



Chiral Columns

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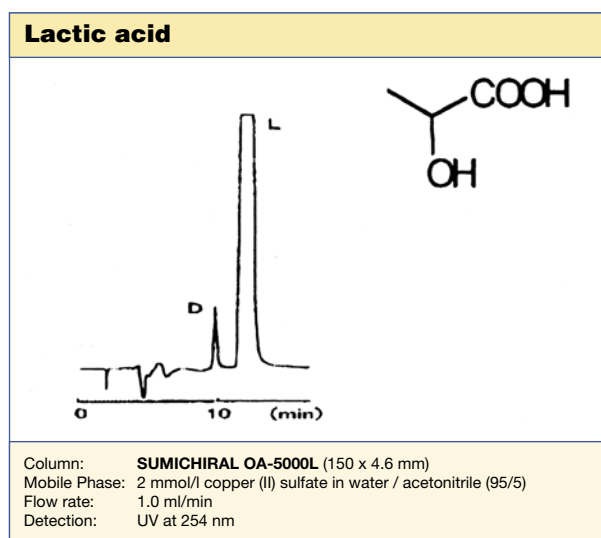
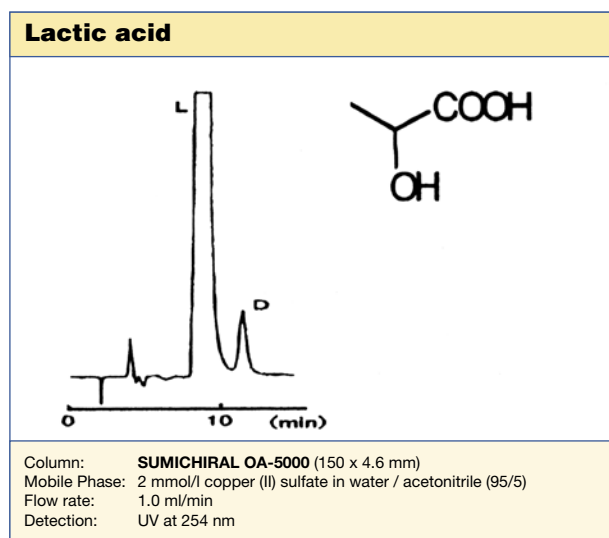
Introduction

HPLC Columns for Optical Isomer Separation

Chirality has become vitally important in the production of pharmaceuticals, agrochemicals, food and related products due to the different pharmacological or taste/odour effects which the different optical isomers can present. The pharmacological effects can range no activity through undesirable effects to having potentially life threatening adverse effects. This has led to the development of highly efficient chiral stationary phases (CSP) for analytical and preparative scale separations.

If the CSP is available in two enantiomeric configurations the elution order of enantiomeric pairs can be reversed.

This is particularly useful when the two isomers are not present in equal quantities; a later eluting minor component can often be hidden by the tail of a major peak but on reversal of elution order can be totally resolved from the major component.



YMC Chiral NEA(R)(S)



- normal and reversed phase mode
- reversal of elution order
- nonpolar to medium polar compounds
- available in bulk quantities



YMC Chiral NEA(R)(S)	Specification
Particle Size / μm	5
Pore Size / nm	30
Surface area / m^2g^{-1}	proprietary
Carbon content / %	proprietary
Recommended pH range	2.0 - 6.5 (reversed phase)

General

Normal Phase

YMC Chiral NEA consists of polymeric 1-naphthylethylamine bonded to a wide pore spherical silica. The R and S columns differ in the optical rotation of the CSP; the R column being formed from R-(+)-1-naphthylethylamine and the S column from S-(-)-1-naphthylethylamine. This results in the two column types having the effect of reversing the elution order of enantiomeric pairs of compounds.

Reversed Phase

YMC-Chiral NEA columns are as well suitable for reversed phase separation of polar, water soluble compounds particularly pharmaceutical compounds.

Recommended eluents include aqueous eluents containing organic modifiers in the range 0-100% or aqueous buffers with pH 2.0-6.5. At the pH limits the minimum organic modifier concentration should be **not less than 10%**. Typical organic modifiers include acetonitrile, methanol and ethanol. Buffer concentrations should be **less than 1 mol/l** and must be rinsed from the column with water/modifier solutions (80-100% water) before storage of the column. The columns should be stored in salt-free water/modifier solutions with a minimum 40% modifier. Used under these conditions excellent column stability will be achieved.

Properties

Although separation modes are chosen according to the purpose of separation, it is recommended to use one column dedicated for one separation mode in order to maximise the lifetime of the column into account.

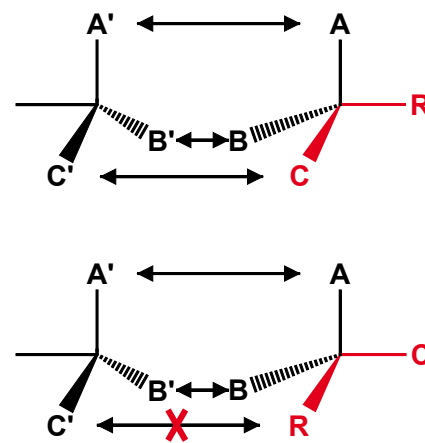
In normal phase mode YMC-Chiral NEA allows the separation of a wide range of non-polar to moderately polar compounds.

The separation mechanisms involve a combination of:

- π - π interactions
- hydrogen bonding
- dipole interactions
- steric effects

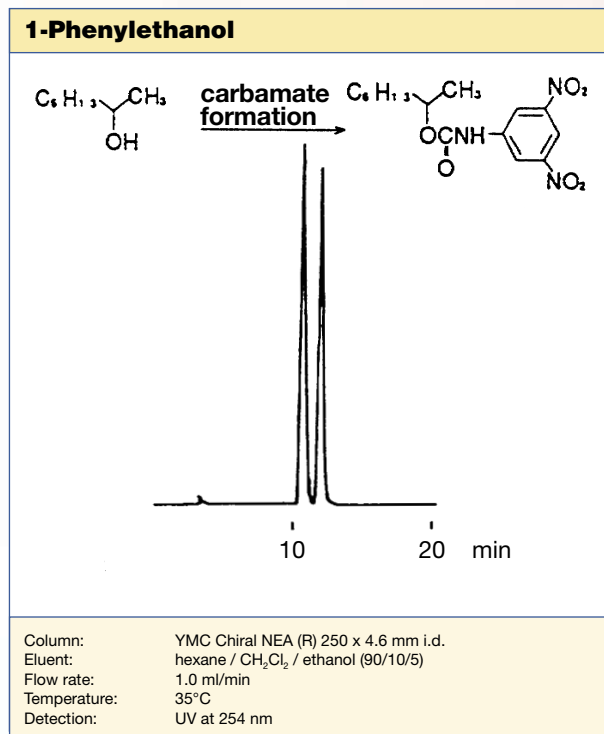
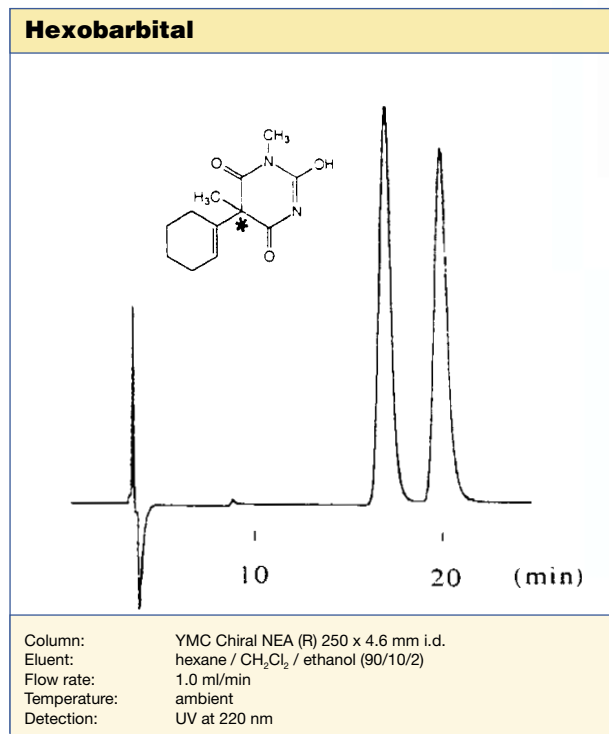
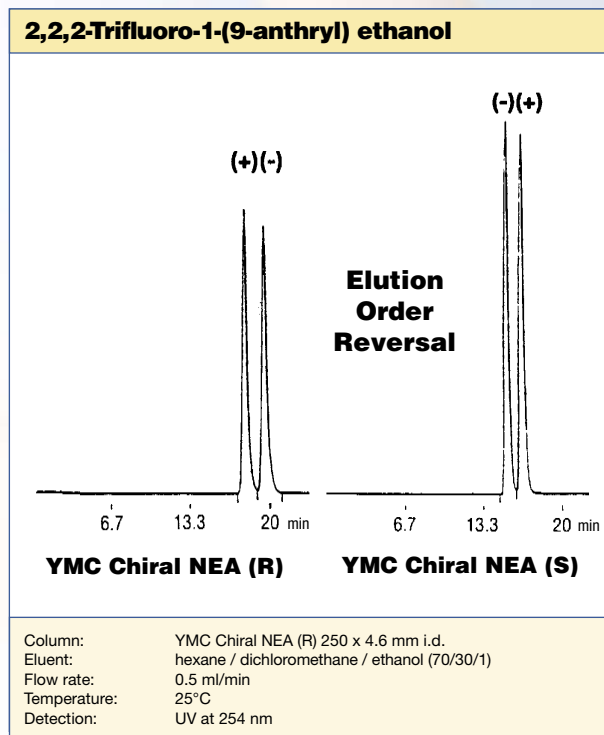
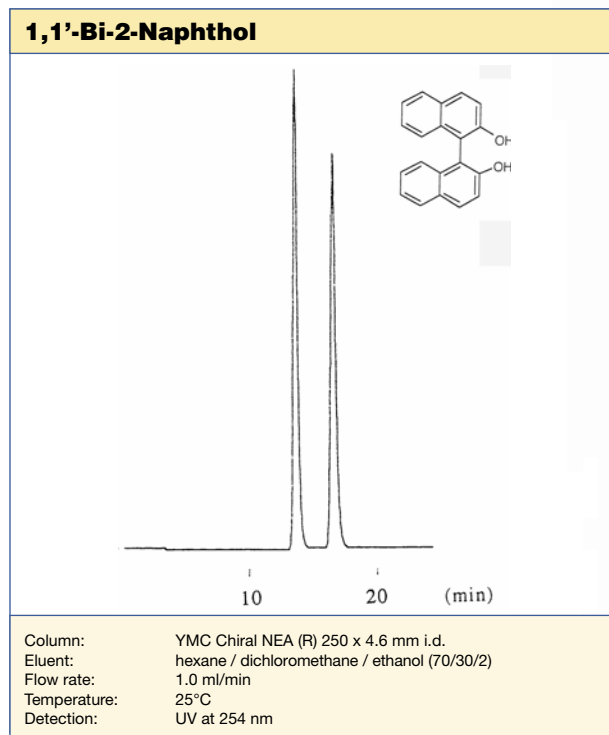
and for a successful separation at least three points of interaction between the CSP and the target compound must exist. Occasionally, for analytical separations, there may be a need to derivatise the sample with, for example π -donating groups such as dinitrobenzoyl, dinitrophenylurea or dinitrophenylcarbamate groups. In some cases, the increase in detectability can offset the disadvantages of derivatisation.

Chiral Separation Mechanism



YMC Chiral NEA(R)(S)

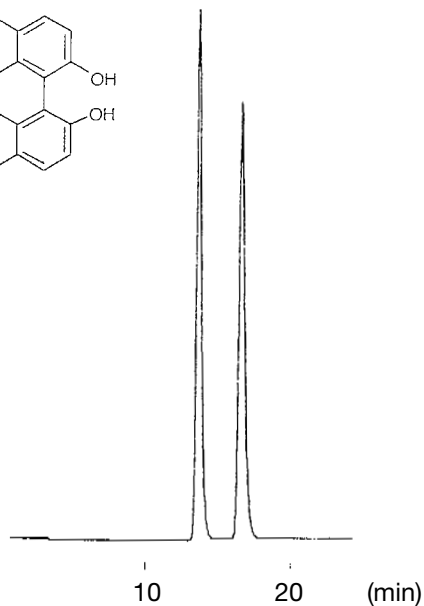
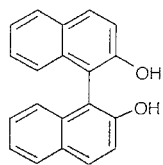
Applications used in normal-phase mode



YMC Chiral NEA(R)(S)

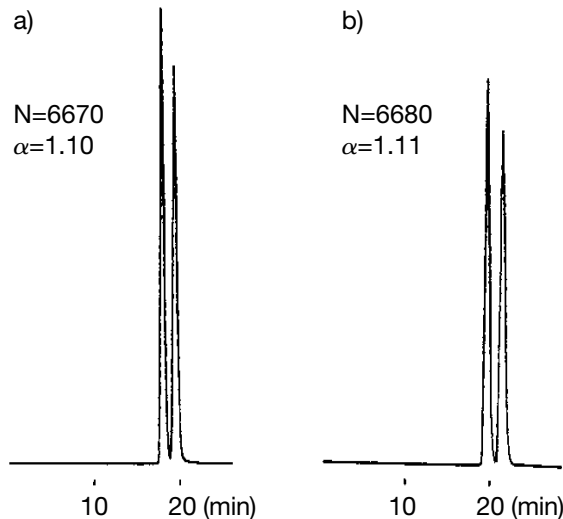
Applications used in reversed-phase mode

1,1'-Bi-2-Naphthol



Column: YMC-Chiral NEA (R) 250 x 4.6 mm i.d.
 Eluent: acetonitrile / water (50/50)
 Flow: 1.0 ml/min
 Pressure: 80 bar
 Detection: UV at 235 nm
 Injection: 1.0 μ l (2.8 mg/ml)
 Temperature: ambient

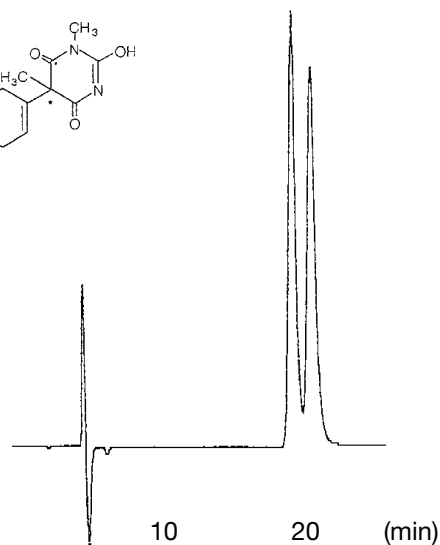
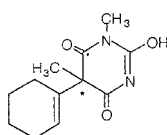
Propranolol - HCl



a)
 Column: YMC-Chiral NEA (R) 250 x 4.6 mm i.d.
 Eluent: acetonitrile / 0.5M NaClO₄ (40/60)
 Flow: 1.0 ml/min
 Temperature: ambient
 Time: 100 hours

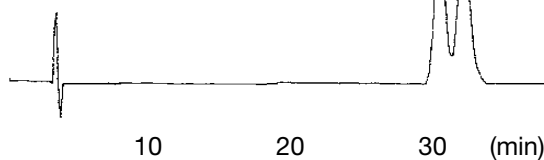
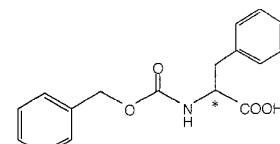
b)
 Eluent: acetonitrile / 0.5M NaClO₄ (40/60)
 Flow: 1.0 ml/min
 Temperature: ambient
 Detection: UV at 254 nm

Hexobarbital



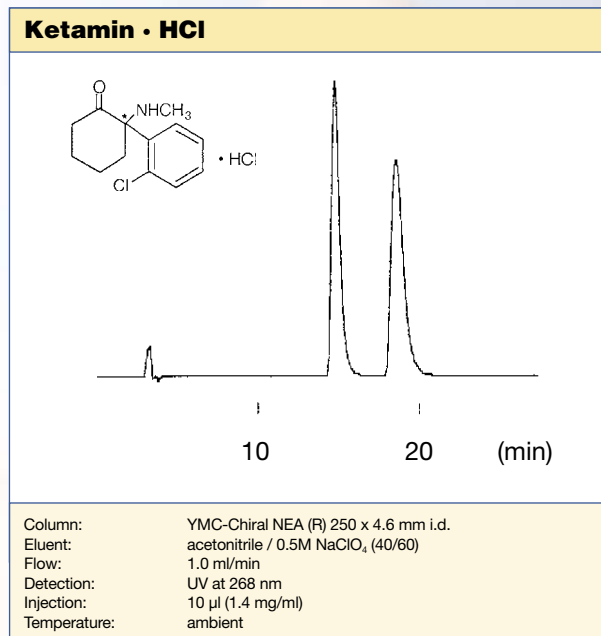
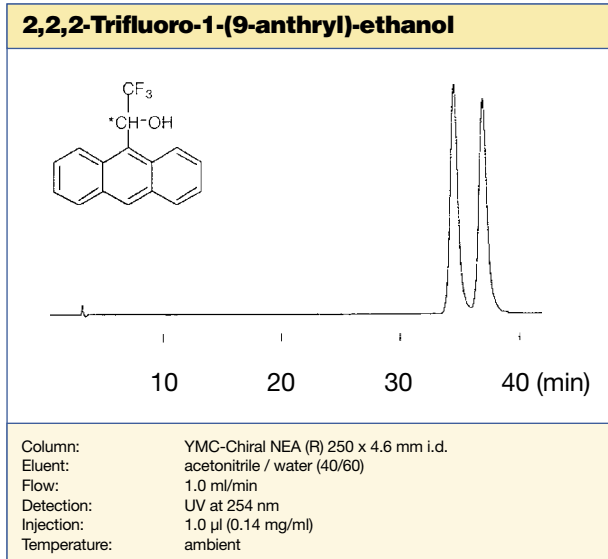
Column: YMC-Chiral NEA (R) 250 x 4.6 mm i.d.
 Eluent: acetonitrile / water (30/70)
 Flow: 0.7 ml/min
 Detection: UV at 210 nm
 Injection: 1.0 μ l (1.2 mg/ml)
 Temperature: ambient

CBZ-Phenylalanine (Z-Phe-OH)



Column: YMC-Chiral NEA (R) 250 x 4.6 mm i.d.
 Eluent: 0.5M NaClO₄-HClO₄ (pH 2.0) / acetonitrile (70/30)
 Flow: 1.0 ml/min
 Detection: UV at 254 nm
 Injection: 10 μ l (1.5 mg/ml)
 Temperature: ambient

YMC Chiral NEA(R)(S)



Column Care

The recommended pH range for using YMC Chiral NEA(R)(S) columns is 2.0-6.5. Remove acid and buffer salts before storage. Store the column in methanol/water = 50/50. If columns are affected by undesired contaminants or clogged inlet frits which cause back pressure increases, flush the column with THF in the opposite flow direction.

For detailed information please refer to the "Column Care and Use Instructions" which are shipped with each analytical column.

YMC Chiral CD BR



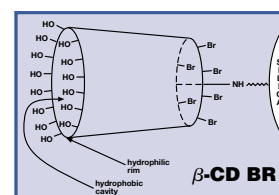
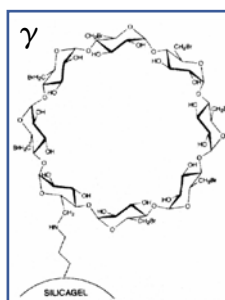
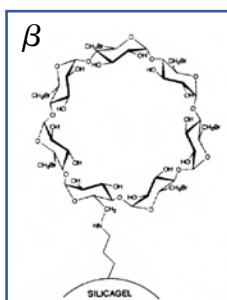
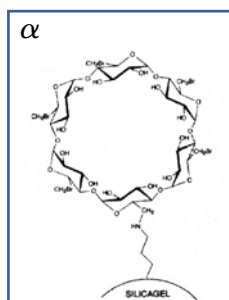
- reversed phase
- polar pharmaceuticals
- positional isomers
- water-soluble compounds



YMC Chiral CD BR	Specification
Particle Size / μm	5
Pore Size / nm	12
Surface area / m^2g^{-1}	proprietary
Carbon content / %	proprietary
Recommended pH range	3.5 - 6.5

General

The family of commercially available cyclic malto-oligosaccharides known as cyclodextrins consist of three members; α -cyclodextrin consists of six (1 \rightarrow 4)-linked α -D-glucopyranose residues in a ring, whereas β -, and γ -cyclodextrins consist of seven and eight residues in the ring. The resulting cone-shaped cylindrical molecules have a hydrophobic cavity and a hydrophilic rim. The latter is due to the hydroxyl groups of the carbohydrate; the secondary hydroxyl groups on carbon atoms 2 and 3 of the glucose residues being on the larger diameter rim whilst the primary hydroxyl groups on carbon atom 6 are on the smaller diameter rim. The diameters of the cavities are such that a single phenyl ring can be accommodated within α -cyclodextrin, whilst the cavities of α -cyclodextrin and α -cyclodextrin can accommodate substituted single phenyl rings and multiple ring systems.



Properties

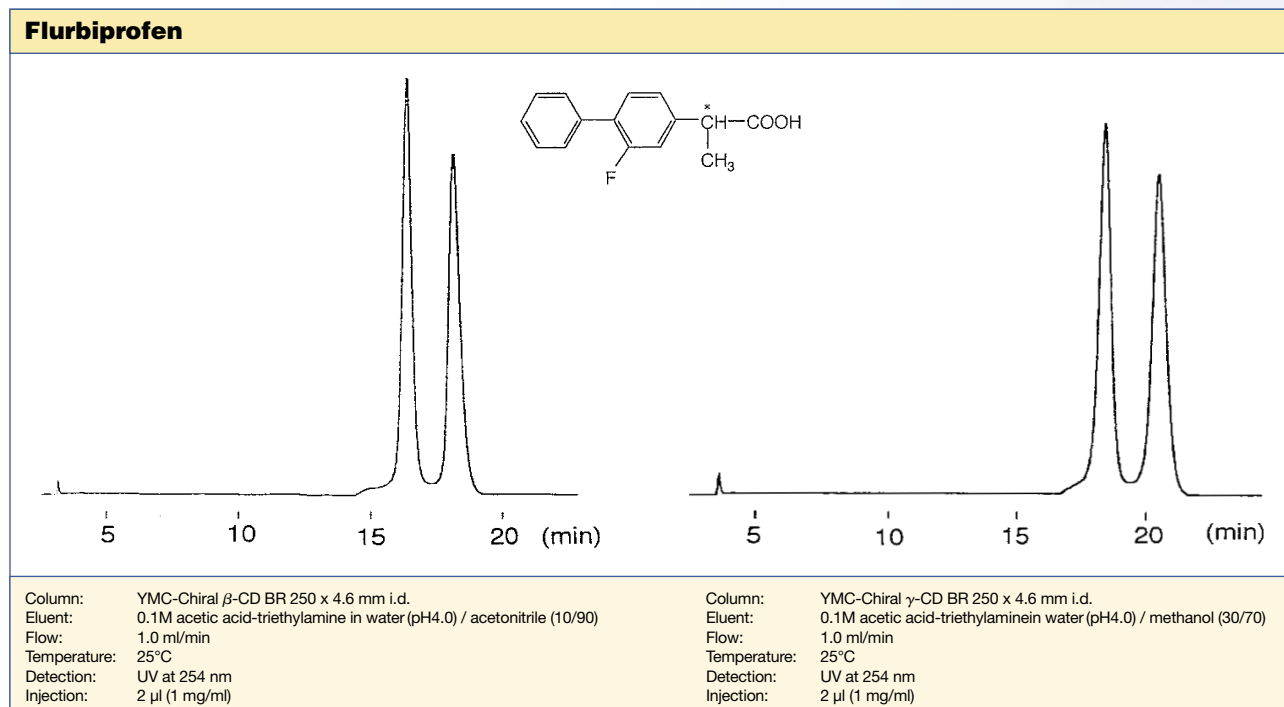
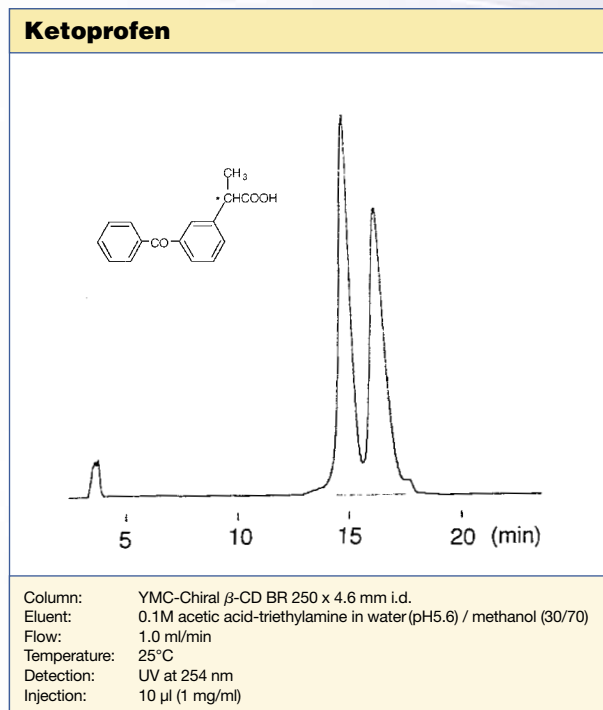
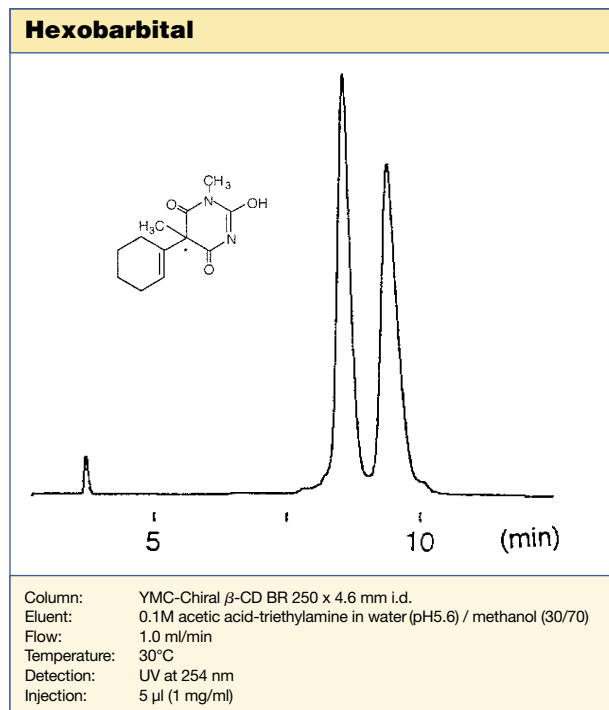
YMC-Chiral CD BR columns offer an alternative approach to enantioseparation. Covalent bonding of a bromide derivative of a cyclodextrin to YMC silica provides a novel CSP. The bromide derivative, in which the primary hydroxyl groups at carbon 6 are substituted for bromine, provides a different chiral selectivity to the 'normal' cyclodextrins. These cyclodextrin bromide derivatives are used in reversed phase mode to separate a wide range of polar, water-soluble compounds. In addition they will separate, under similar conditions, positional isomers of substituted aromatic compounds.

YMC-Chiral CD BR columns have a pH range of pH 3.5-6.5 and can be used with the common buffer systems. However all salts and buffer components must be rinsed from the column with water/methanol solutions (80-100% water) before storage of the column. The columns should be stored in salt-free water/methanol solutions (50% methanol). It is possible to regenerate the column by removal of contamination with THF solution.



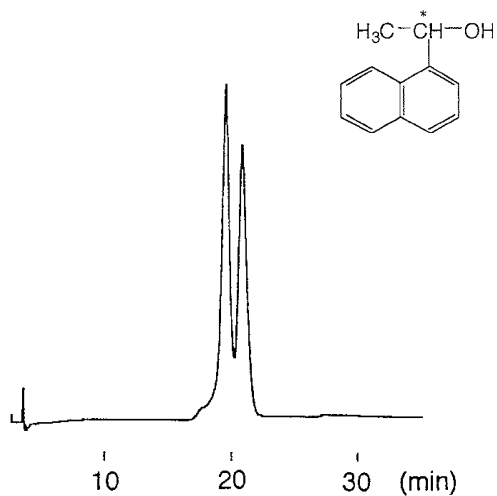
YMC Chiral CD BR

Applications



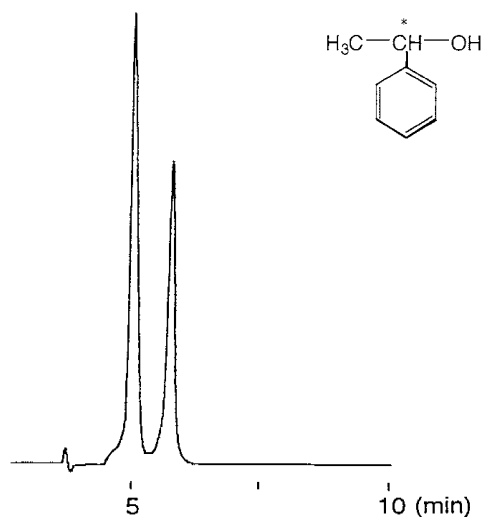
YMC Chiral CD BR

1-(1-naphthyl)-ethylalcohol



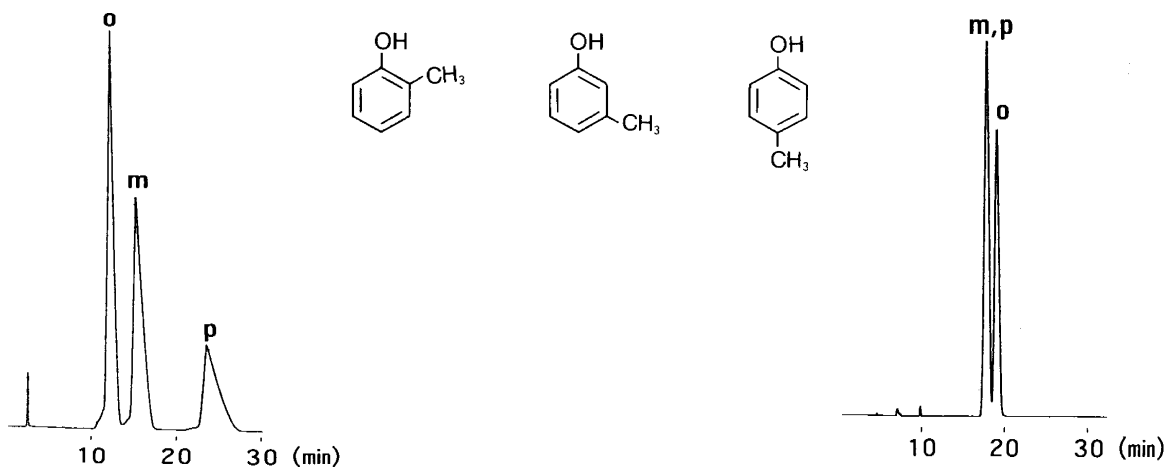
Column: YMC-Chiral γ -CD BR 250 x 4.6 mm i.d.
 Eluent: 0.1M AcOH_{aq}-TEA (Triethylamine)_{aq} (pH5.6) / methanol (90/10)
 Flow: 1.0 ml/min
 Temperature: 30°C
 Detection: UV at 254 nm
 Injection: 5 μ l (1 mg/ml)

Phenylethylalcohol



Column: YMC-Chiral γ -CD BR 250 x 4.6 mm i.d.
 Eluent: 0.1M AcOH_{aq}-TEA (Triethylamine)_{aq} (pH4.0) / methanol (90/10)
 Flow: 1.0 ml/min
 Temperature: 30°C
 Detection: UV at 254 nm
 Injection: 5 μ l (10 mg/ml)

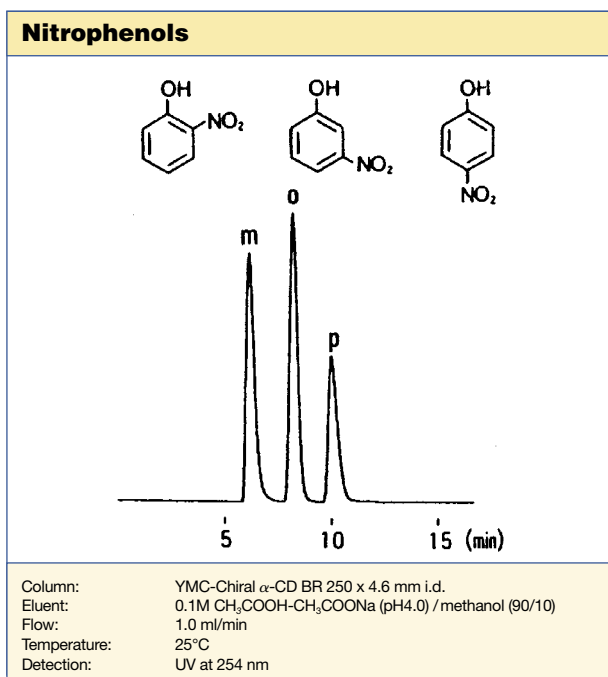
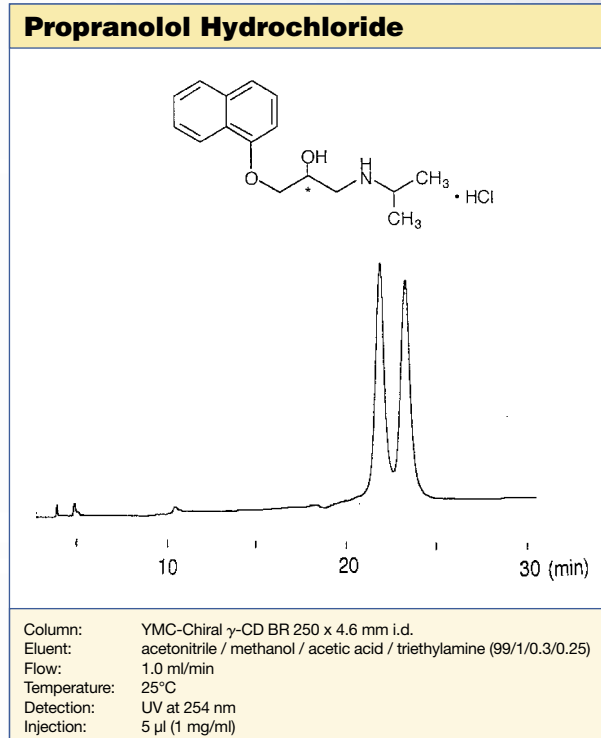
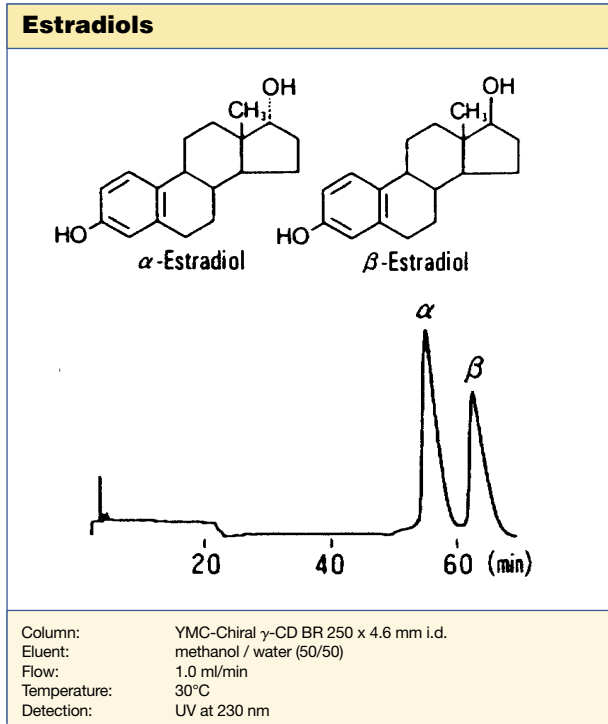
Cresols



Column: YMC-Chiral β -CD BR 250 x 4.6 mm i.d.
 Eluent: methanol / water (20/80)
 Flow: 1.0 ml/min
 Temperature: ambient
 Detection: UV at 254 nm

Column: YMC Pack ODS-AM 250 x 4.6 mm i.d.
 Eluent: methanol / water (40/60)
 Flow: 1.0 ml/min
 Temperature: ambient
 Detection: UV at 254 nm

YMC Chiral CD BR



Column Care

The recommended pH range for using YMC Chiral CD BR columns is 3.5-6.5. Remove acid and buffer salts before storage. Store the column in methanol/water = 50/50. If columns are affected by undesired contaminants or clogged inlet frits which cause back pressure increases, flush the column with THF in the opposite flow direction.

For detailed information please refer to the "Column Care and Use Instructions" which are shipped with each analytical column.

Ordering Information



Normal Phase: YMC Chiral NEA(R), 30 nm, 5 μ m



Column i.d. (mm)	Column length (mm)					Guard cartridges with 10 mm length (pack of 5)
	33	50	100	150	250	
2.1	CR30S050302QT	CR30S050502QT	CR30S051002QT	CR30S051502QT	CR30S052502QT	CR30S050102
3.0	CR30S050303QT	CR30S050503QT	CR30S051003QT	CR30S051503QT	CR30S052503QT	CR30S050103
4.0	CR30S050304QT	CR30S050504QT	CR30S051004QT	CR30S051504QT	CR30S052504QT	CR30S050104
4.6	CR30S050346WT	CR30S050546WT	CR30S051046WT	CR30S051546WT	CR30S052546WT	CR30S050104



For other dimensions please refer to page 217

Normal Phase: YMC Chiral NEA(S), 30 nm, 5 μ m



Column i.d. (mm)	Column length (mm)					Guard cartridges with 10 mm length (pack of 5)
	33	50	100	150	250	
2.1	CS30S050302QT	CS30S050502QT	CS30S051002QT	CS30S051502QT	CS30S052502QT	CS30S050102
3.0	CS30S050303QT	CS30S050503QT	CS30S051003QT	CS30S051503QT	CS30S052503QT	CS30S050103
4.0	CS30S050304QT	CS30S050504QT	CS30S051004QT	CS30S051504QT	CS30S052504QT	CS30S050104
4.6	CS30S050346WT	CS30S050546WT	CS30S051046WT	CS30S051546WT	CS30S052546WT	CS30S050104



For other dimensions please refer to page 217

Reversed Phase: YMC Chiral NEA(R), 30 nm, 5 μ m



Column i.d. (mm)	Column length (mm)					Guard cartridges with 10 mm length (pack of 5)
	33	50	100	150	250	
2.1	NR30S050302QT	NR30S050502QT	NR30S051002QT	NR30S051502QT	NR30S052502QT	NR30S050102
3.0	NR30S050303QT	NR30S050503QT	NR30S051003QT	NR30S051503QT	NR30S052503QT	NR30S050103
4.0	NR30S050304QT	NR30S050504QT	NR30S051004QT	NR30S051504QT	NR30S052504QT	NR30S050104
4.6	NR30S050346WT	NR30S050546WT	NR30S051046WT	NR30S051546WT	NR30S052546WT	NR30S050104



For other dimensions please refer to page 217

Reversed Phase: YMC Chiral NEA(S), 30 nm, 5 μ m



Column i.d. (mm)	Column length (mm)					Guard cartridges with 10 mm length (pack of 5)
	33	50	100	150	250	
2.1	NS30S050302QT	NS30S050502QT	NS30S051002QT	NS30S051502QT	NS30S052502QT	NS30S050102
3.0	NS30S050303QT	NS30S050503QT	NS30S051003QT	NS30S051503QT	NS30S052503QT	NS30S050103
4.0	NS30S050304QT	NS30S050504QT	NS30S051004QT	NS30S051504QT	NS30S052504QT	NS30S050104
4.6	NS30S050346WT	NS30S050546WT	NS30S051046WT	NS30S051546WT	NS30S052546WT	NS30S050104



For other dimensions please refer to page 217

Ordering Information

α -CD BR: YMC Chiral CD BR, 12 nm, 5 μ m

Column i.d. (mm)	Column length (mm)					Guard cartridges with 10 mm length (pack of 5)
	33	50	100	150	250	
2.1	DA12S050302QT	DA12S050502QT	DA12S051002QT	DA12S051502QT	DA12S052502QT	DA12S050102
3.0	DA12S050303QT	DA12S050503QT	DA12S051003QT	DA12S051503QT	DA12S052503QT	DA12S050103
4.0	DA12S050304QT	DA12S050504QT	DA12S051004QT	DA12S051504QT	DA12S052504QT	DA12S050104
4.6	DA12S050346WT	DA12S050546WT	DA12S051046WT	DA12S051546WT	DA12S052546WT	DA12S050104



For other dimensions please refer to page 217



β -CD BR: YMC Chiral CD BR, 12 nm, 5 μ m

Column i.d. (mm)	Column length (mm)					Guard cartridges with 10 mm length (pack of 5)
	33	50	100	150	250	
2.1	DB12S050302QT	DB12S050502QT	DB12S051002QT	DB12S051502QT	DB12S052502QT	DB12S050102
3.0	DB12S050303QT	DB12S050503QT	DB12S051003QT	DB12S051503QT	DB12S052503QT	DB12S050103
4.0	DB12S050304QT	DB12S050504QT	DB12S051004QT	DB12S051504QT	DB12S052504QT	DB12S050104
4.6	DB12S050346WT	DB12S050546WT	DB12S051046WT	DB12S051546WT	DB12S052546WT	DB12S050104



For other dimensions please refer to page 217



γ -CD BR: YMC Chiral CD BR, 12 nm, 5 μ m

Column i.d. (mm)	Column length (mm)					Guard cartridges with 10 mm length (pack of 5)
	33	50	100	150	250	
2.1	DG12S050302QT	DG12S050502QT	DG12S051002QT	DG12S051502QT	DG12S052502QT	DG12S050102
3.0	DG12S050303QT	DG12S050503QT	DG12S051003QT	DG12S051503QT	DG12S052503QT	DG12S050103
4.0	DG12S050304QT	DG12S050504QT	DG12S051004QT	DG12S051504QT	DG12S052504QT	DG12S050104
4.6	DG12S050346WT	DG12S050546WT	DG12S051046WT	DG12S051546WT	DG12S052546WT	DG12S050104



For other dimensions please refer to page 217



Note: For your first order on guard cartridges, please add one guard cartridge holder per system to your order list: integral guard cartridge holder for columns with 2.1-4.0 mm i.d. **XPGCS-Q1** or universal guard cartridge holder for columns with 4.6 mm i.d. **XPGCH-Q1**. The holder can continuously be re-used and, thus it is not required for repeat orders.

Ordering Information

Sure-Fit™ Connector

Since different column hardware manufacturers have introduced a variety of connecting port geometries over the years, the Sure-Fit™ Connector represents an ideal tool to avoid dead volumes or leakages, irrespective of the column brand, when connecting different columns to an HPLC system. YMC strongly recommends the use of the Sure-Fit™ Connector due to its internal spring tensioned mechanism, which automatically self-adjusts to any port depth while maintaining constant pressure on the capillary tubing. This guarantees a connection free from any dead volume. Column changeovers become easy, especially as no tools are required. The Sure-Fit™ Connector is fingertight to 6000 psi and is available in a range of capillary tubing i.d. and lengths.



Column i.d.* (mm)	Tubing i.d.* (mm)	Single end unit (incl. 20 mm stainless steel capillary)	Double end unit (incl. 20 mm stainless steel capillary)
1.0-3.0	0.13	SFS2005	SFD2005
3.0-4.6	0.18	SFS2007	SFD2007

* Other versions available on request

Chiral Detection

CHIRALYSER-MP



The CHIRALYSER-MP is a high performance Optical Rotation Detector for monitoring Optically Active compounds in HPLC. The approved Faraday Compensation, superior to all other methods, enables the CHIRALYSER-MP to detect optical active molecules not only in analytical but also in preparative LC.

If you are interested in more detailed information about the specifications and characteristics of the CHIRALYSER-MP please contact the Kronlab division of YMC Europe GmbH, Phone: +49 (0) 2064 427-0, Email: info@ymc.de or www.ymc.de

Ordering Information

The previous product listing represents commonly used standard column dimension. In order to identify any specific product version and order number, please see the example and the table below.

Full listing of all chemistries and dimensions

Gel Code							Hardware Code						
Chemistry code		Pore size [nm]		Particle shape		Particle size [µm]		Length [mm]		Inner diameter [mm]		Column Type	
YMC30	CT	6	06	spherical	S	3	03	10	01	0.05	E5	Quick Seal	QT
Pro C18	AS	8	08			4	04	20	02	0.075			
Pro C18 RS	RS	12	12			5	05	33	03	0.1	F0	Waters type	WT
Hydrosphere C18	HS	20	20			6	06	50	05	0.2	G0		
ODS-A	AA	30	30					75	L5	0.3	H0		
ODS-AM	AM	100	A0			10	11	100	10	0.5	J0		
ODS-AQ	AQ	proprietary	99			15	16	125	R5	0.8	M0		
J'sphere ODS-H80	JH	non-porous	00			20	21	150	15	1.0	O1		
J'sphere ODS-M80	JM					50	50	250	25	2.1	O2		
J'sphere ODS-L80	JL					75	75			3.0	O3		
ODS-AL	AL							300	30	4.0	O4		
PAH	YP					63/210	A4						
PolymerC18	PC					150	A5	500	50	4.6	46		
Pro C8	OS							1000	A0	6.0	06		
C8 (Octyl)	OC									8.0	08		
YMCbasic	BA									10	10		
Ph (Phenyl)	PH									20	20		
Pro C4	BS									30	30		
C4 (Butyl)	BU												
Protein-RP	PR									50 (2000 psi)	52		
TMS (C1)	TM									70 (2000 psi)	72		
PVA-Sil	PV									100 (2000 psi)	A2		
Polyamine II	PB									150 (2000 psi)	B2		
NH ₂ (Amino)	NH									200 (2000 psi)	C2		
CN (Cyano)	CN												
Diol	DL												
SIL (Silica)	SL												
BioPro-QA	QA												
BioPro-SP	SP												
BioPro-QA-F	QF												
BioPro-SP-F	SF												
Chiral NEA (R)	NR												
Chiral NEA (S)	NS												
Chiral CD BR α	DA												
Chiral CD BR β	DB												
Chiral CD BR γ	DG												
Chiral Prep CD ST	ST												
Chiral Prep CD PM	PM												

Example

Choose your column and fill in the "Gel and Hardware Code" or detailed description (The part number consists of the "Gel Code" and the "Hardware Code").

YMC-Pack ODS-A	12 nm	spherical	3 µm	250 mm	1.0 mm	Quick Seal
AA	12	S	03	25	01	QT

Your column part number: **AA12S032501QT (Example)**

Please note that combinations of features cannot be selected at random, but only from the possible specifications for a chosen stationary phase. These can be determined from the individual product sections in this catalogue or from our homepage www.ymc.de.

For more details



contact your local distributor or

YMC Europe GmbH, Schöttmannshof 19, D-46539 Dinslaken, Phone: +49 (0) 2064 / 427-0,

Fax +49 (0) 2064 / 427-222, e-mail: info@ymc.de, homepage: www.ymc.de

YMC Sumichiral OA



- covalently bonded
- high stability
- normal and reversed phase mode
- 17 different CSPs
- reversal of elution order



YMC Sumichiral OA	Specification
Particle Size / μm	5
Pore Size / nm	12
Surface area / m^2g^{-1}	proprietary
Carbon content / %	proprietary

General

Covalently Bonded CSPs: Sumichiral OA columns are high-performance chiral columns for enantiomer separation by HPLC. Sumichiral OA columns are covalently bonded stationary phases, which exhibit high stability, long column life time and excellent column-to-column and lot-to-lot reproducibility.

Enantiomeric separation is achieved by various diastereomeric interactions such as hydrogen bonding, charge transfer and host-guest interactions etc.

Seventeen Different Phases: Sumichiral OA columns are generally classified according to the type of linkage used to attach the asymmetric carbon. Amide types provide good separation of aromatic compounds, esters, carboxylic acids and alcohols. Urea types provide a higher level of hydrogen bonding for pharmaceutical amines, amino alcohols, esters and amides. The ligand exchange phases offer chiral discrimination in reversed phase mode. They are effective for the direct enantiomer separation of amino acids, hydroxy acids and as copper chelate-forming compounds with amino alcohols, diamines, etc.

Sumichiral OA columns are divided into five groups:

- Amide Type: Asymmetric carbon atoms are bonded directly with CONH group (**OA-2000 series**).
 - Urea Type: Asymmetric carbon atoms are bonded directly with NHCONH group (**OA-3000, 4000 series**).
 - Ligand exchange type: Chiral components are coated hydrophobically on ODS. (**OA-5000, 6000 series**).
 - Cyclodextrin type: β -cyclodextrin bonded to silica gel (**OA-7000**).
 - Crown ether type: Chiral crown ether bonded to aminopropyl silica gel (**OA-8000**).
- (see table next page)

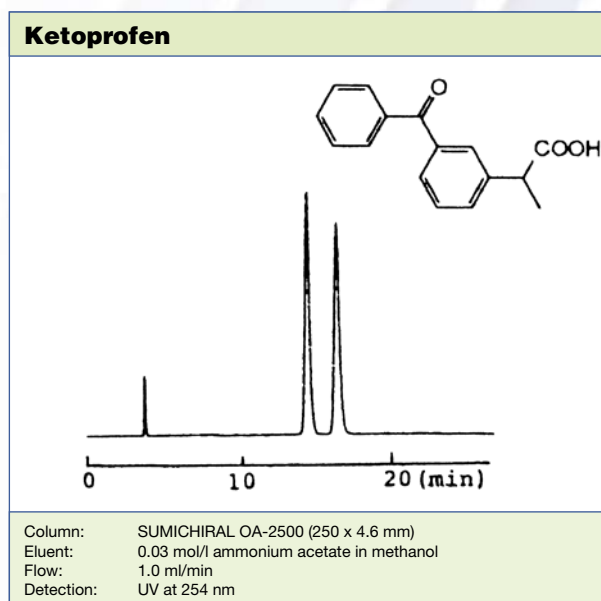
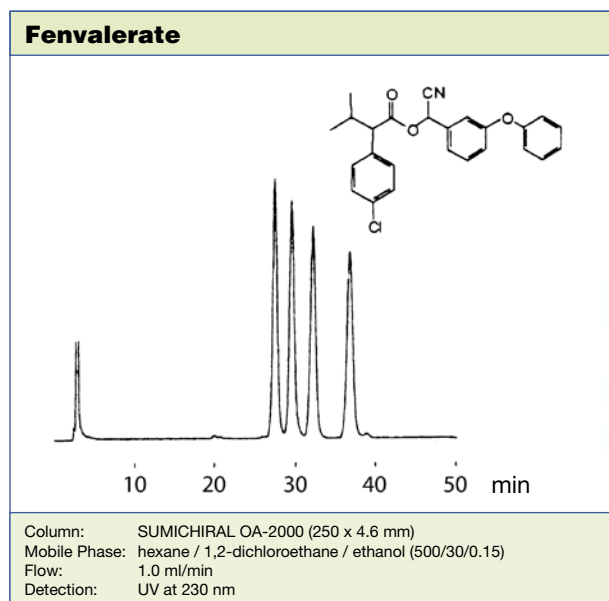


YMC Sumichiral OA

Standard type		Inverted type	MODE**
SUMICHIRAL	Chiral component	SUMICHIRAL	
OA-2000	(R)-phenylglycine	OA-2000S	NP
OA-2500	(R)-1-naphthylglycine	OA-2500S	RP
OA-3100	(S)-valine	OA-3100R	NP, RP
OA-3200	(s)-tert-leucine	OA-3200R	NP, RP
OA-3300	(R)-phenylglycine	OA-3300S	NP, RP
OA-4000	(S)-valine (S)-1-(α -naphthyl)ethylamine	OA-4000R	NP
OA-4100	(S)-valine (R)-1-(α -naphthyl)ethylamine	OA-4100R	NP
OA-4400	(S)-proline (S)-1-(α -naphthyl)ethylamine	OA-4400R	NP
OA-4500	(S)-proline (R)-1-(α -naphthyl)ethylamine	OA-4500R	NP
OA-4600	(S)-tert-leucine (S)-1-(α -naphthyl)ethylamine	OA-4600R	NP
OA-4700	(S)-tert-leucine (R)-1-(α -naphthyl)ethylamine	OA-4700R	NP
OA-4800	(S)-indoline-2-carboxylic acid (S)-1-(α -naphthyl)ethylamine	—	NP
OA-4900	(S)-indoline-2-carboxylic acid (R)-1-(α -naphthyl)ethylamine	—	NP
OA-5000	(D)-penicillamine	OA-5000L	RP
OA-6000	(L)-tartaric acid (S)-1-(α -naphthyl)ethylamine	OA-6000R	RP
OA-6100	(L)-tartaric acid (S)-valine (R)-1-(α -naphthyl)ethylamine	OA-6100R	RP
OA-7000	β -cyclodextrin with novel spacer	—	RP
OA-8000	chiral pseudo 18-crown-6 ether	OA-8000R	NP, RP

Applications

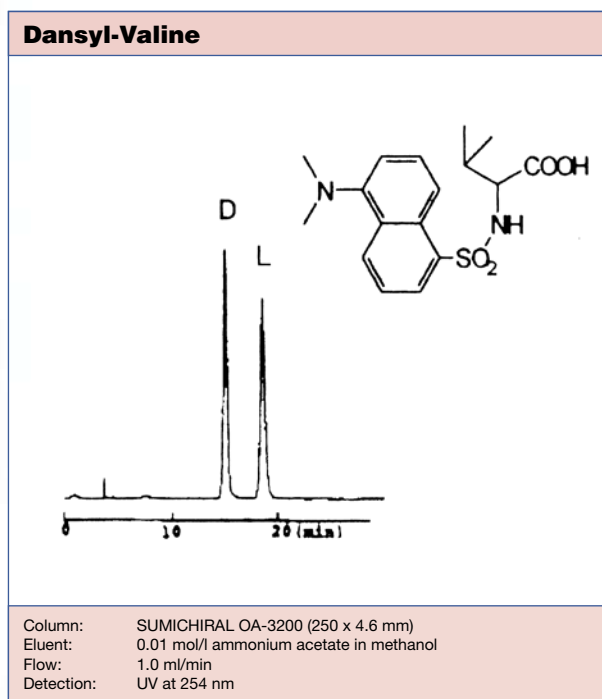
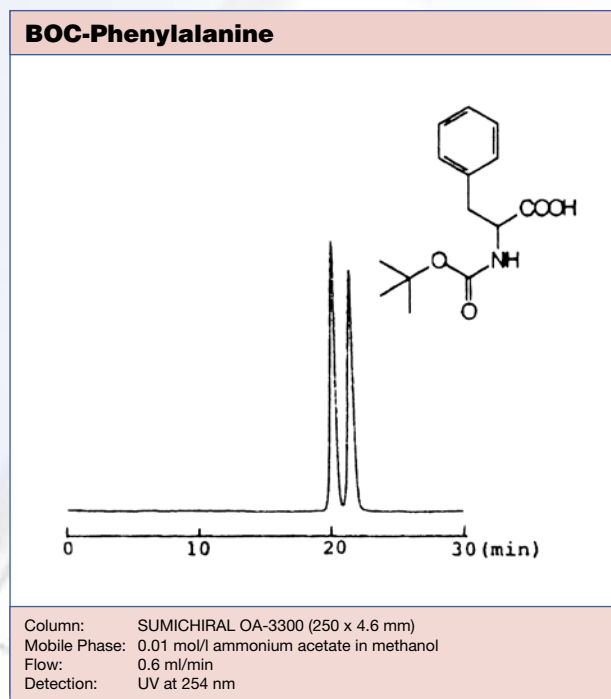
OA-2000 series have 3,5-dinitrobenzoyl group as the π -acid which interact with the solute molecules by charge transfer, hydrogen bonding, etc. The enantiomers of aromatic compounds, esters, carboxylic acids and alcohols can be directly separated on OA-2000 series. Especially, **OA-2000** is especially for pyrethroidal esters whilst **OA-2500** is ideally suited for carboxylic acids such as profens.



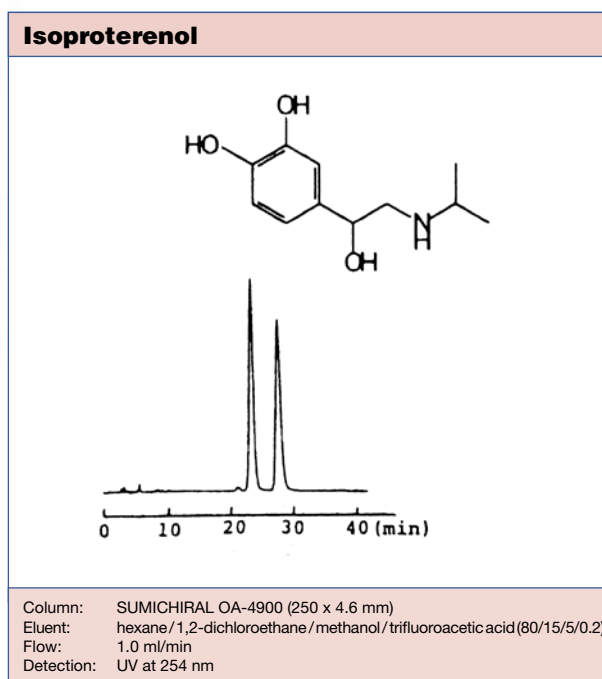
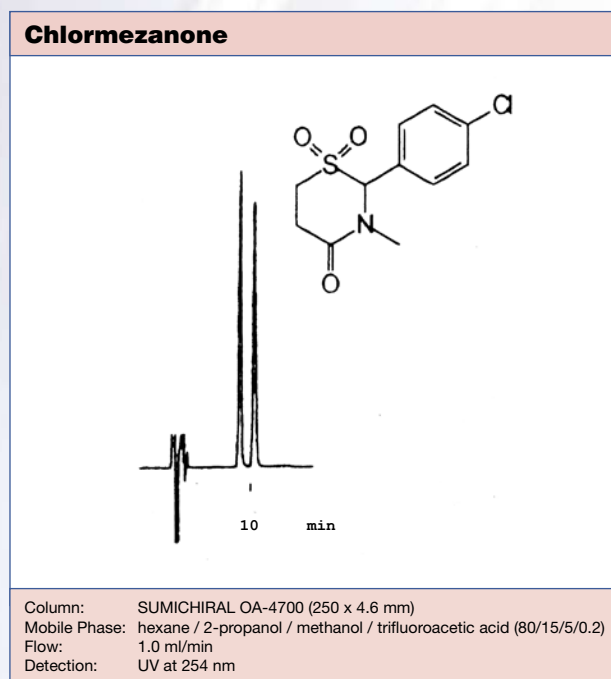
YMC Sumichiral OA

Applications

OA-3000 series have 3,5-dinitrophenylurea group as the π -acid and, in the reverse phase mode, give the chiral discrimination by charge transfer, hydrogen bonding, etc. In general **OA-3000 series** are suitable for carboxylic acids, and more specifically for acetyl- and urethane-amino acids, dansylamino acids, etc.. **OA-3300** offers good direct separation for profens, acetyl-amino acids, BOC-amino acids and benzoyl-amino acids.



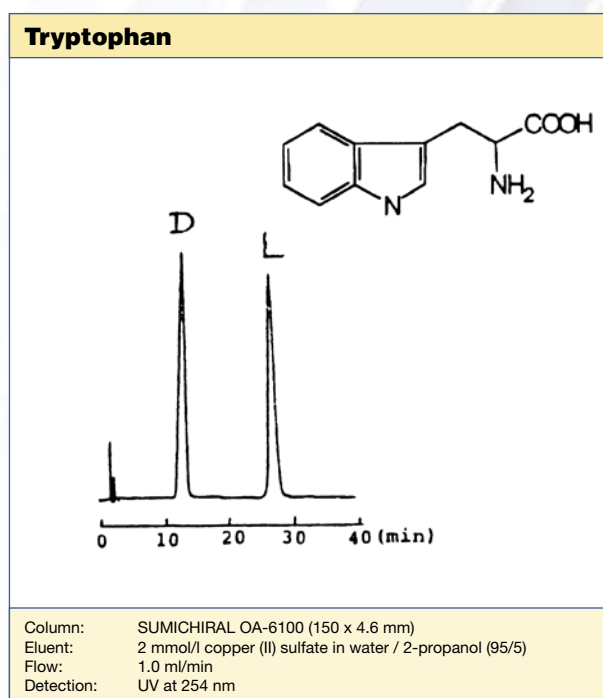
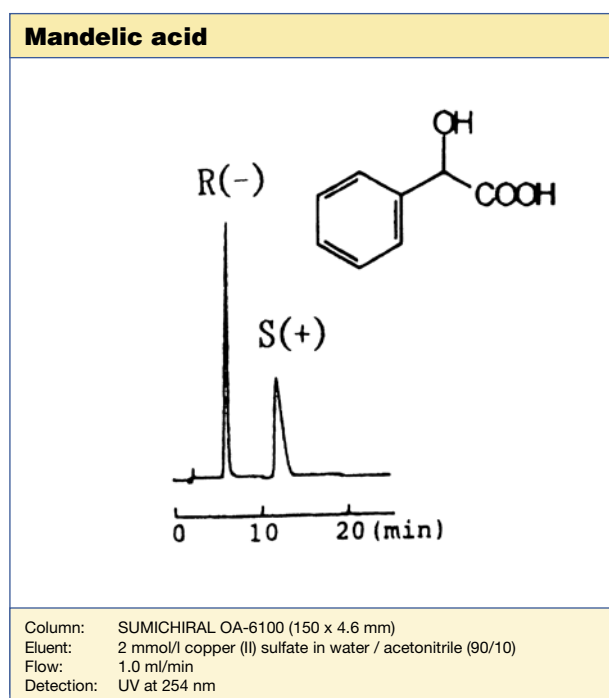
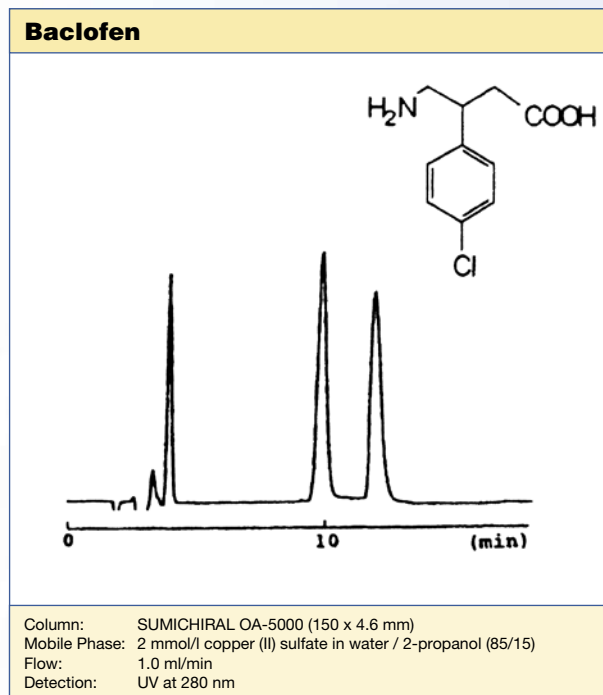
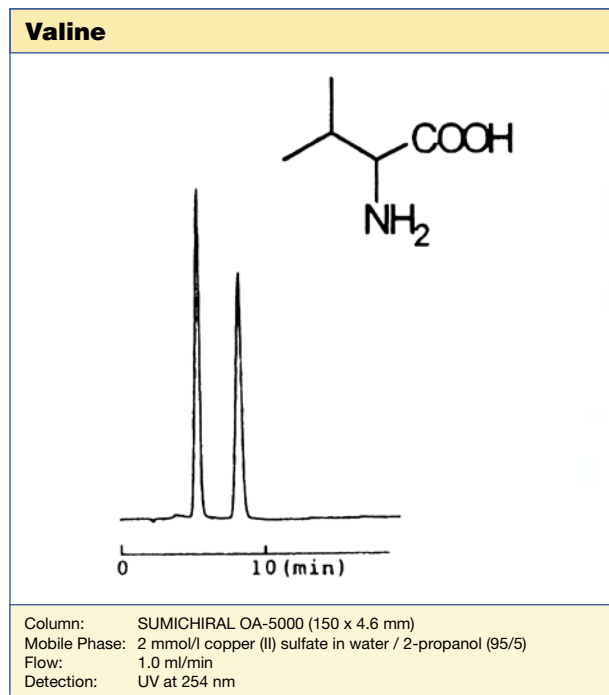
OA-4000 series have naphthyl groups as the π -base, and two chiral centres from amine and amino acid groups. The chiral discrimination is achieved by charge transfer, hydrogen bonding, etc. the chiral discrimination may be performed, and a wide variety of compound such as pharmaceuticals containing amine and amino alcohol, alcohol, ester and amide groups can be directly resolved by normal phase systems. Amide and urethane derivatives of amines, alcohols, etc. can also be resolved effectively.



YMC Sumichiral OA

Applications

OA-5000 and 6000 series offer chiral discrimination by ligand exchange interactions in reversed phase mode, though the volume of organic solvents which can be added to the mobile phase is limited. They are suitable for direct enantiomer separation of not only amino acids, hydroxy acids but also copper chelate-forming compounds such as amino alcohols, diamines, dicarboxylic acids, aminolactams and dipeptides. Especially **OA-5000** can be used for extremely wide range of analyte structure types.

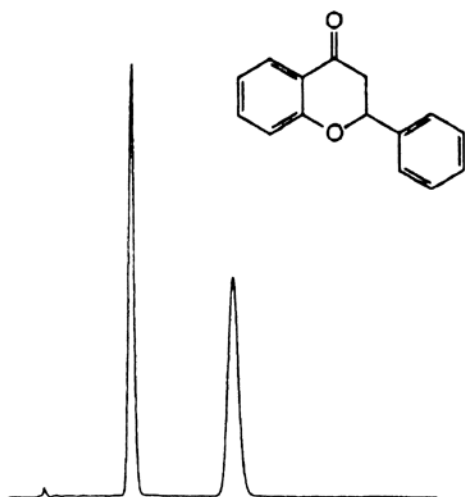


YMC Sumichiral OA

Applications

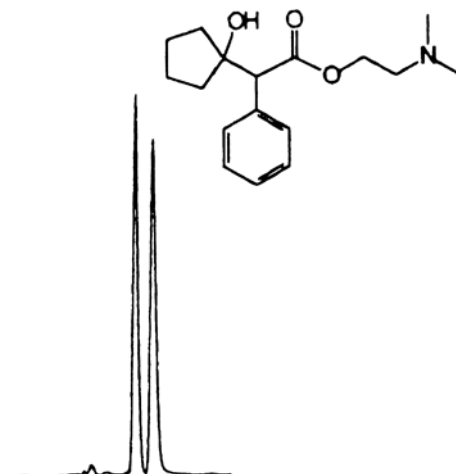
OA-7000 is a novel chiral stationary phase with β -cyclodextrin bonded to the silica gel via new type of spacer. A large number of race-mates, including ketones, amines and amino acid derivates can be separated under reversed phase conditions. Sharp peaks and high theoretical plate numbers are obtained. Improved peak shape is due to the effect of the hydrophilic spacer moiety which prevents secondary interactions between the silica gel and the sample molecules.

Flavanone



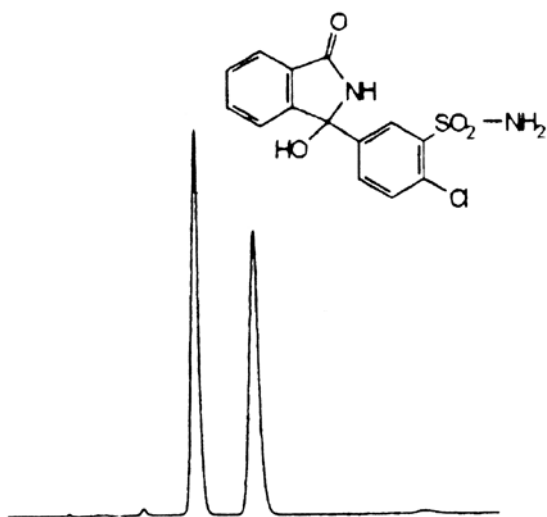
Column: SUMICHIRAL OA-7000 (250 x 4.6 mm)
 Mobile Phase: 20 mmol/l phosphate buffer (pH 2.0) / acetonitrile (60:40)
 Flow: 0.85 ml/min
 Detection: UV at 254 nm

Cyclopropate



Column: SUMICHIRAL OA-7000 (250 x 4.6 mm)
 Eluent: 20 mmol/l phosphate buffer (pH 3.0) / acetonitrile (60:40)
 Flow: 0.2 ml/min
 Detection: UV at 254 nm

Chlorthalidone

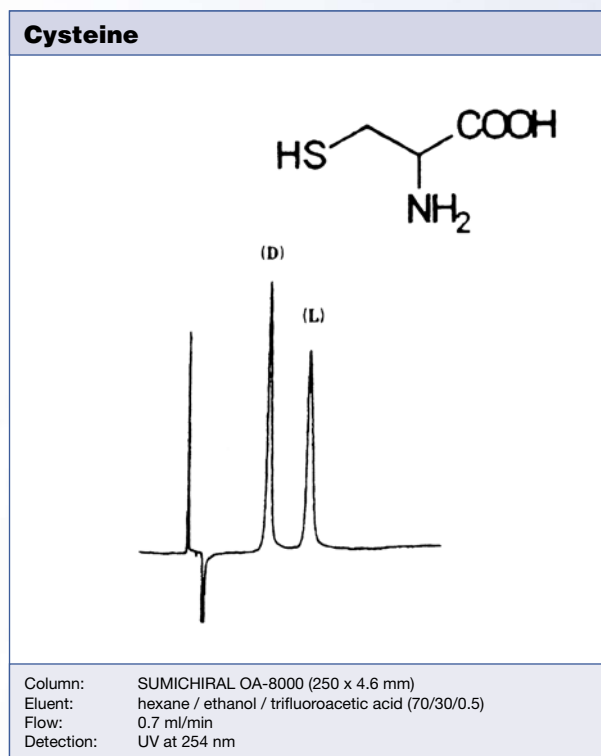
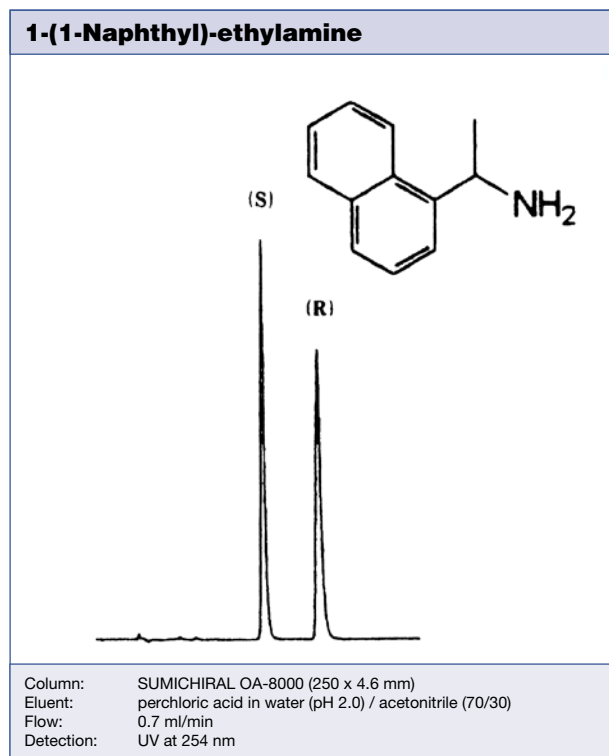


Column: SUMICHIRAL OA-7000 (250 x 4.6 mm)
 Mobile Phase: 20 mmol/l phosphate buffer (pH 3.0) / acetonitrile (80:20)
 Flow: 0.7 ml/min
 Detection: UV at 254 nm

YMC Sumichiral OA

Applications

OA-8000 is a novel chiral stationary phase bonded with chiral crown ether to aminopropyl silica gel. This is very effective for enantiomer separations of amines, aminoalcohols and amino acids, especially for hydrophobic amines. The stationary phase is covalently bonded and very stable. Both reversed and normal phase can be used.



Column care

The recommended pH range for using Sumichiral-OA columns is 2.0-6.0. Remove acid and buffer salts before storage. Store the column in methanol/water = 50/50. If columns are affected by undesired contaminants or clogged inlet frits which cause back pressure increases, flush the column with THF in the opposite flow direction.

For detailed information please refer to the "Column Care and Use Instructions" which are shipped with each analytical column.

Ordering Information

Sure-Fit™ Connector

Since different column hardware manufacturers have introduced a variety of connecting port geometries over the years, the Sure-Fit™ Connector represents an ideal tool to avoid dead volumes or leakages, irrespective of the column brand, when connecting different columns to an HPLC system. YMC strongly recommends the use of the Sure-Fit™ Connector due to its internal spring tensioned mechanism, which automatically self-adjusts to any port depth while maintaining constant pressure on the capillary tubing. This guarantees a connection free from any dead volume. Column changeovers become easy, especially as no tools are required. The Sure-Fit™ Connector is fingertight to 6000 psi and is available in a range of capillary tubing i.d. and lengths.



Column i.d.* (mm)	Tubing i.d.* (mm)	Single end unit (incl. 20 mm stainless steel capillary)	Double end unit (incl. 20 mm stainless steel capillary)
1.0-3.0	0.13	SFS2005	SFD2005
3.0-4.6	0.18	SFS2007	SFD2007

* Other versions available on request

Ordering Information

Phase	Chiral components	Guard Column 10 x 4.0	Analytical 250 x 4.6	Semi-prep 250 x 20
OA-2000 OA-2000S	(R)-phenylglycine (S)-phenylglycine	SC20XCS050104	SC20XCS052546	SC20XCS052520
OA-2500 OA-2500S	(R)-1-naphthylglycine (S)-1-naphthylglycine	SC25XCS050104	SC25XCS052546	SC25XCS052520
OA-3100 OA-3100R	(S)-valine (R)-valine	SC31XCS050104	SC31XCS052546	SC31XCS052520
OA-3200 OA-3200R	(S)-tert-leucine (R)-tert-leucine	SC32XCS050104	SC32XCS052546	SC32XCS052520
OA-3300 OA-3300S	(R)-phenylcyclycine (S)-phenylcyclycine	SC33XCS050104	SC33XCS052546	SC33XCS052520
OA-4000 OA-4000R	(S)-valine (S)-1-(α -naphthyl)ethylamine (R)-valine (R)-1-(α -naphthyl)ethylamine	SC40XCS050104	SC40XCS052546	SC40XCS052520
OA-4100 OA-4100R	(S)-valine (R)-1-(α -naphthyl)ethylamine (R)-valine (S)-1-(α -naphthyl)ethylamine	SC41XCS050104	SC41XCS052546	SC41XCS052520
OA-4400 OA-4400R	(S)-proline (S)-1-(α -naphthyl)ethylamine (R)-proline (R)-1-(α -naphthyl)ethylamine	SC44XCS050104	SC44XCS052546	SC44XCS052520
OA-4500 OA-4500R	(S)-proline (R)-1-(α -naphthyl)ethylamine (R)-proline (S)-1-(α -naphthyl)ethylamine	SC45XCS050104	SC45XCS052546	SC45XCS052520
OA-4600 OA-4600R	(S)-tert-leucine (S)-1-(α -naphthyl)ethylamine (R)-tert-leucine (R)-1-(α -naphthyl)ethylamine	SC46XCS050104	SC46XCS052546	SC46XCS052520
OA-4700 OA-4700R	(S)-tert-leucine (R)-1-(α -naphthyl)ethylamine (R)-tert-leucine (S)-1-(α -naphthyl)ethylamine	SC47XCS050104	SC47XCS052546	SC47XCS052520
OA-4800	(S)-indoline-2-carboxylic acid (S)-1-(α -naphthyl)ethylamine	SC48XCS050104	SC48XCS052546	SC48XCS052520
OA-4900	(S)-indoline-2-carboxylic acid (R)-1-(α -naphthyl)ethylamine	SC49XCS050104	SC49XCS052546	SC49XCS052520
OA-5000 OA-5000L	(D)-penicillamine (L)-penicillamine	SC50XCS050104	SC50XCS052546	SC50XCS052520
OA-6000 OA-6000R	(L)-tartaric acid (R)-1-(α -naphthyl)ethylamine (D)-tartaric acid (S)-1-(α -naphthyl)ethylamine	SC60XCS050104	SC60XCS052546	SC60XCS052520
OA-6100 OA-6100R	(L)-tartaric acid (S)-valine (S)-1-(α -naphthyl)ethylamine (D)-tartaric acid (R)-valine (R)-1-(α -naphthyl)ethylamine	SC61XCS050104	SC61XCS052546	SC61XCS052520
OA-7000	β -cyclodextrin with novel spacer	SC70XCS050104	SC70XCS052546	SC70XCS052520
OA-8000	chiral pseudo 18-crown-6 ether	SC80XCS050104	SC80XCS052546	SC80XCS052520

Standard column dimensions

Guard Column	4.0 mm x 10 mm, 8 mm x 50 mm
Analytical Column	4.6 mm x 250 mm 4.6 mm x 150 mm is also available for OA-8000 4.6 mm x 150 mm (for OA-5000, 6000, 6100) 4.6 mm x 50 mm is also available for OA-5000
Preparative Column	8 mm x 250 mm, 10 mm x 250 mm, 20 mm x 250 mm

For more details



contact your local distributor or

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Fax +49 (0) 2064 / 427-222, e-mail: info@ymc.de, homepage: www.ymc.de