic acid and (R)-1-(α-naphthyl)ethylamine urea linkage, electron donor designed for the separation of:</p> <ul style="list-style-type: none"> • amines, amino alcohols, alcohols 	3022
Urea Type	<p>(S)-valine and (R)-1-(α-naphthyl)ethylamine urea linkage, electron donor designed for the separation of:</p> <ul style="list-style-type: none"> • π-acceptor derivatives of amines, carboxylic acids and amino acids • the esters and amides of these acids • underivatized alcohols 	3014	<p>(D)-penicillamine ligand exchange, electron acceptor designed for the separation of:</p> <ul style="list-style-type: none"> • α-amino acids, their derivatives • α-hydroxy acids, amino alcohols 	3126

All CHIREX brand analytical columns are available in 5µ particle size. Preparative columns and bulk media are also available in 15 and 30µ particle sizes. Narrow particle size distributions, combined with our advanced column packing methodology, results in highly stable beds

and uniformly-packed CHIREX columns. Our proprietary bonding process leads to excellent chemical stability. The table below provides additional technical data.

CHIREX™ Series Technical Data and Specifications Sheet

Chiral Type:	Pirkle or "Brush" type; Type I Classification
Particle Size:	5µ (analytical), 15µ and 30µ (preparative)
Phase:	Derivative of optically pure amino acid or carboxylic acid
Bonding:	Covalently bonded to α-aminopropyl silica
Maximum Flow Rate:	1.5 to 2.0 mL/min on 250 x 4.6mm ID
Maximum Pressure:	3000 psi
Typical Pressure:	700 psi @ 1.0 mL/min on 250 x 4.6mm ID
Maximum Temp:	50°C
pH Range:	2.5 to 7.5
Column Hardware:	316 Stainless Steel or metal-free PEEK (on request)
Shelf Life:	Highly stable at room temperature
Solvent Systems:	Compatible with primarily normal phase systems based on Hexane. Phases 3005, 3010, 3011 and 3012 may also utilize a "reversed phase" system based on Ammonium Acetate in Methanol. Only the Ligand Exchange column (phase 3126) is a true reversed phase column utilizing a water-based mobile phase system.
Typical Solvents:	Hexane, 1,2-Dichloroethane, Chloroform, Tetrahydrofuran, Ethyl Acetate, Isopropanol, Ethanol, Methanol
Typical Modifiers:	0.1 to 0.5% Acids or Amines e.g., Trifluoroacetic Acid, Acetic Acid, Triethylamine, Tetraethylamine Buffers, Ammonium Acetate, Copper (II) Sulfate (Ionically Bonded Columns and phase 3126 have limitations. See column care and use note provided with column.)
Conditioning Procedure:	Care and Conditioning Guide provided with each column
Cleaning Procedure:	Wash thoroughly after the use of mobile phases containing acids, bases or salts (follow column care and use note provided with column)
Storage Conditions:	In Normal Phase: Hexane/Ethanol (99:1). In Reversed Phase: Methanol, up to 100% (except for phase 3126, which has organic solvent limitations. See care and use note for details.)
General:	Use of a guard column is highly recommended for longer column life

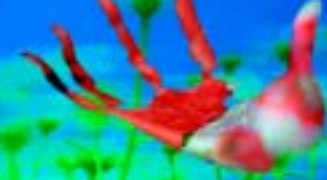
Which CHIREX™ Stationary Phase?

Stationary phase selection depends on presence/absence of chemical groupings in the chiral solute. The table below guides you to your selection.

CHIREX™ Column Selection Guide

Presence of Chemical Groupings in Chiral Solute						Recommended Columns:			
Class	Aromatic	—N—	—COOH	—OH	Other	Comment	First Choice	Second Choice	Third Choice
Group 1	Y	Y	Y			Aromatic α-amino acids, α-hydroxy acids	3126	3005 or 3001	3011 or 3012
Group 2	Y	Y		Y			3022 or 3020	3014	3017 or 3018
Group 3	Y	Y			Y		3014 or 3020	3022	3017 or 3018
Group 4	Y		Y				3005	3010	3001
Group 5	Y			Y			3001 or 3014	3017 or 3005	3020 or 3022
Group 6	Y				Y		3001	3005	3019 or 3020
Group 7		Y	Y			Aliphatic α-amino acids, α-hydroxy acids and their derivatives	3126		
Group 8			Y				3126	3010	3001
Group 9					Y		3014	3019 or 3020	3001
Group 10					Y	Asymmetric other than carbon. Chiral center at N,S,P,B, etc.	3014	3010	3005

CHIREX™ CHIRAL HPLC OF AMINO ACIDS HYDROXY ACIDS & DIPEPTIDES



Higher selectivity = Higher resolution Improved Analytical Results

If you are working with derivatized or underivatized amino acids, hydroxy acids, or dipeptides, Chirex HPLC columns are your solution. With either reversed or normal phase conditions all types can be resolved.

The table below lists some of the more popular applications within this category. See page 13 for a more complete list. If you don't see your analyte of interest, please give us a call.

Separation of Amino Acid Derivatives

Compound	Chirex Phase	Separation Factor (α)	APP ID No.
t-BOC-Derivatives (Butyloxycarbonyl)			
t-BOC-Leucine	3012	1.09	14064
t-BOC-Phenylalanine	3012	1.09	13784
t-BOC-Valine	3012	1.10	14063
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 (Benzylloxycarbonyl)			
Z-Alanine	3011	1.16	13729
Z-Asparagine	3010	1.12	13760
Z-Leucine	3011	1.17	13731
Z-Norvaline	3011	1.13	13755
Z-Phenylalanine	3012	1.08	13762
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	13722
N-Formylmethionine	3126	1.25	13721
N-Benzoyl Derivatives			
N-Benzoylglutamic acid	3012	1.14	13782
N-Benzoylleucine	3012	1.11	14460
N-Benzoylphenylalanine	3012	1.17	13730
N-Benzoylphenylglycine	3012	1.13	14461
N-Benzoylvaline	3012	1.19	13778
N-Dansyl Derivatives (5-5-Dimethyl-aminonaphthalene-1-sulfonyl derivative)			
N-Dansylnorvaline	3011	1.24	13766
N-Dansylphenylalanine	3011	1.27	13771
N-Dansylthreonine	3012	1.18	13734
N-Dansyltryptophan	3010	1.15	13774
N-Dansylvaline	3011	1.28	13763
PTH Derivatives (Phenylthiohydantoin)			
PTH-Valine	3014	1.12	13921

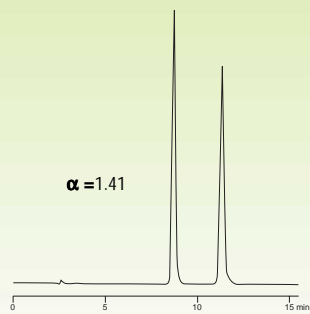
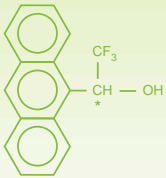
Separation of Underivatized Amino Acids

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

2, 2, 2-Trifluoro-1-(9-anthryl)ethanol

App ID 13973

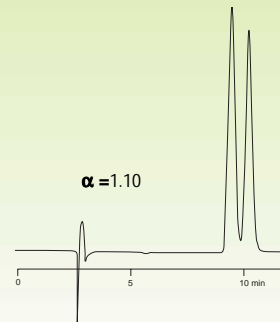
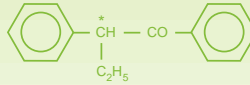
Column: Chirex 3001
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3001-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (75.8:22.7:1.5)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



2-Phenylbutyrophenone

App ID 13999

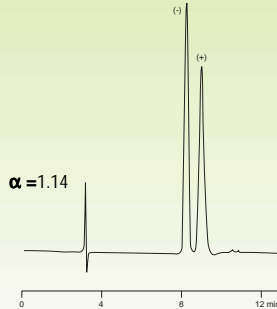
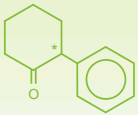
Column: Chirex 3001
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3001-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (98:1.9:0.1)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



2-Phenylcyclohexanone

App ID 13986

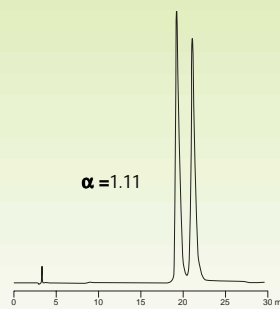
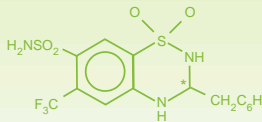
Column: Chirex 3001
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3001-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol / Acetic acid (90.6:9:0.2:0.1)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Bendroflumethazide

App ID 5243

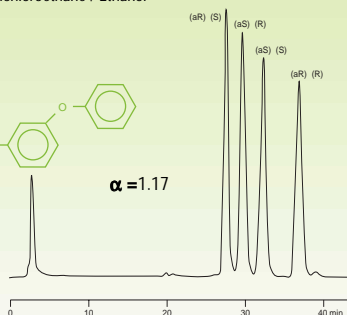
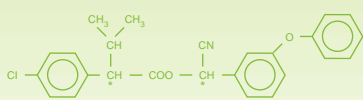
Column: Chirex 3001
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3001-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol-trifluoroacetic acid (55:35:10)
 Flow Rate: 1mL/min
 Detector: UV @ 272nm



Fenvalerate

App ID 13995

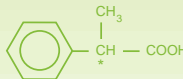
Column: Chirex 3001
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3001-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (94:3:5:7:0.03)
 Flow Rate: 1mL/min
 Detector: UV @ 230nm



Furamethrin

App ID 13998

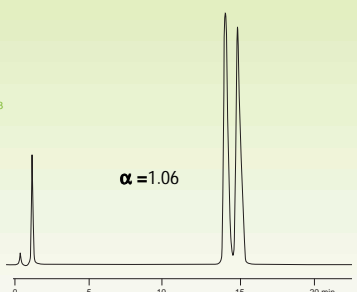
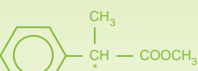
Column: Chirex 3001
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3001-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane (99.8:0.2)
 Flow Rate: 0.8mL/min
 Detector: UV @ 230nm



Methyl mandelate

App ID 13984

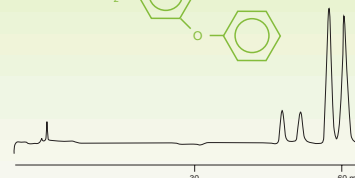
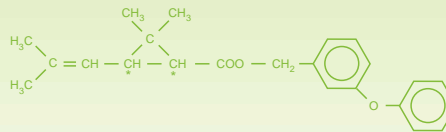
Column: Chirex 3001
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3001-D0
 Mobile Phase: Hexane / Ethanol (99.5:0.5)
 Flow Rate: 1mL/min
 Detector: UV @ 230nm



Phenothrin

App ID 13992

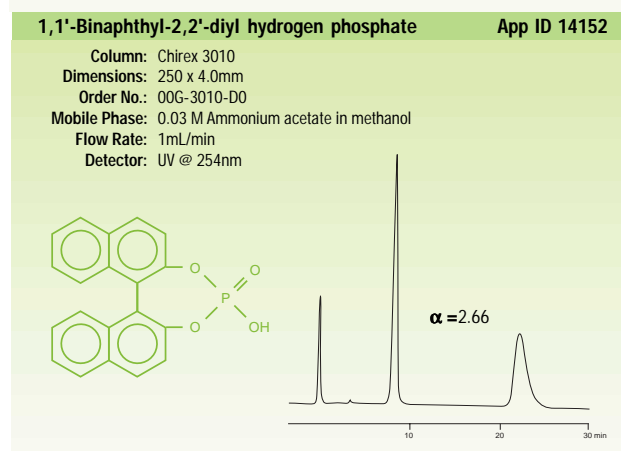
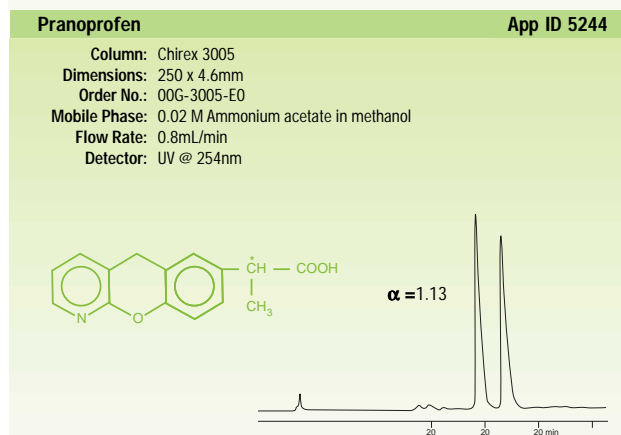
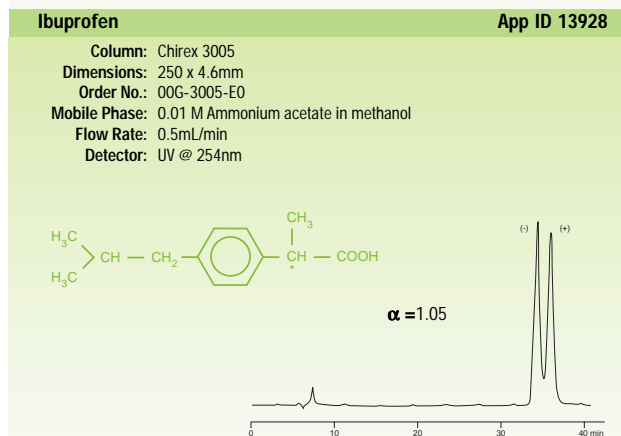
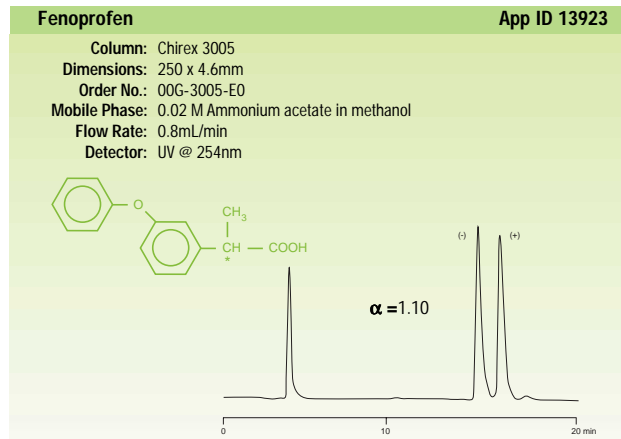
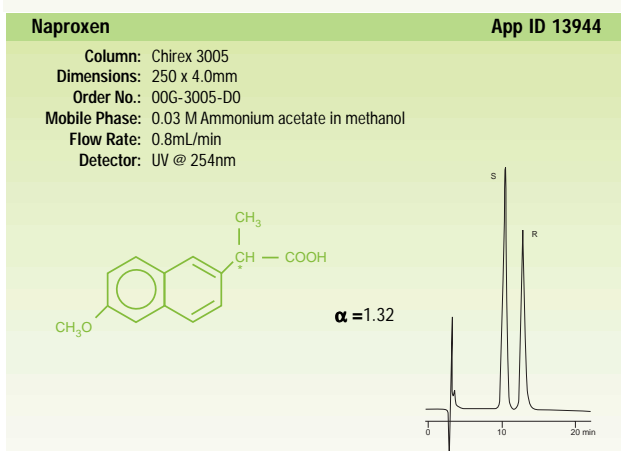
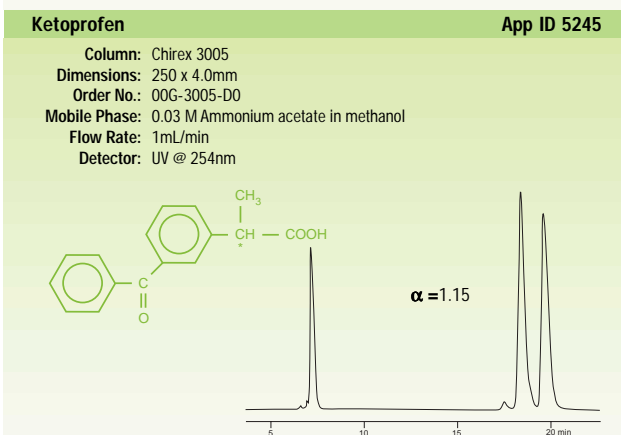
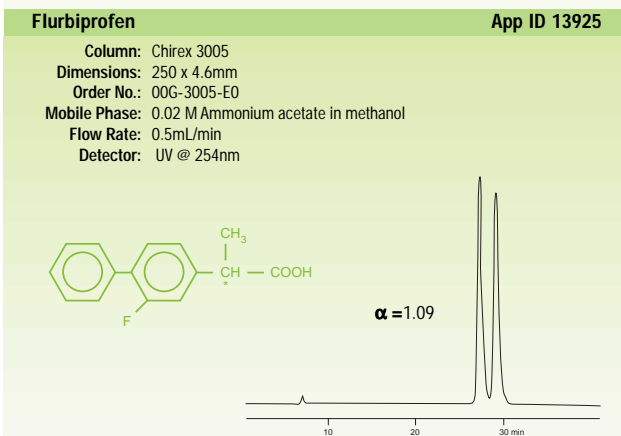
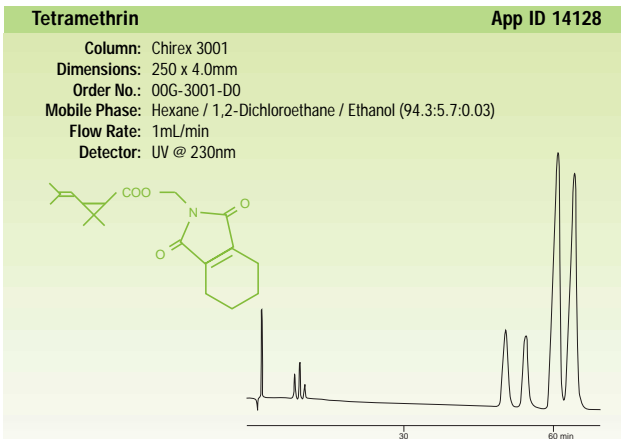
Column: Chirex 3001
 Dimensions: 500 x 4.0mm
 Order No.: 00G-3001-D0 (x2)
 Mobile Phase: Hexane / 1,2-Dichloroethane (99.8:0.2)
 Flow Rate: 1mL/min
 Detector: UV @ 230nm



These applications
 are only a partial list.
 Call us regarding your
 Chiral separation.



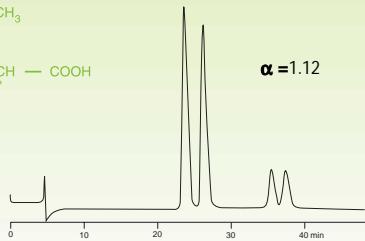
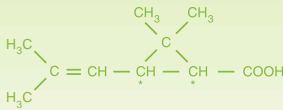
These applications
are only a partial list.
Call us regarding your
Chiral separation.



Chrysanthemic Acid

App ID 5246

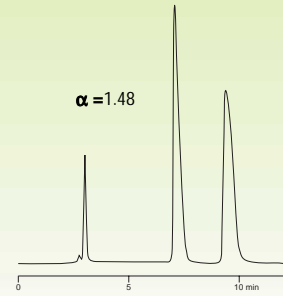
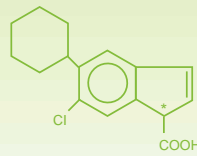
Column: Chirex 3010
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3010-D0
 Mobile Phase: 0.1 M Ammonium acetate in water / Tetrahydrofuran (60:40)
 Flow Rate: 0.5mL/min
 Detector: UV @ 230nm



Clidanac

App ID 13930

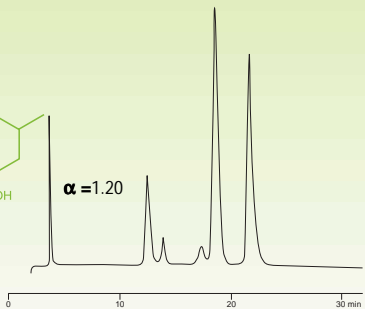
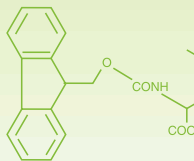
Column: Chirex 3010
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3010-D0
 Mobile Phase: 0.1 M Ammonium acetate in methanol
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



N-FMOC-leucine

App ID 13800

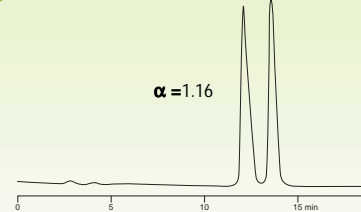
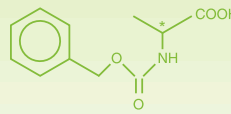
Column: Chirex 3011
 Dimensions: 250 x 4.6mm
 Order No.: 00G-3011-E0
 Mobile Phase: 0.01 M Ammonium acetate in methanol
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Z-Alanine

App ID 13729

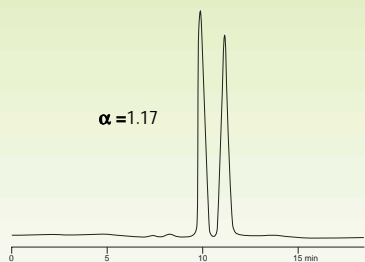
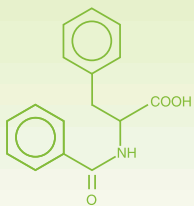
Column: Chirex 3011
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3011-D0
 Mobile Phase: 0.01 M Ammonium acetate in methanol
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



N-Benzoylphenylalanine

App ID 13730

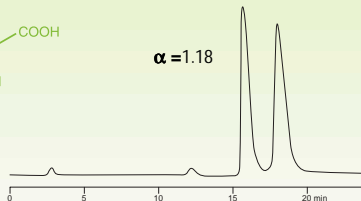
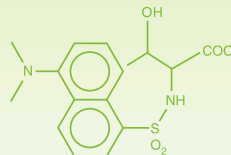
Column: Chirex 3012
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3012-D0
 Mobile Phase: 0.01 M Ammonium acetate in methanol
 Flow Rate: 1mL/min
 Detector: UV @ 254nm
 $\alpha = 1.17$



N-Dansylthreonine

App ID 13734

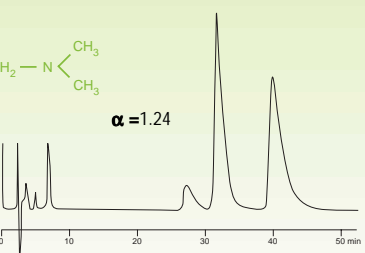
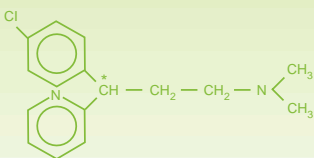
Column: Chirex 3012
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3012-D0
 Mobile Phase: 0.01 M Ammonium acetate in methanol
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Chlorpheniramine

App ID 13889

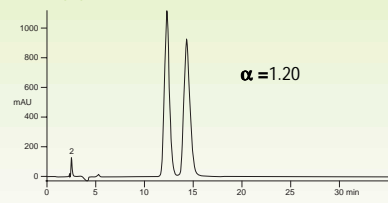
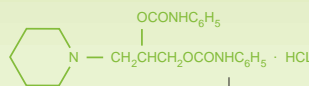
Column: Chirex 3014
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3014-D0
 Mobile Phase: Hexane / Ethanol / Trifluoroacetic acid (83.1:16.6:0.2)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Diperodon

App ID 13623

Column: Chirex 3014
 Dimensions: 250 x 4.6mm
 Order No.: 00G-3014-E0
 Mobile Phase: Hexane / Dichloroethane / Ethanol-TFA (60:35:5), w/ ethanol-TFA 20:1
 Flow Rate: 0.7mL/min
 Detector: UV @ 242nm



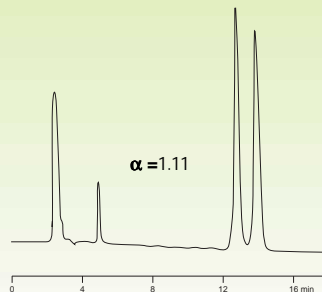
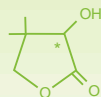
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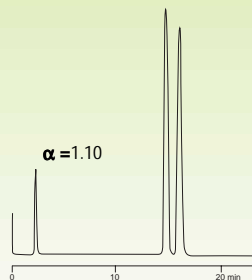
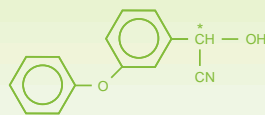
Pantolactone App ID 14118

Column: Chirex 3014
Dimensions: 250 x 4.6mm
Order No.: 00G-3014-E0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (82:16.4:1.6)
Flow Rate: 1mL/min
Detector: UV @ 230nm



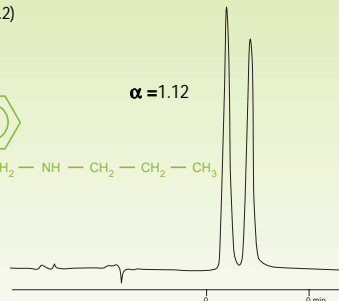
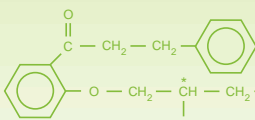
α-Cyano-3-phenoxybenzylalcohol App ID 13979

Column: Chirex 3017
Dimensions: 250 x 4.0mm
Order No.: 00G-3017-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol / Acetic acid (75.6:22.7:1.5:0.2)
Flow Rate: 1mL/min
Detector: UV @ 254nm



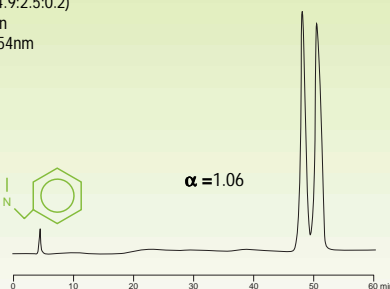
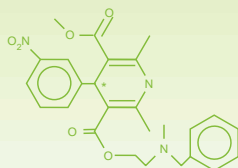
Propafenone App ID 13832

Column: Chirex 3017
Dimensions: 250 x 4.0mm
Order No.: 00G-3017-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol / Trifluoroacetic acid (48.6:49.9:1.2:0.2)
Flow Rate: 1mL/min
Detector: UV @ 254nm



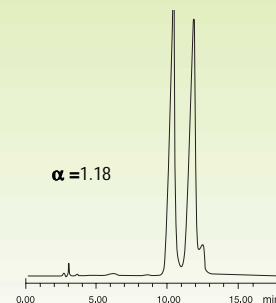
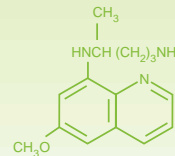
Nicardipine App ID 13904

Column: Chirex 3018
Dimensions: 500 x 4.0mm
Order No.: 00G-3018-D0 (x2)
Mobile Phase: Hexane / 1,2-Dichloroethane / Methanol / Trifluoroacetic acid (62.3:34.9:2.5:0.2)
Flow Rate: 1mL/min
Detector: UV @ 254nm



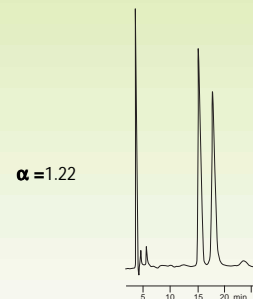
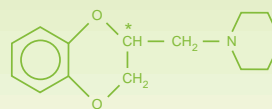
Primaquine App ID 5248

Column: Chirex 3014
Dimensions: 250 x 4.6mm
Order No.: 00G-3014-E0
Mobile Phase: Hexane / Dichloroethane / Ethanol-TFA (55:35:10), w/ ethanol/TFA (20:1)
Flow Rate: 1mL/min
Detector: UV @ 268nm



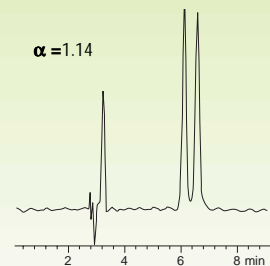
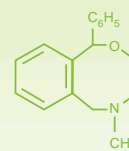
Piperoxan App ID 5253

Column: Chirex 3017
Dimensions: 250 x 4.6mm
Order No.: 00G-3017-E0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol-trifluoroacetic acid (60:35:5)
Flow Rate: 1mL/min
Detector: UV @ 234nm



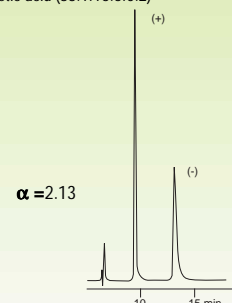
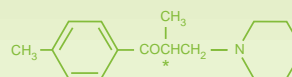
Nefopam App ID 5254

Column: Chirex 3018
Dimensions: 250 x 4.6mm
Order No.: 00G-3018-E0
Mobile Phase: Hexane / Dichloroethane / Ethanol-TFA (50:35:15), w/ethanol-TFA (20:1)
Flow Rate: 1mL/min
Detector: UV @ 268nm



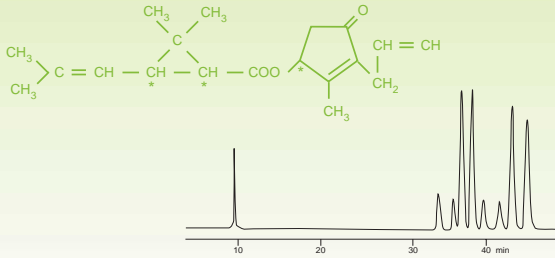
Tolperisone App ID 13894

Column: Chirex 3018
Dimensions: 250 x 4.0mm
Order No.: 00G-3018-D0
Mobile Phase: Hexane / Ethanol / Trifluoroacetic acid (83.1:16.6:0.2)
Flow Rate: 1mL/min
Detector: UV @ 254nm



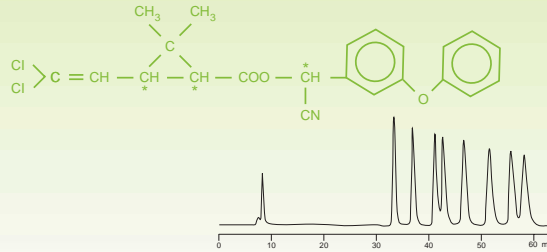
Allethrin App ID 5251

Column: Chirex 3019
 Dimensions: 500 x 4.0mm
 Order No.: 00G-3019-D0 (x2)
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (500:30:0.15)
 Flow Rate: 0.8mL/min
 Detector: UV @ 230 nm



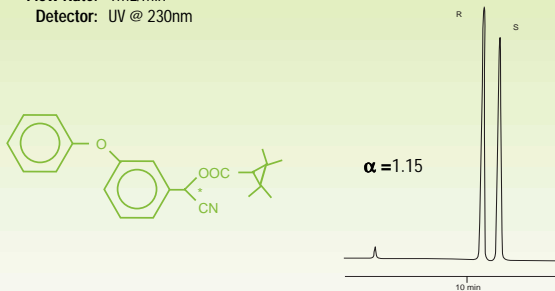
Cypermethrin App ID 5252

Column: Chirex 3019
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3019-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (98:2:0.01)
 Flow Rate: 1mL/min
 Detector: UV @ 230 nm



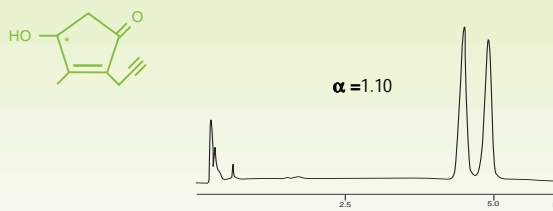
Fenproprathrin App ID 13988

Column: Chirex 3019
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3019-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (98:2:0.01)
 Flow Rate: 1mL/min
 Detector: UV @ 230nm



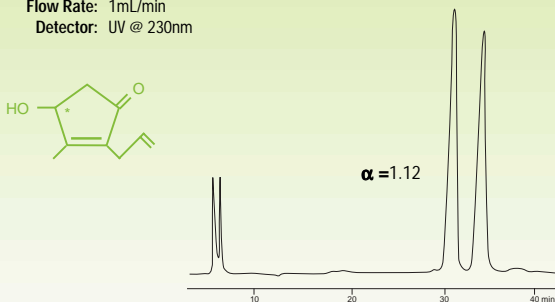
2-Methyl-4-oxo-3-(2-propynyl)cyclopent-2-enyl alcohol App ID 14134

Column: Chirex 3020
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3020-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (82.6:16.5:0.8)
 Flow Rate: 1mL/min
 Detector: UV @ 230nm



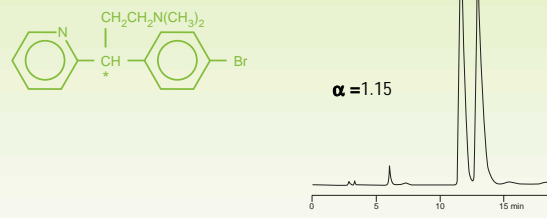
Allethrolone App ID 14129

Column: Chirex 3020
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3020-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (82.6:16.5:0.8)
 Flow Rate: 1mL/min
 Detector: UV @ 230nm



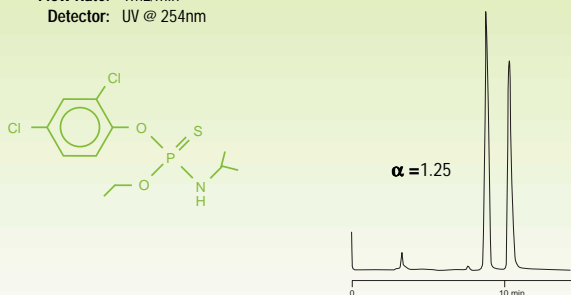
Brompheniramine App ID 5256

Column: Chirex 3020
 Dimensions: 250 x 4.6mm
 Order No.: 00G-3020-E0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol-trifluoroacetic acid (60:35:5), w/ ethanol-TFA (20:1)
 Flow Rate: 1mL/min
 Detector: UV @ 264nm



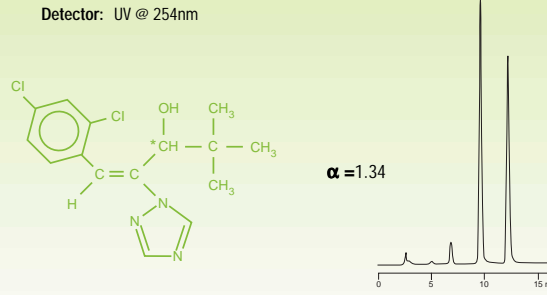
o-Ethyl o-2,4-Dichlorophenyl Isopropyl-Phosphoramidothioate App ID 5258

Column: Chirex 3020
 Dimensions: 250 x 4.6mm
 Order No.: 00G-3020-E0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol / (94.3:5.6:0.03)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Diniconazole App ID 5261

Column: Chirex 3020
 Dimensions: 250 x 4.0mm
 Order No.: 00G-3020-D0
 Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (82.6:16.5:0.8)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm

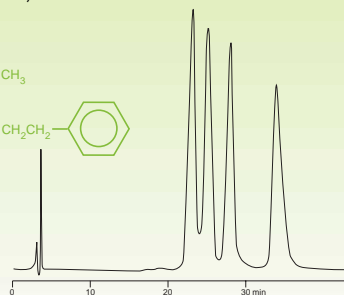
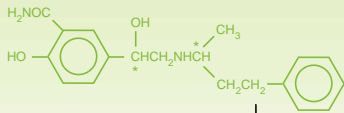


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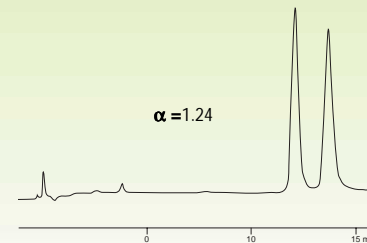
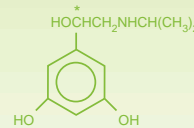
Labetalol App ID 5255

Column: Chirex 3020
Dimensions: 250 x 4.6mm
Order No.: 00G-3020-E0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol-trifluoroacetic acid (60:35:5), w/ Ethanol-TFA (20:1)
Flow Rate: 1mL/min
Detector: UV @ 308nm



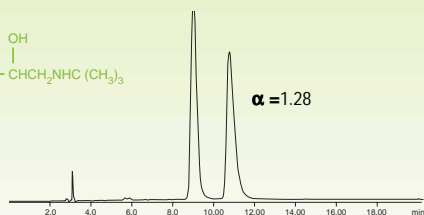
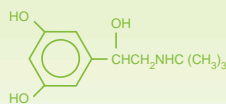
Metaproterenol App ID 5257

Column: Chirex 3020
Dimensions: 250 x 4.6mm
Order No.: 00G-3020-E0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol-trifluoroacetic acid (55:35:10), w/ Ethanol-TFA (20:1)
Flow Rate: 1mL/min
Detector: UV @ 280nm



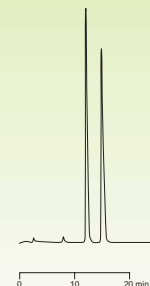
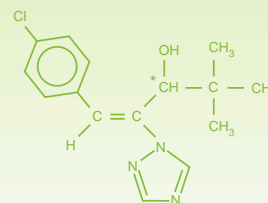
Terbutaline App ID 13701

Column: Phase 3020
Dimensions: 250 x 4.6mm
Order No.: 00G-3020-E0
Mobile Phase: Hexane / Dichloroethane / Ethanol-TFA (55:35:10), w/ ethanol-TFA 20:1
Flow Rate: 1mL/min
Detector: UV @ 278nm



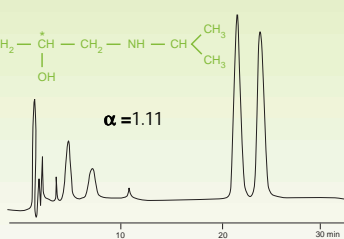
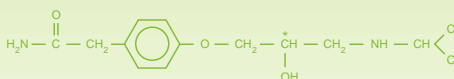
Uniconazole App ID 5242

Column: Phase 3020
Dimensions: 250 x 4.0mm
Order No.: 00G-3020-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol (82.6:16.5:0.8)
Flow Rate: 1mL/min
Detector: UV @ 254nm



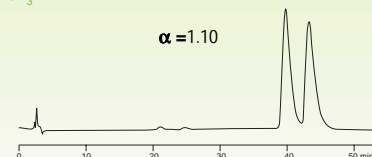
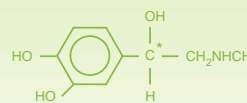
Atenolol App ID 13824

Column: Phase 3022
Dimensions: 250 x 4.0mm
Order No.: 00G-3022-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Methanol / Trifluoroacetic acid (57.4:34.9:7.5:0.2)
Flow Rate: 1mL/min
Detector: UV @ 254nm



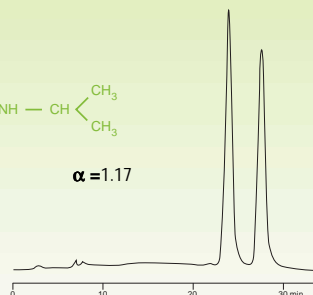
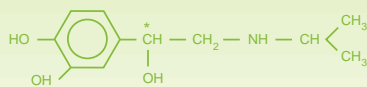
Epinephrine App ID 13845

Column: Phase 3022
Dimensions: 250 x 4.0mm
Order No.: 00G-3022-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Methanol / Trifluoroacetic acid (59.9:34.9:5:0.2)
Flow Rate: 1mL/min
Detector: UV @ 280nm



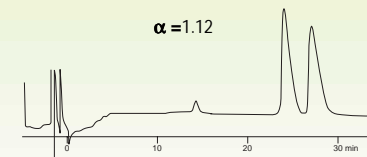
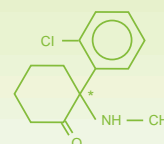
Isoproterenol App ID 13817

Column: Phase 3022
Dimensions: 250 x 4.0mm
Order No.: 00G-3022-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Methanol / Trifluoroacetic acid (59.9:34.9:5:0.2)
Flow Rate: 1mL/min
Detector: UV @ 280nm



Ketamine App ID 5262

Column: Phase 3022
Dimensions: 250 x 4.6mm
Order No.: 00G-3022-E0
Mobile Phase: Hexane / Ethanol / Trifluoroacetic acid (83.1:16.6:0.2)
Flow Rate: 1mL/min
Detector: UV @ 230nm

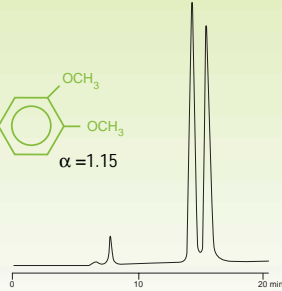
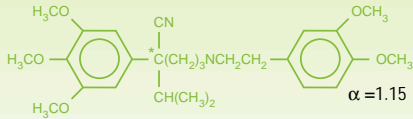


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Methoxyverapamil (Gallopamil)

App ID 5263

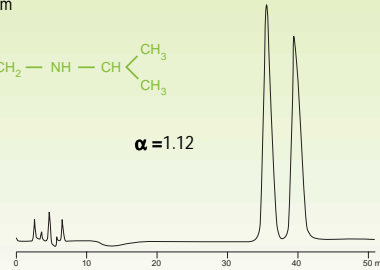
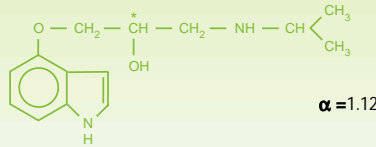
Column: Chirex 3022
Dimensions: 250 x 4.6mm
Order No.: 00G-3022-E0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol-trifluoroacetic acid (55:35:10), w/ Ethanol-TFA (20:1)
Flow Rate: 1mL/min
Detector: UV @ 278nm



Pindolol

App ID 13831

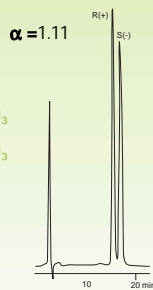
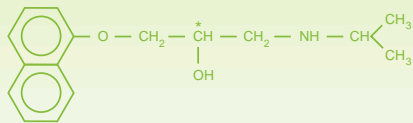
Column: Chirex 3022
Dimensions: 250 x 4.0mm
Order No.: 00G-3022-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol / Trifluoroacetic acid (59.9:34.9:5:0.2)
Flow Rate: 1mL/min
Detector: UV @ 254nm



Propranolol

App ID 13813

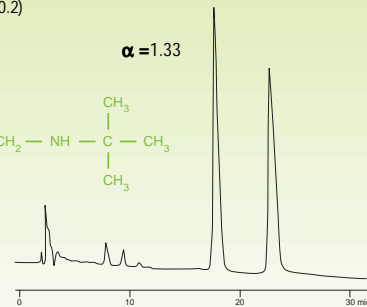
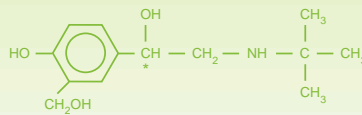
Column: Chirex 3022
Dimensions: 250 x 4.0mm
Order No.: 00G-3022-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Ethanol / Trifluoroacetic acid (59.9:34.9:5:0.2)
Flow Rate: 1mL/min
Detector: UV @ 254nm



Salbutamol (Albuterol)

App ID 5264

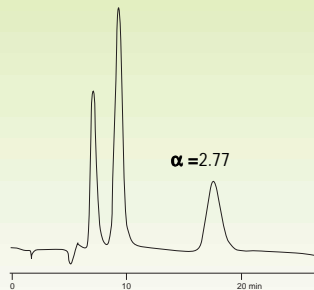
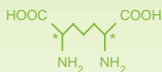
Column: Chirex 3022
Dimensions: 250 x 4.0mm
Order No.: 00G-3022-D0
Mobile Phase: Hexane / 1,2-Dichloroethane / Methanol / Trifluoroacetic acid (59.8:34.9:5:0.2)
Flow Rate: 1mL/min
Detector: UV @ 280nm



2,6-Diaminopimelic acid

App ID 14066

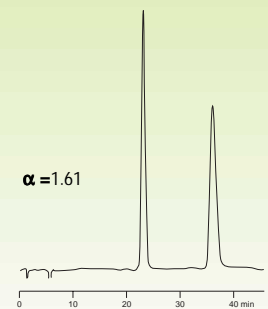
Column: Chirex 3126
Dimensions: 150 x 4.6mm
Order No.: 00F-3126-E0
Mobile Phase: 2 mM Copper (II) sulfate in water / Methanol (70:30)
Flow Rate: 1mL/min
Detector: UV @ 254nm



2-Hydroxybutyric acid

App ID 14098

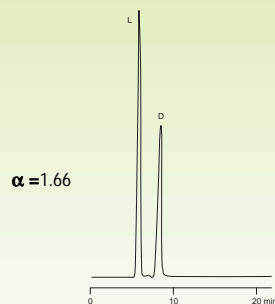
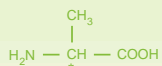
Column: Chirex 3126
Dimensions: 150 x 4.6mm
Order No.: 00F-3126-E0
Mobile Phase: 2 mM Copper (II) sulfate in water / Methanol (85:15)
Flow Rate: 1mL/min
Detector: UV @ 254nm



Alanine

App ID 14004

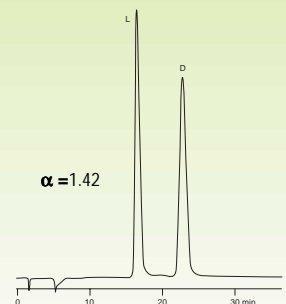
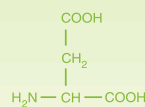
Column: Chirex 3126
Dimensions: 150 x 4.6mm
Order No.: 00F-3126-E0
Mobile Phase: 1mM Copper (II) sulfate in water
Flow Rate: 1mL/min
Detector: UV @ 254nm



Aspartic Acid

App ID 14019

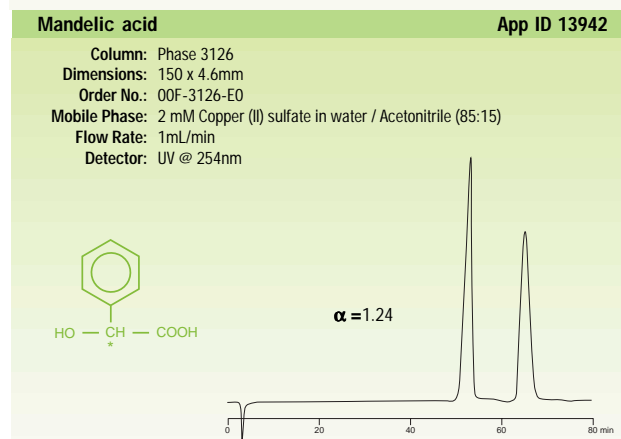
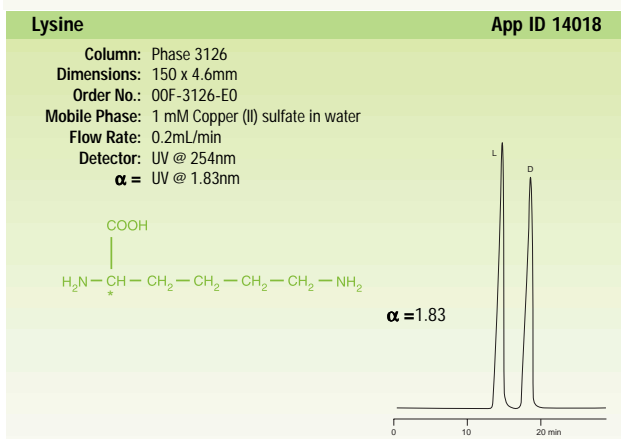
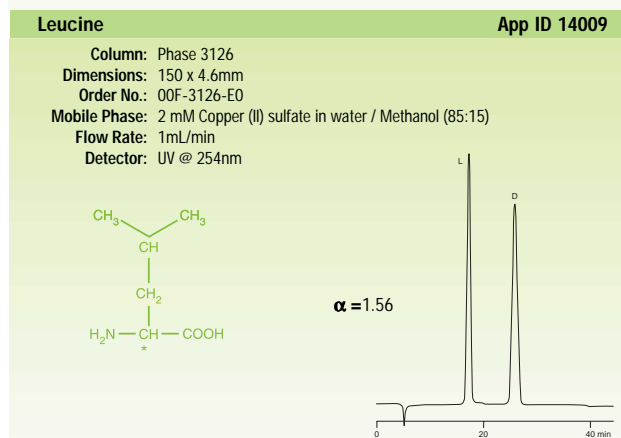
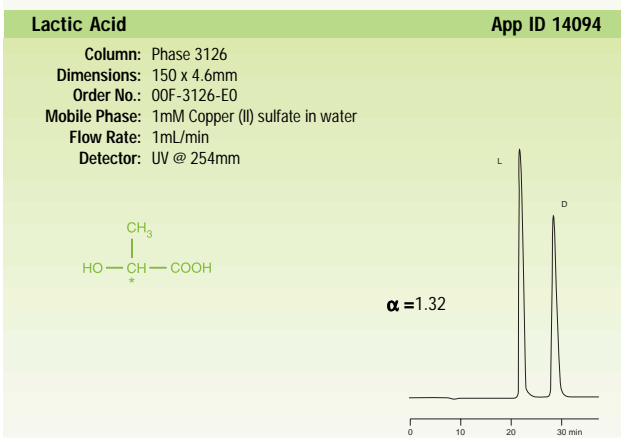
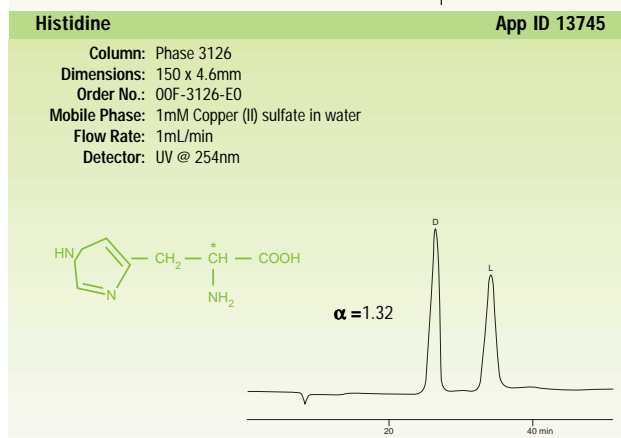
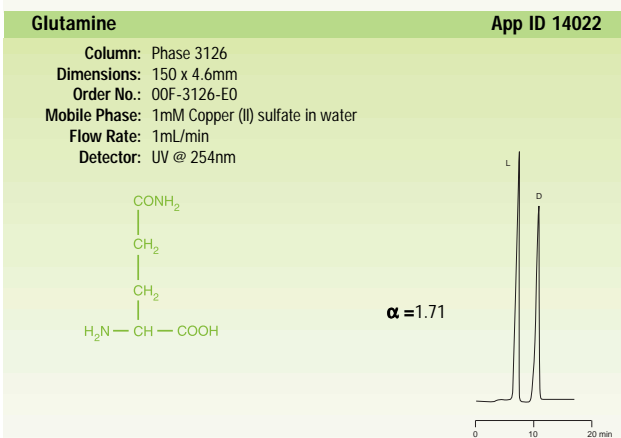
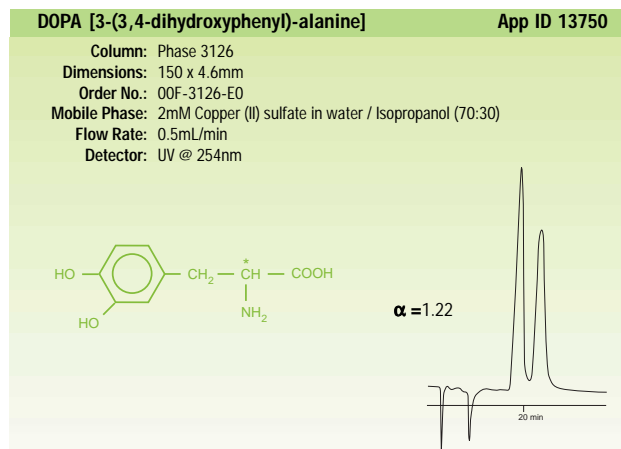
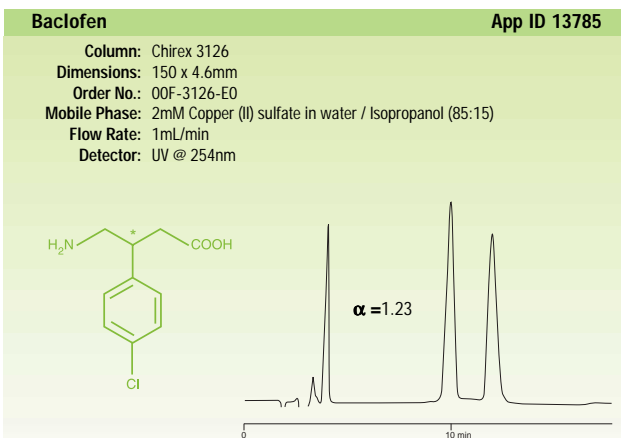
Column: Chirex 3126
Dimensions: 150 x 4.6mm
Order No.: 00F-3126-E0
Mobile Phase: 2mM Copper (II) sulfate in water / Methanol (85:15)
Flow Rate: 1mL/min
Detector: UV @ 254nm



These applications
are only a partial list.
Call us regarding your
Chiral separation.



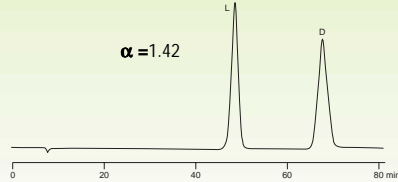
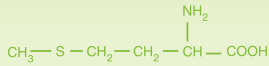
These applications
are only a partial list.
Call us regarding your
Chiral separation.



Methionine

App ID 14024

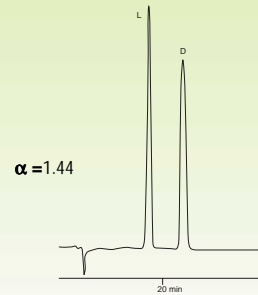
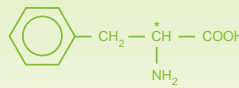
Column: Chirex 3126
 Dimensions: 150 x 4.6mm
 Order No.: 00F-3126-E0
 Mobile Phase: 1 mM Copper (II) sulfate in water
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Phenylalanine

App ID 13740

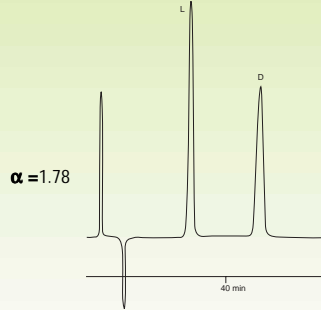
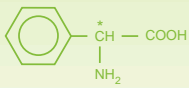
Column: Chirex 3126
 Dimensions: 150 x 4.6mm
 Order No.: 00F-3126-E0
 Mobile Phase: 2 mM Copper (II) sulfate in water / Methanol (70:30)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Phenylglycine

App ID 13748

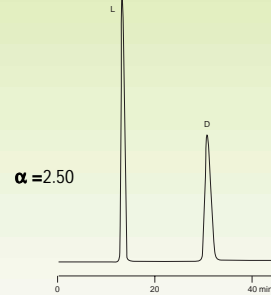
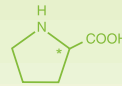
Column: Chirex 3126
 Dimensions: 150 x 4.6mm
 Order No.: 00F-3126-E0
 Mobile Phase: 2 mM Copper (II) sulfate in water / Methanol (85:15)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Proline

App ID 14011

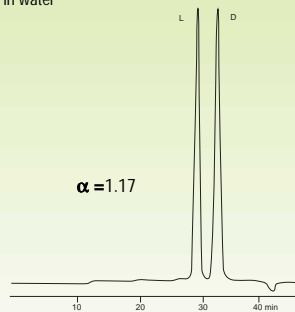
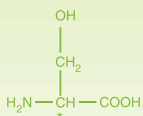
Column: Chirex 3126
 Dimensions: 150 x 4.6mm
 Order No.: 00F-3126-E0
 Mobile Phase: 1 mM Copper (II) sulfate in water
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Serine

App ID 14016

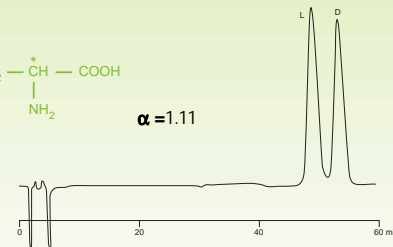
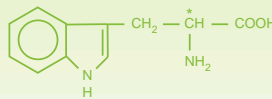
Column: Chirex 3126
 Dimensions: 150 x 4.6mm
 Order No.: 00F-3126-E0
 Mobile Phase: 1 mM Copper (II) sulfate in water
 Flow Rate: 0.2mL/min
 Detector: UV @ 254nm



Tryptophan

App ID 13737

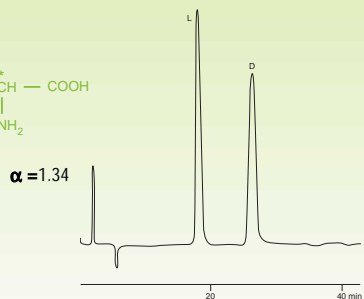
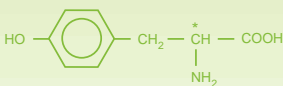
Column: Chirex 3126
 Dimensions: 150 x 4.6mm
 Order No.: 00F-3126-E0
 Mobile Phase: 2 mM Copper (II) sulfate in water / Methanol (70:30)
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



Tyrosine

App ID 13743

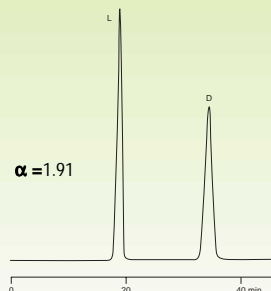
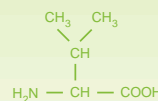
Column: Chirex 3126
 Dimensions: 150 x 4.6mm
 Order No.: 00F-3126-E0
 Mobile Phase: 2 mM Copper (II) sulfate in water / Methanol (85:15)
 Flow Rate: 4mL/min
 Detector: UV @ 254nm



Valine

App ID 14006

Column: Chirex 3126
 Dimensions: 150 x 4.6mm
 Order No.: 00F-3126-E0
 Mobile Phase: 1 mM Copper (II) sulfate in water
 Flow Rate: 1mL/min
 Detector: UV @ 254nm



These applications
 are only a partial list.
 Call us regarding your
 Chiral separation.

Additional CHIREX™ APPLICATIONS



The separations below are listed alphabetically by compound name. They include CHIREX stationary phase used and calculated separation factors. For a copy of the chromatograms which will include mobile phase conditions on

these compounds along with any other compounds of interest to you please feel free to contact us, or simply fax us the last page of this brochure.

Chirex Phase	Separation Factor (α)	Compound	APP ID No.
3020	1.05	Abscisic acid	14115
3022	1.09	Acebutolol	13584
3020	1.06	o-Acetylmandelic acid	13946
3126	1.66	Alanine	14004
3126	2.26	Alanylglycine	14080
3126	1.62	Alanylglycyl-glycine	14082
3019	—	Allethrin	5251
3020	1.12	Allethrolone	14129
3126	1.67	Alloisoleucine	14038
3126	1.19	Allothreonine	14046
3126	1.30	1-Aminoethylphosphonic acid	14089
3126	1.80	2-Amino-n-butyric acid	14034
3126	1.31	2-Amino-4-phosphonobutyric acid	14087
3126	1.30	3-Amino-e-caprolactam	14070
3011	1.28	o-Anthracene-1-carbonyl lactic acid	13960
3011	1.57	o-Anthracene-1-carbonyl mandelic acid	13963
3011	1.55	o-Anthracene-9-carbonyl lactic acid	13965
3126	2.15	Arginine	14027
3126	1.10	Asparagine	14049
3126	1.42	Aspartic acid	14019
3022	1.10	Atenolol	13824
3018	1.06	Atropine	13839
3126	1.23	Baclofen	13785
3001	1.11	Bendroflumethiazide	5243
3011	1.10	1-Benzocyclobutenecarboxylic acid	13967
3022	1.07	Benzoin	13978
3014	1.22	Bepridil	13593
3010	1.56	1,1'-Bi-2-naphthol	14143
3010	2.66	1,1'-Binaphthyl-2,2'- diylhydrogen phosphate	14152
3012	1.09	t-BOC-leucine	14065
3012	1.09	t-BOC-phenylalanine	13784
3012	1.10	t-BOC-valine	14063
3126	1.36	p-Boronophenylalanine	13790
3005	1.11	α-Bromophenylacetic acid	13969
3126	1.05	2-Bromopropionic acid	14116
3020	1.15	Brompheniramine	5256
3018	1.19	Carbinoxamine	13905
3010	1.06	2-(4-Chlorophenyl)-3-methylbutyric acid	13934
3020	1.21	Chloroquine	13604
3014	1.24	Chlorpheniramine	13889
3020	1.08	Chlorthalidone	13608
3010	—	Chrysanthemic acid	5246
3022	1.27	Clenbuterol	13615
3010	1.48	Clidanac	13930
3017	1.10	α-Cyano-3-phenoxybenzyl alcohol	13979
3014	1.09	Cyclopentolate	13840
3019	—	Cypermethrin	5252
3020	—	Cypermethrin	5252
3126	2.47	Cystine	14085
3126	2.77	2,6-Diaminopimelic acid	14066
3022	1.23	Dichloroisoproterenol	13621
3017	1.14	3-(3,4-Dichlorophenyl)-2-dimethylamino-2-methylpropane-1-ol	
3010	—	3-(2,2-Dichlorovinyl)-2,2-dimethyl-cyclopropanecarboxylic acid	14095
3005	1.09	cis-3-(2,2-Dichlorovinyl)-2,2-dimethyl-cyclopropanecarboxylic acid	
3005	1.10	trans-3-(2,2-Dichlorovinyl)-2,2-dimethyl-cyclopropanecarboxylic acid	
3019	1.06	2,3-Dihydroflavone	
3011	1.07	3,4-Dihydro-2H-pyran-2-carboxylic acid	14114

Chirex Phase	Separation Factor (α)	Compound	APP ID No.
3126	1.09	3,4-Dihydro-2H-pyran-2-carboxylic acid	14113
3020	1.34	Diniconazole	5261
3010	1.79	o-(3,5-Dinitrophenyl) aminocarbonyl lactic acid	13791
3011	1.77	o-(3,5-Dinitrophenyl) aminocarbonyl lactic acid	13792
3010	1.36	o-(3,5-Dinitrophenyl) aminocarbonyl mandelic acid	13794
3011	1.35	o-(3,5-Dinitrophenyl) aminocarbonyl mandelic acid	13795
3014	1.20	Diperodon	5249
3020	1.06	1,2-Diphenylethylamine	13882
3126	1.09	1,2-Diphenylethylene diamine	13916
3126	1.15	dl-Threo-3-phenylserine	13787
3126	1.22	DOPA [3-(3,4-Dihydroxyphenyl) alanine]	13750
3020	1.07	Doxylamine	13627
3022	1.10	Epinephrine	5260
3020	1.25	o-Ethyl o-2,4-dichlorophenyl-isopropylphosphoramidothioate	5258
3007	1.06	Ethyl 3-Hydroxybutyrate	14139
3007	1.14	Ethyl lactate	14140
3022	1.11	Etilefrine hydrochloride	13867
3005	1.10	Fenoprofen	13923
3022	1.12	Fenoterol	13848
3019	1.15	Fenpropathrin	13988
3001	—	Fenvalerate	13995
3019	1.06	Flavanone (2,3-Dihydroflavone)	14002
3014	1.09	Floctafenine	13874
3005	1.09	Flurbiprofen	13925
3001	—	Furamethrin	13998
3126	1.11	Glutamic acid	14047
3126	1.71	Glutamine	14022
3126	1.78	Glycylalanine	14079
3126	1.69	Glycylvaline	14081
3020	1.08	Hexobarbital	14051
3126	1.32	Histidine	13745
3022	1.08	Homochlorcyclizine	13909
3126	1.14	Homocysteine thiolactone	14072
3126	1.61	2-Hydroxybutyric acid	14098
3126	1.53	2-Hydroxyhexanoic acid	14108
3126	1.43	p-Hydroxynorephedrine	13862
3020	1.11	Hydroxy-phenyl-5-phenyl-hydantoin	13635
3005	1.05	Ibuprofen	13928
3022	1.08	Indapamide	13638
3005	1.08	Indoprofen	13639
3020	1.21	Isoetharine	13640
3022	1.17	Isoproterenol	5259
3020	1.37	Isoxsuprine	13646
3022	1.12	Ketamine	5262
3005	1.15	Ketoprofen	5245
3020	—	Labetalol	5255
3126	1.32	Lactic acid	14094
3126	1.56	Leucine	14009
3126	1.36	Leucylglycyl-glycine	14083
3010	1.11	Lorazepam	
3126	1.83	Lysine	14018
3126	3.60	Malic acid	14099
3126	1.24	Mandelic acid	14942
3022	1.12	Metanephrine	13651
3020	1.24	Metaproterenol	5257
3022	1.13	Metaproterenol	13873
3005	1.11	α-Methamphetamine-3,3-dinitrobenzoyl amide	
3005	1.19	α-Methamphetamine-2-naphthyl amide	
3005	1.03	α-Methamphetamine-2-naphthyl amide	
3005	1.16	α-Methamphetamine-1-naphthyl uride	

Additional CHIREX™ APPLICATIONS

Chirex Phase	Separation Factor (α)	Compound	APP ID No.
3126	1.42	Methionine	14024
3020	1.09	Methocarbamol	13655
3022	1.10	Methoxamine	13657
3005	1.15	α -Methoxyphenylacetic acid	13947
3017	1.10	Methoxyphenamine	13903
3022	1.15	Methoxyverapamil (Gallopamil)	5263
3005	1.27	α -Methylbenzylamine-2-naphthyl amide	
3005	1.24	α -Methylbenzylamine-3,5-dinitrophenyl uride	
3005	1.30	α -Methylbenzylamine-1-naphthyl uride	
3007	1.10	Methyl lactate	14138
3126	1.59	α -Methyl leucine	
3001	1.06	Methylmandelate	13984
3020	1.10	2-Methyl-4-oxo-3-(2-propynyl) - cyclopent-2-enyl alcohol	14134
3126	1.18	α -Methyltryptophan	
3014	1.06	Metoprolol	13663
3001	1.09	Midodrine	13664
3126	1.17	N-Acetylaniline	14052
3126	1.39	N-Acetylleucine	14058
3126	1.27	N-Acetylmethionine	13728
3020	1.37	N-Acetylphenylalanine	13804
3126	1.50	N-Acetylvaline	14055
3007	1.09	1-(1-Naphthyl)ethyl alcohol	13972
3020	1.16	1-(1-Naphthyl)ethylamine	13878
3126	1.42	Naphthylglycine	13789
3012	1.09	Naproxen	13945
3012	1.14	N-Benzoylglutamic acid	13782
3012	1.11	N-Benzoylleucine	
3012	1.17	N-Benzylphenylalanine	13730
3012	1.13	N-Benzylphenylglycine	
3012	1.19	N-Benzylvaline	13778
3011	1.24	N-Dansylnorvaline	13732
3011	1.27	N-Dansylphenylalanine	13771
3012	1.18	N-Dansylthreonine	13734
3010	1.16	N-Dansyltryptophan	13774
3011	1.28	N-Dansylvaline	13763
3126	1.25	N-Dansylmethionine	
3018	1.14	Nefopam	5254
3011	1.19	N-FMOC-Alanine	
3011	1.20	N-FMOC-Leucine	13800
3011	1.10	N-FMOC-Phenylalanine	13796
3011	1.12	N-FMOC-Valine	13798
3126	1.37	N-Formylvaline	13721
3126	1.25	N-Formylmethionine	13722
3020	1.12	N-Formylphenylalanine	13802
3018	1.05	Nicardipine	13904
3014	1.10	Nicotine	13673
3017	1.07	Norepinephrine	13868
3126	1.23	Normetanephrine	14160
3126	1.95	Norvaline	14029
3126	1.28	Octopamine	13857
3126	1.38	Ornithine	14041
3014	1.08	Oxprenolol	13826
3017	1.50	Oxyphencyclimine	13678
3126	1.63	Pantoic acid	14117
3014	1.11	Pantolactone	14118
3007	—	Permethrin	
3012	1.13	2-Phenylbutyric acid	13949
3126	1.26	3-Phenylactic acid	13943
3001	—	Phenothrin	13992
3010	1.08	2-Phenoxypropionic acid	13939
3126	1.26	Phenylalanine	13740

Chirex Phase	Separation Factor (α)	Compound	APP ID No.
3001	1.12	2-Phenylbutyrophenone	13999
3001	1.14	2-Phenylcyclohexanone	13986
3005	1.08	<i>trans</i> -2-Phenyl-1-cyclopropanecarboxylic acid	
3014	1.08	1-Phenylethylamine	13975
3126	1.78	Phenylglycine	13748
3126	1.26	Phenylactic acid	
3001	1.05	2-Phenylpropionic acid	13933
3014	1.06	1-Phenyl-2-(<i>p</i> -tolyl)ethylamine	13888
3022	1.12	Pindolol	13831
3126	1.80	Pipecolic acid	14031
3017	1.22	Piperoxan	5253
3019	—	Prallethrin	14127
3005	1.13	Pranoprofen	5244
3020	1.17	Prilocaine	13680
3014	1.18	Primaquine	5248
3005	1.45	Proglumide	13685
3126	2.50	Proline	14011
3020	1.12	Promethazine	13688
3017	1.12	Propafenone	13832
3022	1.11	Propranolol	13813
3011	1.52	<i>o</i> -Pyrene-1-carbonyl lactic acid	13952
3011	1.97	<i>o</i> -Pyrene-1-carbonyl mandelic acid	13955
3011	1.72	<i>o</i> -Pyrene-1-carbonyl 2-hydroxybutyric acid	13958
3011	1.55	<i>o</i> -Pyrene-1-carbonyl leucic acid	13959
3014	1.12	PTH-valine	13733
3022	1.33	Quinacrine	13695
3001	—	Resmethrin	13992
3022	1.33	Salbutamol (Albuterol)	5264
3126	1.17	Serine	14016
3007	1.09	Styrene oxide	13987
3022	1.10	Synephrine	13700
3126	1.19	Synephrine	13871
3126	6.44	Tartaric acid	14100
3019	1.18	Terallethrin	14123
3020	1.16	Terbutaline	13852
3126	1.81	tert-Leucine	14074
3126	1.06	Tetrahydro-2-furancarboxylic acid	14110
3017	1.28	Tetrahydrozoline	13706
3001	—	Tetramethrin	13852
3022	1.10	Thioridazine	13711
3126	1.20	Threonine	14043
3018	2.13	Tolperisone	13894
3126	1.10	<i>trans</i> -1,2-Diaminocyclohexane	14067
3001	1.41	2,2,2-Trifluoro-1-(9-anthryl)ethanol	13973
3007	1.06	α -(Trifluoromethyl)benzyl alcohol	13985
3020	1.11	Trimepramine	
3020	1.17	Trimeprazine	
3022	1.10	Tropicamide	13715
3126	1.11	Tryptophan	13737
3126	1.34	Tyrosine	13743
3020	1.29	Uniconazole	5242
3126	1.91	Valine	14006
3022	1.15	Verapamil	13910
3022	1.03	Warfarin	13720
3012	1.16	Z-Alanine	13752
3010	1.12	Z-Asparagine	13759
3011	1.17	Z-Leucine	13731
3011	1.13	Z-Norvaline	13755
3012	1.08	Z-Phenylalanine	13761
3011	1.09	Z-Serine	13758
3012	1.07	Z-Valine	13754

Chiral Method Development Kits

If you are doing method development or you are not sure which CHIREX stationary phase to select, Phenomenex offers two (2) kits, each containing five short 50 x 4.6mm columns for screening and rapid analysis.

KIT A For Pharmaceuticals, Agrochemicals

The broad range of Pirkle-concept (Type I, or brush type) columns carefully chosen for this Kit will enable the chiral chromatographer to quickly and easily survey stationary phase utility and separation conditions for a wide variety of enantiomeric compounds. Used with normal phase solvent systems, these latest generation chiral columns are highly efficient tools particularly well-suited for enantiomeric separations of pharmaceuticals and agrochemicals.

Kit A. For Pharmaceuticals, Agrochemicals

This kit contains five columns, 50 x 4.6mm:

- Column 1: Chirex 3001: 3,5-dinitrobenzoic acid derivative of (R)-phenylglycine
- Column 2: Chirex 3005: 3,5-dinitrobenzoic acid derivative of (R)-1-naphthylphenylglycine
- Column 3: Chirex 3010: 3,5-dinitroaniline derivative of (S)-valine
- Column 4: Chirex 3014: (R)-1-(α -naphthyl)ethylamine derivative of (S)-valine
- Column 5: Chirex 3020: (R)-1-(α -naphthyl)ethylamine derivative of (S)-tert-leucine

KIT B For α -Amino Acids, α -Hydroxy Acids, Carboxylic Acids, Aromatic Amines, Alcohols and Amino Alcohols

This Kit contains a collection of chiral columns for method development of enantiomeric α -amino acids, α -hydroxy acids, and aromatic amines, alcohols and amino alcohols. The kit includes four Pirkle-concept columns and one ligand-exchange type column. The Pirkle-concept columns are chosen for their high utility/versatility in separating derivatized amino acids, whereas the ligand-exchange column offers excellent enantioselectivity for underivatized α -amino acids, and α -hydroxy acids.

Kit B. For α -Amino Acids, α -Hydroxy Acids, Carboxylic Acids, Aromatic Amines, Alcohols and Amino Alcohols

This kit contains five columns, 50 x 4.6mm:

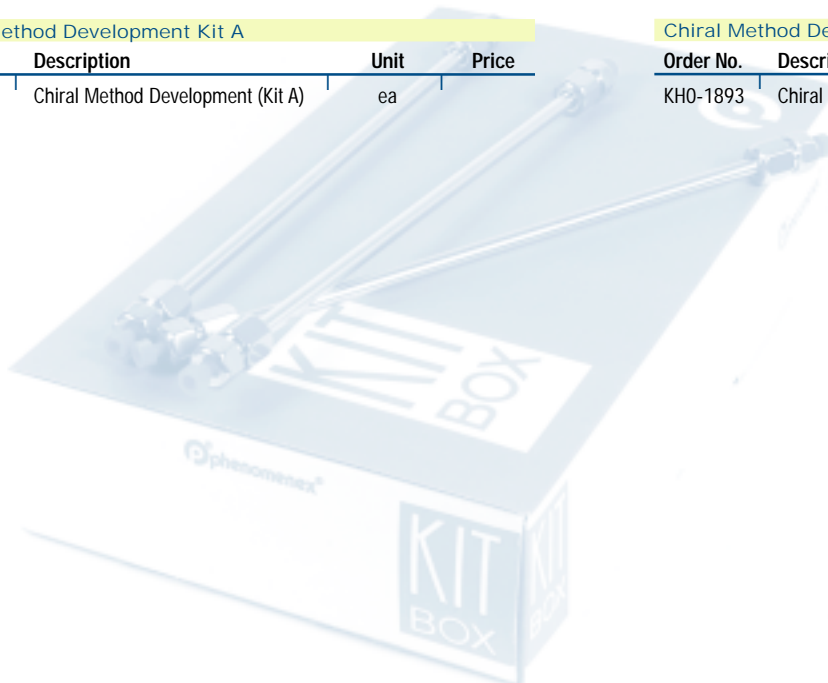
- Column 1: Chirex 3010: 3,5-dinitroaniline derivative of (S)-valine
- Column 2: Chirex 3011: 3,5-dinitroaniline derivative of (S)-tert-leucine
- Column 3: Chirex 3012: 3,5-dinitroaniline derivative of (R) phenylglycine
- Column 4: Chirex 3014: (R)-1-(α -naphthyl)ethylamine derivative of (S)-valine
- Column 5: Chirex 3126: Ligand-Exchange type based on (N,S) dioctyl-(D)-penicillamine complexed with copper(II)

Chiral Method Development Kit A

Order No.	Description	Unit	Price
KHO-1892	Chiral Method Development (Kit A)	ea	

Chiral Method Development Kit B

Order No.	Description	Unit	Price
KHO-1893	Chiral Method Development (Kit B)	ea	



CHIREX™ HPLC Columns

5µ Starter™ Columns (mm)

Phase	Chirex Phase Description	Bond Type	Linkage Type	50 x 4.6
3001	(R)-PGLY and DNB	Covalent	Amide	00B-3001-E0
3010	(S)-VAL and DNAn	Covalent	Urea	00B-3010-E0
3011	(S)-LEU and DNAn	Covalent	Urea	00B-3011-E0
3012	(R)-PGLY and DNAn	Covalent	Urea	00B-3012-E0
3014	(S)-VAL and (R)-NEA	Covalent	Urea	00B-3014-E0
3017	(S)-PRO and (S)-NEA	Covalent	Urea	00B-3017-E0
3018	(S)-PRO and (R)-NEA	Covalent	Urea	00B-3018-E0
3019	(S)-LEU and (S)-NEA	Covalent	Urea	00B-3019-E0
3020	(S)-LEU and (R)-NEA	Covalent	Urea	00B-3020-E0
3022	(S)-ICA and (R)-NEA	Covalent	Urea	00B-3022-E0
3005	(R)-NGLY and DNB	Covalent	Amide	00B-3005-E0
3126	(D)-Penicillamine	Ion-Metal	Lig Exchange	00B-3126-E0

5µ Analytical and Guard Columns (mm)

Phase	Chirex Phase Description	Bond Type	Linkage Type	Analytical				Guards
				150 x 2.0	250 x 2.0	150 x 4.6	250 x 4.6	30 x 4.6
3001	(R)-PGLY and DNB	Covalent	Amide	—	00G-3001-B0	00F-3001-E0	00G-3001-E0	03A-3001-E0
3010	(S)-VAL and DNAn	Covalent	Urea	—	—	00F-3010-E0	00G-3010-E0	03A-3010-E0
3011	(S)-LEU and DNAn	Covalent	Urea	—	—	00F-3011-E0	00G-3011-E0	03A-3011-E0
3012	(R)-PGLY and DNAn	Covalent	Urea	—	—	00F-3012-E0	00G-3012-E0	03A-3012-E0
3014	(S)-VAL and (R)-NEA	Covalent	Urea	—	00G-3014-B0	—	00G-3014-E0	03A-3014-E0
3017	(S)-PRO and (S)-NEA	Covalent	Urea	—	—	00F-3017-E0	—	03A-3017-E0
3018	(S)-PRO and (R)-NEA	Covalent	Urea	—	—	00F-3018-E0	00G-3018-E0	03A-3018-E0
3019	(S)-LEU and (S)-NEA	Covalent	Urea	—	—	00F-3019-E0	00G-3019-E0	03A-3019-E0
3020	(S)-LEU and (R)-NEA	Covalent	Urea	00F-3020-B0	—	00F-3020-E0	00G-3020-E0	03A-3020-E0
3022	(S)-ICA and (R)-NEA	Covalent	Urea	00F-3022-B0	00G-3022-B0	00F-3022-E0	00G-3022-E0	03A-3022-E0
				—				
3005	(R)-NGLY and DNB	Covalent	Amide	—	00G-3005-B0	00F-3005-E0	00G-3005-E0	03A-3005-E0
3126	(D)-Penicillamine	Ion-Metal	Lig Exchange	00F-3126-B0	00G-3126-B0	00F-3126-E0	03A-3126-E0	03A-3126-E0



Preparative Columns and Bulk Media are available in 15 and 30µ particle sizes. Give us a call for info on pricing and availability.

Detailed notes on care and use, as well as performance testing, are provided with each column.



For improved Chiral Reproducibility, You Need Constant Temperature. You Need a Column Chiller/Heater

ThermaSphere™ TS-430 Column Chiller/Heater 4°C to 70°C

- Improves chiral reproducibility and chromatographic results
- Improves baseline and overall detector performance
- Improves peak efficiency
- Capacity to hold four (4) 30cm columns up to 1" outer diameter (up to 21.2mm ID)

Temperature range/readability/accuracy/stability

Temperature readability is 0.1°C and accuracy is 0.2°C over the entire range from 4.0°C to 70.0°C. The unit features single point electronic calibration for accuracy that is easily reset by the user to agree with local laboratory standards. The display can be changed from temperature to timer with a single keystroke on the tactile touch membrane.

Design

Completely solid state and integrated, the only moving parts in the unit are the chamber fan and the cooling fan, making the design of the TS-430 truly reliable. Easy to install, the unit requires minimal bench-top space for the benefits it provides. Being Peltier based, it has no compressors or CFCs to worry about and is extremely energy efficient.

The four mounting posts for the columns are located on the inside door of the unit. This allows easy, unobstructed access to the columns, valves, and fittings. Columns are held to the posts by solvent-resistant Buna-N™ O-rings making mounting and changing columns easy.

ThermaSphere Chilling/Heating Column Ovens

Order No.	Description	Price
EHO-5720	ThermaSphere TS-430 Chilling/Heating HPLC Column Oven, 4-70°C, 115 Vac, 50/60 Hz, 2.0 amp	
EHO-5721	ThermaSphere TS-430 Chilling/Heating HPLC Column Oven, 4-70°C, 230 Vac, 50/60 Hz, 1.0 amp	



(1) The TS-430 is warranted for 1 year parts and labor.
(2) Please specify Line Cord if other than US (Australia, Germany, Italy and UK are available).



Specifications

Temp. range:	4.0°C to 70.0°C
Readability:	0.1°C
Accuracy:	0.2°C
Stability:	±0.2°C
Convection fan:	Yes
Timer range:	00:01 min/sec to 99:59 hrs/min
Readability:	1 second
Audible alarm:	Yes (with Auto-off)
ELECTRICAL	
Chiller/heater:	Peltier, 100 watts
Power consumption:	230 watts AC
Electrical:	115 VAC, 50/60 Hz, 2.0 amp 230 VAC, 50/60 Hz, 1.0 amp
DIMENSIONS	
Chamber:	15.625" (39.69 cm) H x 6.385" (16.28 cm) W x 5.125" (13.02 cm) D
Overall Chassis:	25.5" (64.77 cm) H x 8.75" (22.23 cm) W x 3.25" (33.66 cm) D
Valve hole diameter:	1.625" (4.13 cm)

RUNNING CHIRAL APPLICATIONS?

FREE Key Ring with Bottle Opener when you ask about our technical assistance.

Complete the questions below, fax it back to us at (310) 328-7768, attn: Technical Department.

1. What is the compound name?

2. Does your compound have any of the following chemical groups?

Aromatic Yes No
 $\begin{array}{c} | \\ -N- \end{array}$ Yes No
 $-COOH$ Yes No
 $-OH$ Yes No

Other _____

4. Chemical and physical properties:

Describe the Sample Matrix: _____

Is the Sample Sensitive to: Light Moisture Temp pH Other

Indicate Solubility (L= low, M= medium, H= high): Water Methanol Hexane

Are you sample-limited (for detection)?: _____

Type of Stereoisomer: Chiral Center (Carbon Phosphorous Sulfur other)

Chiral Axis Chiral Plane Atropisomer Molecular Strain

Number of Active or Important Chiral Centers in the Compound: _____

Isometric Composition: Racemic Enriched Diastereomeric

Degree of Purity: _____

Name: _____

Company/Institution: _____

Address: _____

State/Province/Zip: _____

Country: _____

Tel: _____

Fax: _____

E-mail: _____



FREE

3. If possible, please provide a structure of the compound



FAX to: PHENOMENEX,
 ATTN: Technical Department
 (310) 328-7768

Printed Matter

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CHIREX[™]



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