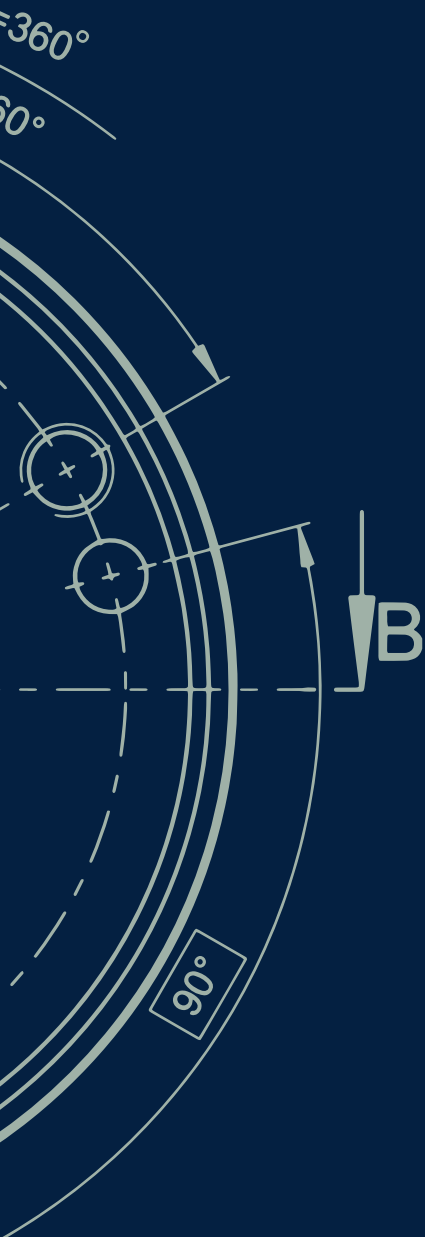


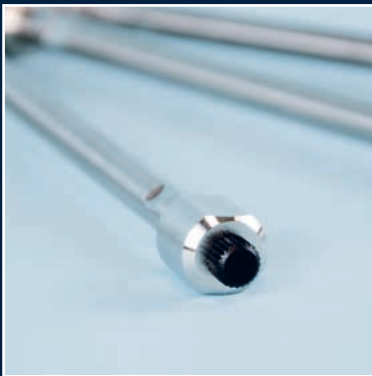
Science with Passion



# Column Selection Guide

2023/2024

for (U)HPLC, Prep. LC, FPLC and GPC



# Welcome to KNAUER



## About KNAUER

Based in Berlin, KNAUER is a medium-sized, owner-managed company that has been serving the sciences since 1962. We develop and manufacture scientific instruments of superior quality for liquid chromatography. The range includes systems and components for analytical HPLC/UHPLC, preparative HPLC, fast protein liquid chromatography (FPLC), multi-column chromatography/simulated moving bed (SMB), gel permeation chromatography/size exclusion chromatography (GPC/SEC), osmometry and Skids for the production of lipid nanoparticles (LNP).

## Sustainability & ecological commitment

We are committed to protect the environment for ourselves and our children. KNAUER contributes to the conservation of a healthy environment by basing our work on an environmental management system according to DIN EN ISO 14001. The KNAUER quality management system according to DIN EN ISO 9001 and EN ISO 13485:2016 makes sure that we continuously manufacture products in the best quality possible. As a family business with about 190 employees, KNAUER focuses on sustainability and takes responsibility for our future.

### Some of our ecological activities:

- The regular creation of an input and output balance for the determination and evaluation of energy and resource flows
- Environmentally friendly product development, energy-efficient production, and shipping with biodegradable packaging materials and re-usable packaging with local suppliers
- Fixed specifications for the development of new products according to ecological aspects such as low solvent consumption, repairability, and longevity of the products
- Complete modernization of the company building included thermal insulation, new windows, electric blinds, and a green rooftop, which resulted in a 50 % heating energy saving
- 100 % green electricity and generation of solar power with our photovoltaic system on the roof
- Guidelines for business travel from an environmental, economic, and social perspective
- Tips and instructions for clients to reduce solvent consumption during instrument use
- Environmentally compatible working and manufacturing of HPLC instruments and accessories, e.g. by using energy-efficient working equipment and reducing the use of solvents and harmful substances
- A life cycle assessment to optimize the manufacturing process and concentrate on electricity saving components

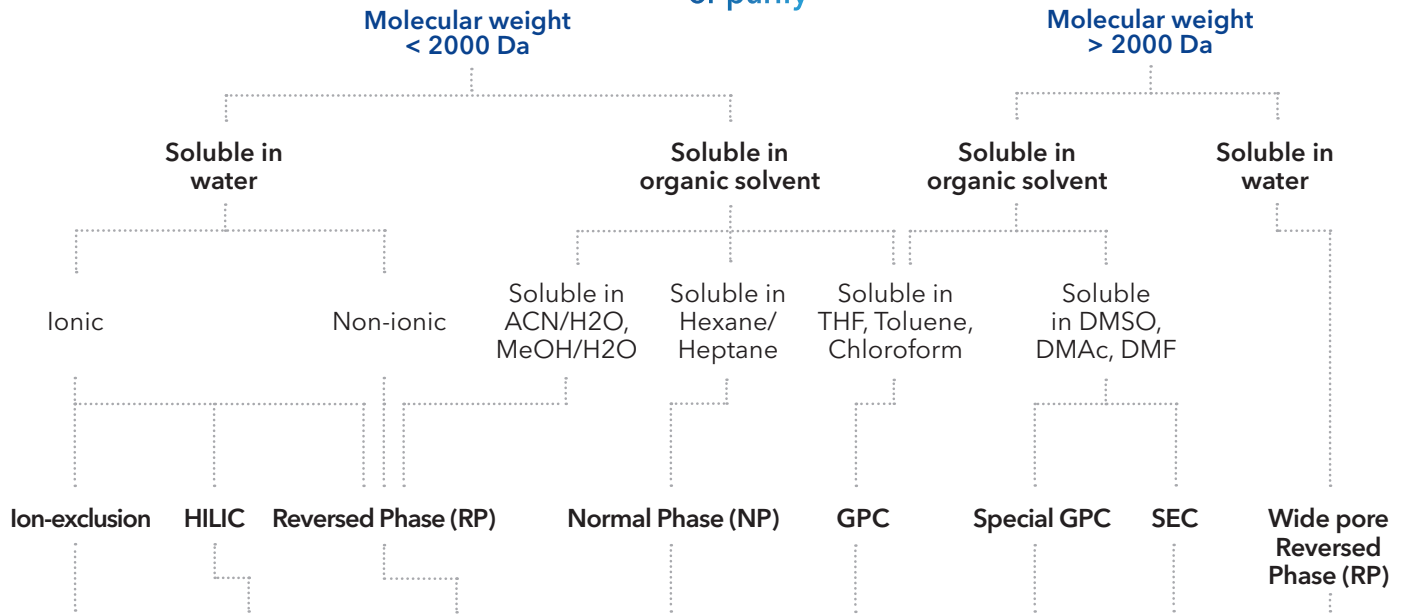
## Sustainability: #KNAUERforFuture

Many KNAUER employees have good ideas for sustainability, and so we all get better together every year. We would like to inspire YOU to implement sustainability in many areas of your company, too. May these short videos keep you entertained and invite you to act! [www.knauer.net/sustainable](http://www.knauer.net/sustainable).

# Non-native conditions

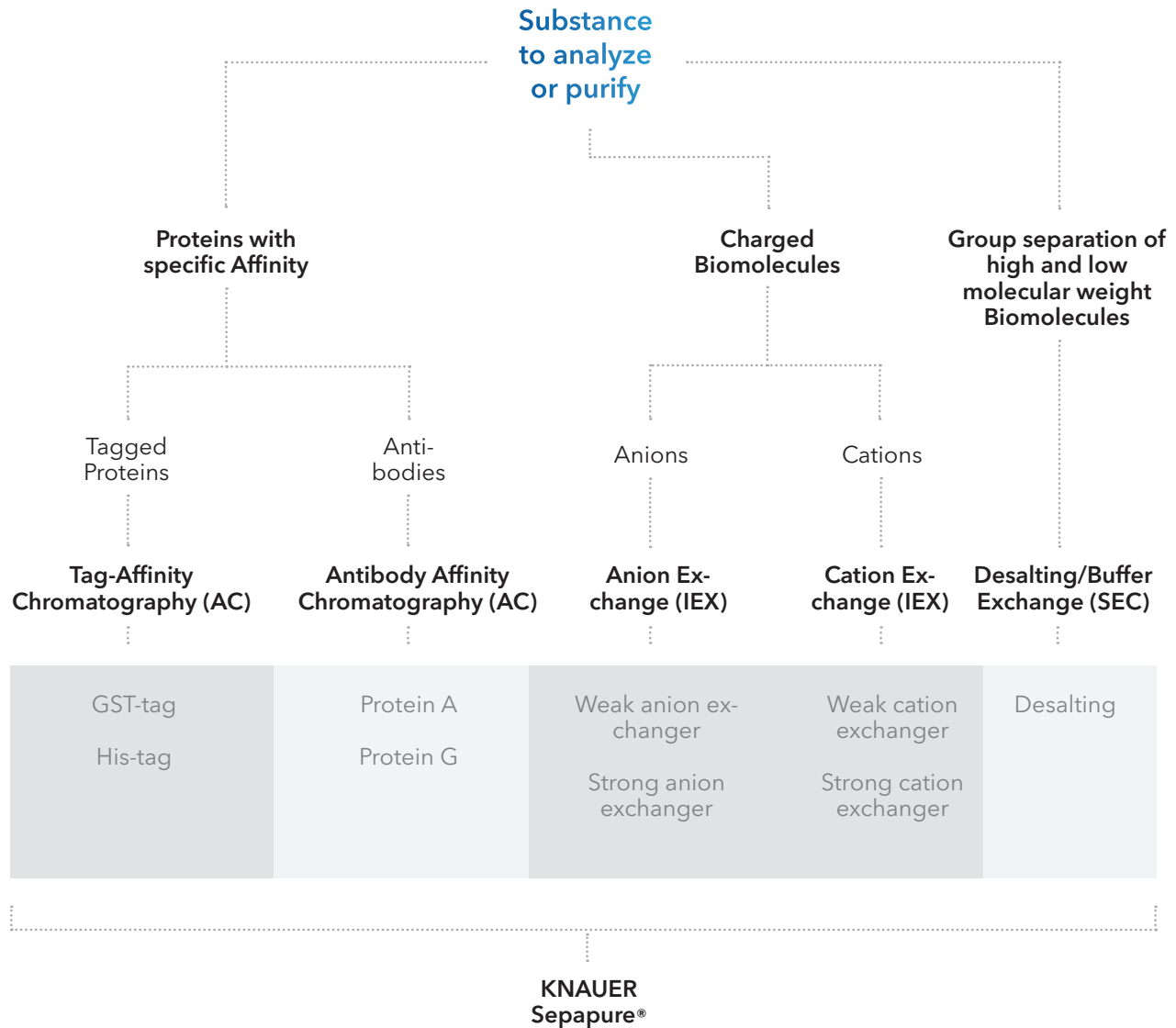


Substance to analyze or purify



H-form (USP L17)	Silica (USP L3)	Classical C18 (USP L1)	Silica (USP L3)	Porous styrene-divinylbenzene	Special GPC polymer material	Hydrophilic polymer material	Wide pore classical C18 (USP L1)
Ca-form (USP L19)	NH2 (USP L8)	Hydrophilic/ aqueous C18 (USP L1)	NH2 (USP L8)				Wide pore C18A hydrophilic/ aqueous (USP L1)
Pb-form (USP L34)	Zwitter-ionic HILIC (USP -)	Hydrophobic/ pH stable C18 (USP L1)	Diol (USP L20)				Wide pore C8 (USP L7)
Na-form (USP -)		Classical C8 (USP L7)	Cyano (USP L10)				Wide pore C4 (USP L26)
		Hydrophilic/ aqueous C8 (USP L7)					
		Hydrophobic/ pH stable C8 (USP L7)					
		C4 (USP L26)					
		CN (USP L10)					
		Phenyl (USP L11)					
<b>Eurokat</b>		<b>KNAUER Eurospher Eurospher II</b>		<b>Applichrom® ABOA StyDiViBe</b>	<b>Applichrom® ABOA DMAc-Phil, DMSO-Phil</b>	<b>Applichrom® ABOA Super-OH</b>	<b>KNAUER Eurosil Bioselect</b>

## Native conditions



### Find more information

Finding the best fitting column for your HPLC/UHPLC, GPC or FPLC application always starts with looking closely at the substances you want to analyse or purify.

This flow chart gives you a guideline how to select the right column for your application. Start at the top and follow the decision lines all the way down to find a column recommendation.

**More details about KNAUER columns and phases can be found in the Column Product Selection Guide and online:**  
[www.knauer.net/columns](http://www.knauer.net/columns)



# Eurospher II Chiral

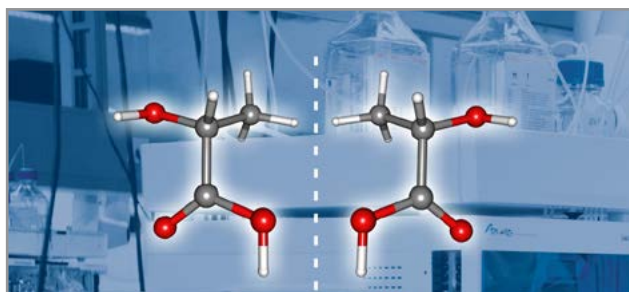
Based on ultra-high purity silica, the Eurospher II chiral column materials are characterized by high enantioselectivity and loadability.

Available in a wide range of dimensions for analytical, preparative and SMB (simulated moving bed) applications, Eurospher II Chiral columns are the perfect choice for even the most challenging enantioseparation tasks

Since chiral separations are not very well predictable, KNAUER offers a chiral screening service for your samples (Article number: AL0220).



**Tip:** Some of the most popular eluents for HPLC (such as acetone, chloroform, DMF, DMSO, MEK, toluene, dioxane, ethyl acetate, methylene chloride, pyridine and THF) which may be remaining in your HPLC system, can destroy Eurospher II Chiral AM and OM phases even in small concentrations! It is highly recommended that the HPLC system is flushed with appropriate eluents before the installation of the chiral column.



## Chiral selectors

Depending on the analytes, three different chiral selectors are available:

Chiral column	HPLC mode	USP code	Description	Chiral selector
Chiral AM	NP	L51	polysaccharide chiral stationary phase	Amylose-tris-(3,5-dimethylphenylcarbamate)
Chiral AM-R	RP	L51	polysaccharide chiral stationary phase	Amylose-tris-(3,5-dimethylphenylcarbamate)
Chiral OM	NP	L40	polysaccharide chiral stationary phase	Cellulose-tris-(3,5-dimethylphenylcarbamate)
Chiral OM-R	RP	L93	polysaccharide chiral stationary phase	Cellulose-tris-(3,5-dimethylphenylcarbamate)
Chiral NR	NP	n/a	immobilized brush-type phase	p-electron donor- and p-electron acceptor groups
Chiral NR-R	RP	n/a	immobilized brush-type phase	p-electron donor- and p-electron acceptor groups

## Characteristics of chiral separations

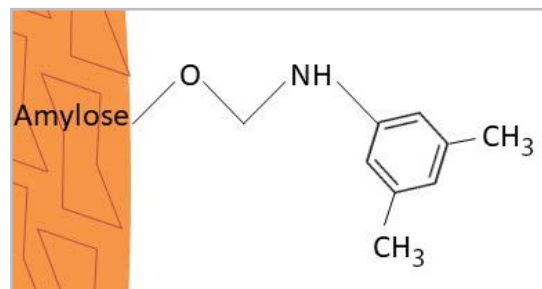
Eurospher II Chiral NR	Eurospher II Chiral OM	Eurospher II Chiral AM
Analytes need an oxygen at or near the chiral center and additionally an aromatic ring	Highly versatile chiral phase	Highest generality of all Eurospher II Chiral phases
Elution more predictable than with Chiral AM and OM phases	Analyte does not need to carry an aromatic ring	Analyte does not need to carry an aromatic ring
Inversion of elution order is possible	No inversion of elution order possible	No inversion of elution order possible
Very high capacity and thus ideally suited for preparative HPLC	Scale up in the preparative HPLC range is possible	Scale up in the preparative HPLC range is possible
Stable in all common HPLC eluents	Caution! Not stable in all HPLC eluents!	Caution! Not stable in all HPLC eluents!

## Eurospher II Chiral AM

- Ultra pure, spherical high performance HPLC phase for enantioseparation of racemates
- Amylose modified silica gel phase with chiral selector

### Properties

Silica gel	ultra pure, > 99.99 %
Metal content	< 10 ppm
Particle size	3 µm, 5 µm, 10 µm
Particle form	spherical
Pore size of base material	1000 Å
Chiral selector	Amylose-tris-(3,5-dimethyl-phenylcarbamate) for Chiral AM

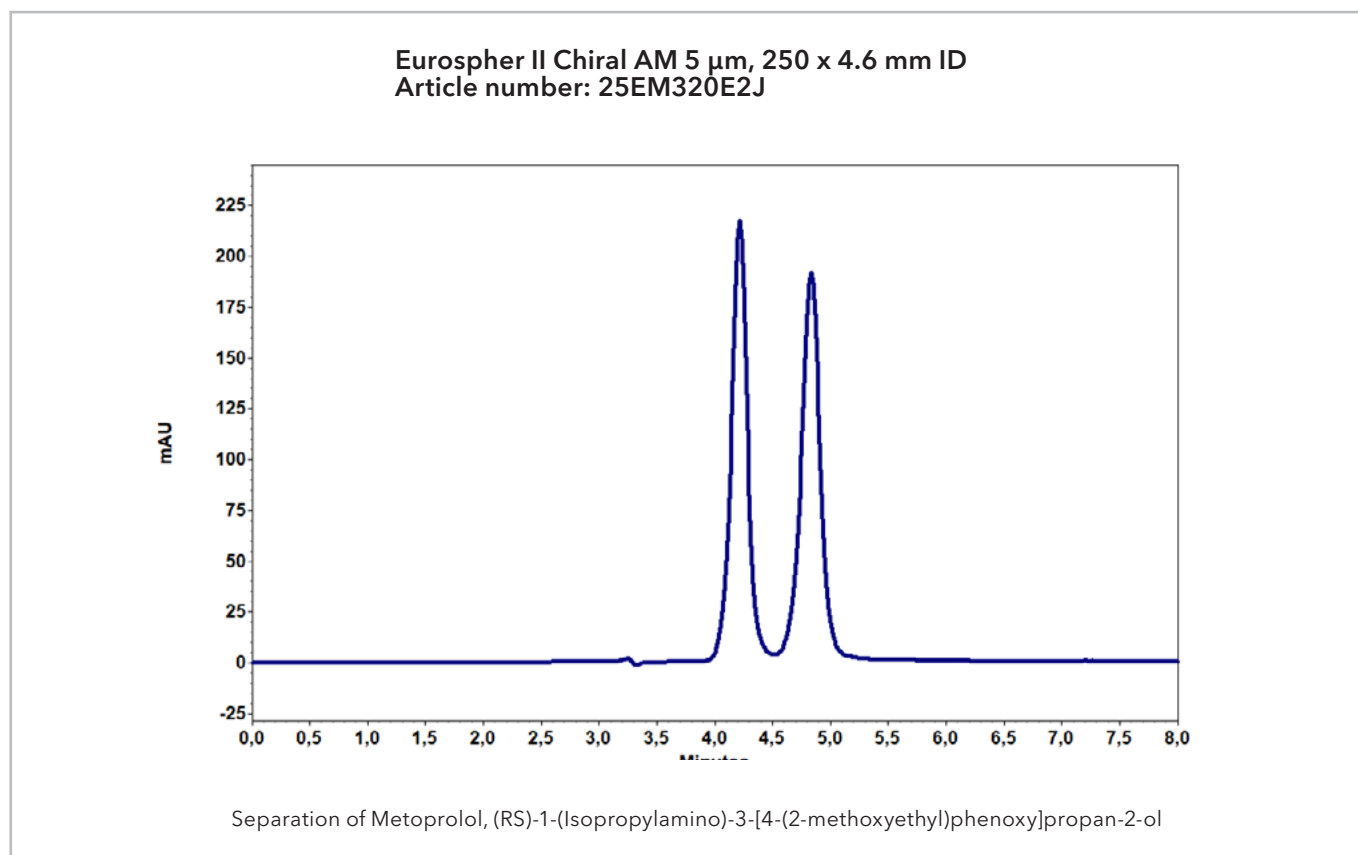


### Key features

KNAUER offers these chiral stationary phases for two different separation modes: Eurospher II Chiral AM is designed for separations in normal phase (NP) mode, Eurospher II Chiral AM-R for separations in reversed phase mode.

### Recommended application areas

Eurospher II Chiral AM columns are able to separate neutral, acidic and basic racemates.



## Ordering information

Upon request we can also provide further information about more possible combinations of material particle size and hardware configurations. Shown here are only the most common combinations.

### Eurospher II Chiral AM analytical columns

Column length & equipment	4 mm ID				4.6 mm ID			
	Order No.	3 µm ...M320E2G	5 µm ...M320E2J	10 µm ...M320E2N	Order No.	3 µm ...M320E2G	5 µm ...M320E2J	10 µm ...M320E2N
250 mm	<b>25D...</b>	25DM320E2G	25DM320E2J	25DM320E2N	<b>25E...</b>	25EM320E2G	25EM320E2J	25EM320E2N
with integrated precolumn	<b>25W...</b>	25WM320E2G	25WM320E2J	25WM320E2N	<b>25V...</b>	25VM320E2G	25VM320E2J	25VM320E2N
150 mm	<b>15D...</b>	15DM320E2G	15DM320E2J	15DM320E2N	<b>15E...</b>	15EM320E2G	15EM320E2J	15EM320E2N
with integrated precolumn	<b>15W...</b>	15WM320E2G	15WM320E2J	15WM320E2N	<b>15V...</b>	15VM320E2G	15VM320E2J	15VM320E2N
100 mm	<b>10D...</b>	10DM320E2G	10DM320E2J	10DM320E2N	<b>10E...</b>	10EM320E2G	10EM320E2J	10EM320E2N
with integrated precolumn	<b>10W...</b>	10WM320E2G	10WM320E2J	10WM320E2N	<b>10V...</b>	10VM320E2G	10VM320E2J	10VM320E2N
50 mm	<b>05D...</b>	05DM320E2G	05DM320E2J	05DM320E2N	<b>05E...</b>	05EM320E2G	05EM320E2J	05EM320E2N
5 mm precolumn cartridge	<b>P6C...</b>	P6CM320E2G	P6CM320E2J	P6CM320E2N	<b>P6E...</b>	P6EM320E2G	P6EM320E2J	P6EM320E2N

### Eurospher II Chiral AM-R analytical columns

Column length & equipment	4 mm ID				4.6 mm ID			
	Order No.	3 µm ...M32RE2G	5 µm ...M32RE2J	10 µm ...M32RE2N	Order No.	3 µm ...M32RE2G	5 µm ...M32RE2J	10 µm ...M32RE2N
250 mm	<b>25D...</b>	25DM32RE2G	25DM32RE2J	25DM32RE2N	<b>25E...</b>	25EM32RE2G	25EM32RE2J	25EM32RE2N
with integrated precolumn	<b>25W...</b>	25WM32RE2G	25WM32RE2J	25WM32RE2N	<b>25V...</b>	25VM32RE2G	25VM32RE2J	25VM32RE2N
150 mm	<b>15D...</b>	15DM32RE2G	15DM32RE2J	15DM32RE2N	<b>15E...</b>	15EM32RE2G	15EM32RE2J	15EM32RE2N
with integrated precolumn	<b>15W...</b>	15WM32RE2G	15WM32RE2J	15WM32RE2N	<b>15V...</b>	15VM32RE2G	15VM32RE2J	15VM32RE2N
100 mm	<b>10D...</b>	10DM32RE2G	10DM32RE2J	10DM32RE2N	<b>10E...</b>	10EM32RE2G	10EM32RE2J	10EM32RE2N
with integrated precolumn	<b>10W...</b>	10WM32RE2G	10WM32RE2J	10WM32RE2N	<b>10V...</b>	10VM32RE2G	10VM32RE2J	10VM32RE2N
50 mm	<b>05D...</b>	05DM32RE2G	05DM32RE2J	05DM32RE2N	<b>05E...</b>	05EM32RE2G	05EM32RE2J	05EM32RE2N
5 mm precolumn cartridge	<b>P6C...</b>	P6CM32RE2G	P6CM32RE2J	P6CM32RE2N	<b>P6E...</b>	P6EM32RE2G	P6EM32RE2J	P6EM32RE2N

### Eurospher II Chiral AM semi-preparative and preparative standard columns

Column length	10 mm ID			20 mm ID			30 mm ID		
	Order No.	5 µm ...M320E2J	10 µm ...M320E2N	Order No.	5 µm ...M320E2J	10 µm ...M320E2N	Order No.	5 µm ...M320E2J	10 µm ...M320E2N
250 mm	<b>25H...</b>	25HM320E2J	25HM320E2N	<b>25J...</b>	25JM320E2J	25JM320E2N	<b>25M...</b>	25MM320E2J	25MM320E2N
150 mm	<b>15H...</b>	15HM320E2J	15HM320E2N	<b>15J...</b>	15JM320E2J	15JM320E2N	<b>15M...</b>	15MM320E2J	15MM320E2N

### Eurospher II Chiral AM-R semi-preparative and preparative standard columns

Column length	10 mm ID			20 mm ID			30 mm ID		
	Order No.	5 µm ...M32RE2J	10 µm ...M32RE2N	Order No.	5 µm ...M32RE2J	10 µm ...M32RE2N	Order No.	5 µm ...M32RE2J	10 µm ...M32RE2N
250 mm	<b>25H...</b>	25HM32RE2J	25HM32RE2N	<b>25J...</b>	25JM32RE2J	25JM32RE2N	<b>25M...</b>	25MM32RE2J	25MM32RE2N
150 mm	<b>15H...</b>	15HM32RE2J	15HM32RE2N	<b>15J...</b>	15JM32RE2J	15JM32RE2N	<b>15M...</b>	15MM32RE2J	15MM32RE2N

## Eurospher II Chiral OM

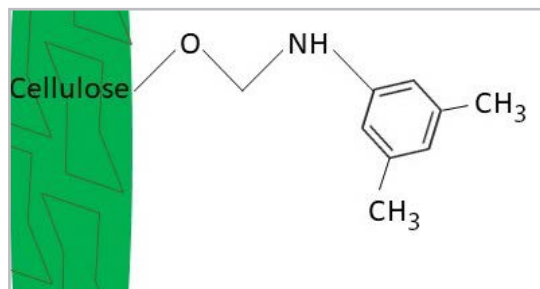
- Ultra pure, spherical high performance HPLC phase for enantioseparation of racemates
- Cellulose modified silica gel phase with chiral selector

### Properties

Eurospher II Chiral OM is equivalent to Daicel's well-known Chiralcel® OD\* phases.

\*) Chiralcel® OD is a brand name of Daicel Corporation.

<b>Silica gel</b>	ultra pure, > 99.99 %
<b>Metal content</b>	< 10 ppm
<b>Particle size</b>	3 µm, 5 µm, 10 µm
<b>Particle form</b>	spherical
<b>Pore size of base material</b>	1000 Å
<b>Chiral selector</b>	Cellulose-tris-(3,5-dimethyl-phenylcarbamate) for Chiral OM

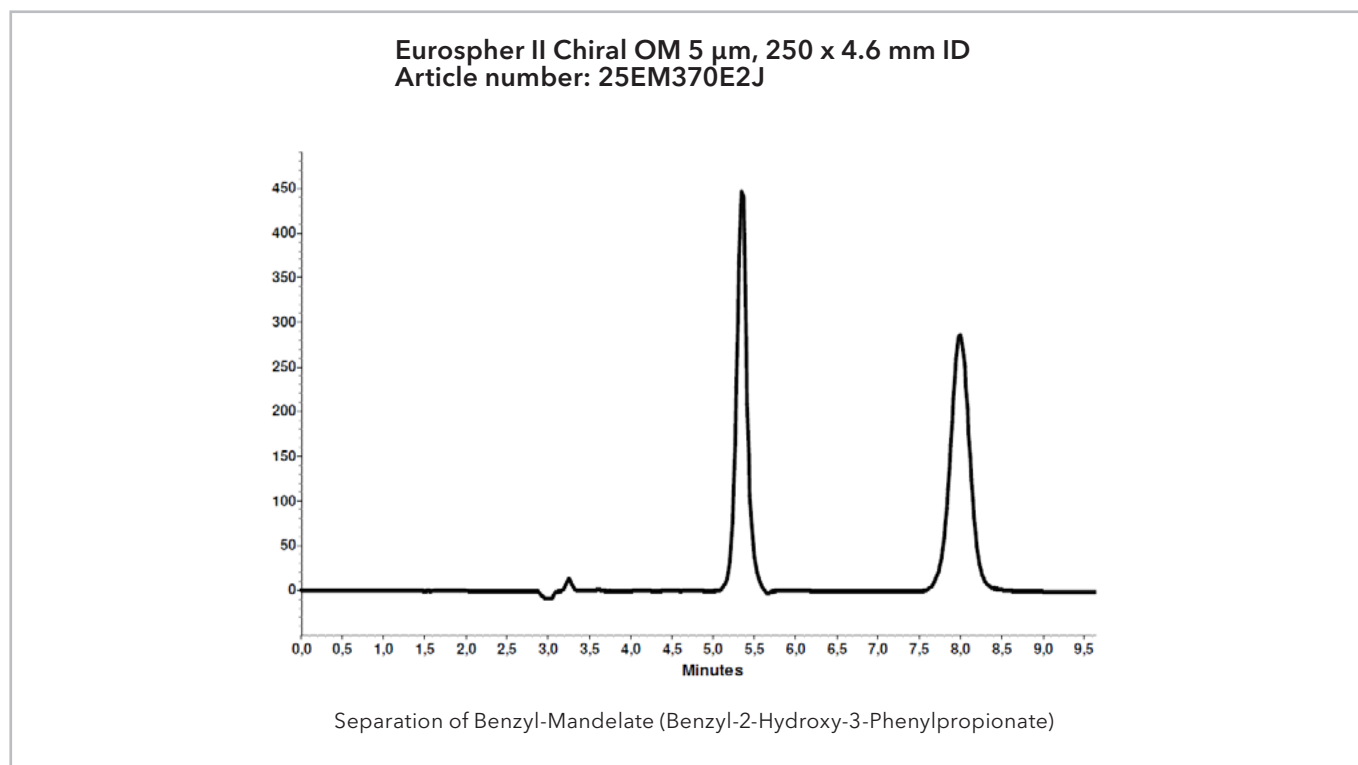


### Key features

KNAUER offers these chiral stationary phases for two different separation modes: Eurospher II Chiral OM is designed for separations in normal phase (NP) mode, Eurospher II Chiral OM-R for separations in reversed phase mode.

### Recommended application areas

Eurospher II Chiral OM columns are able to separate neutral, acidic and basic racemates.



## Ordering information

Upon request we can also provide further information about more possible combinations of material particle size and hardware configurations. Shown here are only the most common combinations.

### Eurospher II Chiral OM analytical columns

Column length & equipment	4 mm ID				4.6 mm ID			
	Order No.	3 µm ...M370E2G	5 µm ...M370E2J	10 µm ...M370E2N	Order No.	3 µm ...M370E2G	5 µm ...M370E2J	10 µm ...M370E2N
250 mm	<b>25D...</b>	25DM370E2G	25DM370E2J	25DM370E2N	<b>25E...</b>	25EM370E2G	25EM370E2J	25EM370E2N
with integrated precolumn	<b>25W...</b>	25WM370E2G	25WM370E2J	25WM370E2N	<b>25V...</b>	25VM370E2G	25VM370E2J	25VM370E2N
150 mm	<b>15D...</b>	15DM370E2G	15DM370E2J	15DM370E2N	<b>15E...</b>	15EM370E2G	15EM370E2J	15EM370E2N
with integrated precolumn	<b>15W...</b>	15WM370E2G	15WM370E2J	15WM370E2N	<b>15V...</b>	15VM370E2G	15VM370E2J	15VM370E2N
100 mm	<b>10D...</b>	10DM370E2G	10DM370E2J	10DM370E2N	<b>10E...</b>	10EM370E2G	10EM370E2J	10EM370E2N
with integrated precolumn	<b>10W...</b>	10WM370E2G	10WM370E2J	10WM370E2N	<b>10V...</b>	10VM370E2G	10VM370E2J	10VM370E2N
50 mm	<b>05D...</b>	05DM370E2G	05DM370E2J	05DM370E2N	<b>05E...</b>	05EM370E2G	05EM370E2J	05EM370E2N
5 mm precolumn cartridge	<b>P6C...</b>	P6CM370E2G	P6CM370E2J	P6CM370E2N	<b>P6E...</b>	P6EM370E2G	P6EM370E2J	P6EM370E2N

### Eurospher II Chiral OM-R analytical columns

Column length & equipment	4 mm ID				4.6 mm ID			
	Order No.	3 µm ...M37RE2G	5 µm ...M37RE2J	10 µm ...M37RE2N	Order No.	3 µm ...M37RE2G	5 µm ...M37RE2J	10 µm ...M37RE2N
250 mm	<b>25D...</b>	25DM37RE2G	25DM37RE2J	25DM37RE2N	<b>25E...</b>	25EM37RE2G	25EM37RE2J	25EM37RE2N
with integrated precolumn	<b>25W...</b>	25WM37RE2G	25WM37RE2J	25WM37RE2N	<b>25V...</b>	25VM37RE2G	25VM37RE2J	25VM37RE2N
150 mm	<b>15D...</b>	15DM37RE2G	15DM37RE2J	15DM37RE2N	<b>15E...</b>	15EM37RE2G	15EM37RE2J	15EM37RE2N
with integrated precolumn	<b>15W...</b>	15WM37RE2G	15WM37RE2J	15WM37RE2N	<b>15V...</b>	15VM37RE2G	15VM37RE2J	15VM37RE2N
100 mm	<b>10D...</b>	10DM37RE2G	10DM37RE2J	10DM37RE2N	<b>10E...</b>	10EM37RE2G	10EM37RE2J	10EM37RE2N
with integrated precolumn	<b>10W...</b>	10WM37RE2G	10WM37RE2J	10WM37RE2N	<b>10V...</b>	10VM37RE2G	10VM37RE2J	10VM37RE2N
50 mm	<b>05D...</b>	05DM37RE2G	05DM37RE2J	05DM37RE2N	<b>05E...</b>	05EM37RE2G	05EM37RE2J	05EM37RE2N
5 mm precolumn cartridge	<b>P6C...</b>	P6CM37RE2G	P6CM37RE2J	P6CM37RE2N	<b>P6E...</b>	P6EM37RE2G	P6EM37RE2J	P6EM37RE2N

### Eurospher II Chiral OM semi-preparative and preparative standard columns

Column length	10 mm ID			20 mm ID			30 mm ID		
	Order No.	5 µm ...M370E2J	10 µm ...M370E2N	Order No.	5 µm ...M370E2J	10 µm ...M370E2N	Order No.	5 µm ...M370E2J	10 µm ...M370E2N
250 mm	<b>25H...</b>	25HM370E2J	25HM370E2N	<b>25J...</b>	25JM370E2J	25JM370E2N	<b>25M...</b>	25MM370E2J	25MM370E2N
150 mm	<b>15H...</b>	15HM370E2J	15HM370E2N	<b>15J...</b>	15JM370E2J	15JM370E2N	<b>15M...</b>	15MM370E2J	15MM370E2N

### Eurospher II Chiral OM-R semi-preparative and preparative standard columns

Column length	10 mm ID			20 mm ID			30 mm ID		
	Order No.	5 µm ...M37RE2J	10 µm ...M37RE2N	Order No.	5 µm ...M37RE2J	10 µm ...M37RE2N	Order No.	5 µm ...M37RE2J	10 µm ...M37RE2N
250 mm	<b>25H...</b>	25HM37RE2J	25HM37RE2N	<b>25J...</b>	25JM37RE2J	25JM37RE2N	<b>25M...</b>	25MM37RE2J	25MM37RE2N
150 mm	<b>15H...</b>	15HM37RE2J	15HM37RE2N	<b>15J...</b>	15JM37RE2J	15JM37RE2N	<b>15M...</b>	15MM37RE2J	15MM37RE2N

## Eurospher II Chiral NR

- Ultra pure, spherical high performance HPLC phase for enantioseparation of racemates
- Amylose modified silica gel phase with chiral selector

### Properties

Silica gel	ultra pure, > 99.99 %
Metal content	< 10 ppm
Particle size	Eurospher II Chiral NR: 3 µm, 5 µm, 8 µm, 12 µm Eurospher II Chiral NR-R: 8 µm, 12 µm
Particle form	spherical
Pore size of base material	1000 Å

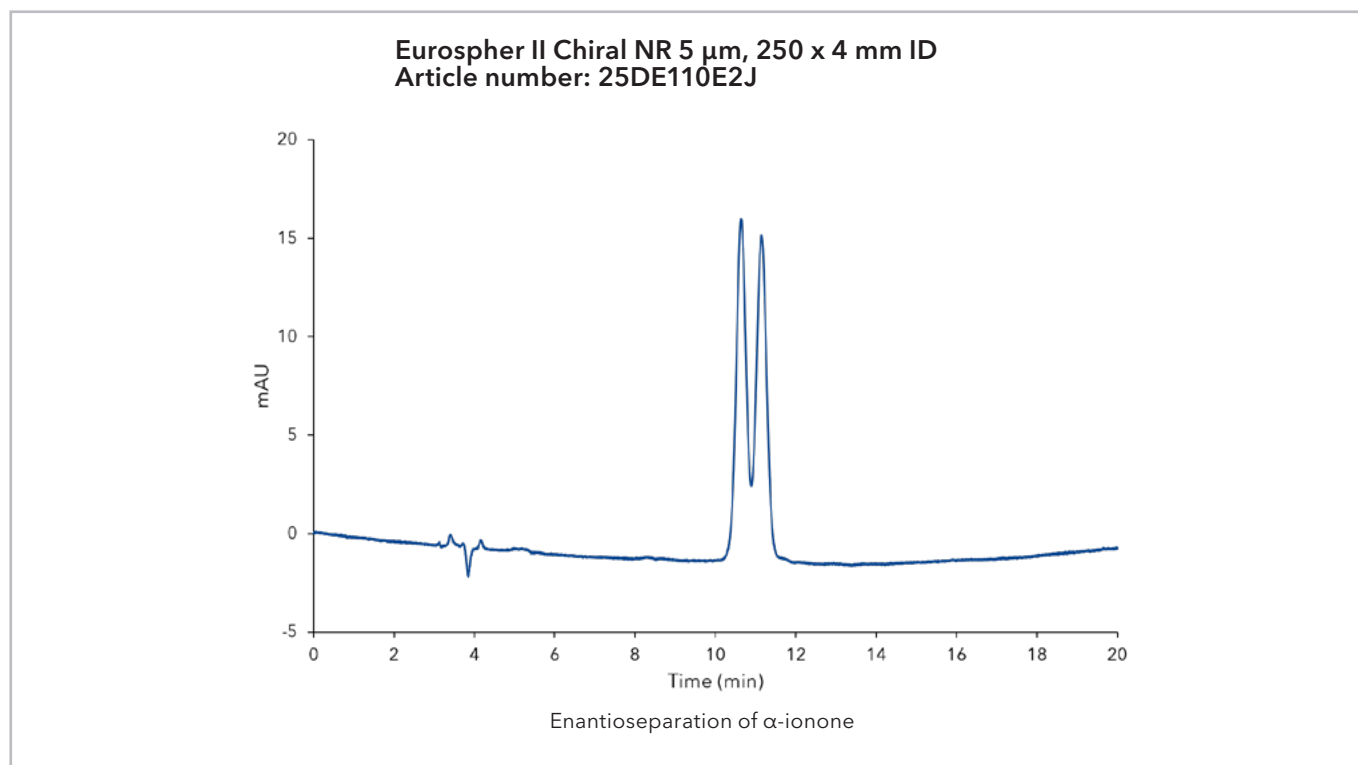
### Key features

Eurospher II Chiral NR is an immobilized brush-type phase with very broad generality and complementary selectivity to Eurospher II Chiral AM and OM. In many cases it is similar to Eurospher II Chiral AM or Chiral OM, but much more stable. The Chiral NR selector is covalently bound, so that you can use all HPLC eluents.

Due to its high loadability it is perfectly suited for preparative separations. Both phases can be used in RP and NP mode. Eurospher II Chiral-NR-R shows reversed elution order compared to Eurospher II Chiral-NR caused by the modification with the opposite enantiomeric form of the chiral selector.

### Recommended application areas

Eurospher II Chiral NR columns are able to separate analytes with an oxygen at or near the chiral center and additionally an aromatic ring.



# Get in touch

## Sales

If you want to learn more about our products and services or get a quote, the experts from our sales team are happy to assist you with your request.

Phone: +49 30 809727-0 (workdays 9-17h CET)

Fax: +49 30 8015010

E-mail: [sales@knauer.net](mailto:sales@knauer.net)

## Support

Do you have questions about the installation or the operation of your device or software?

### International Support:

Contact your local KNAUER partner for support:

[www.knauer.net/en/Support/Distributors-worldwide](http://www.knauer.net/en/Support/Distributors-worldwide)

Phone: +49 30 809727-111 (workdays 9-17h CET)

Fax: +49 30 8015010

E-mail: [support@knauer.net](mailto:support@knauer.net)



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