KNAUER

Euroline

► Eurospher II

Eurospher II – the logical choice

After more than 20 years on the market, our Eurospher stationary phase has established a reputation for being a first-class packing material for a wide field of applications. Our next generation Eurospher II has been developed for an even wider range of application areas. Based on an ultra pure spherical silica gel, Eurospher II is a high performance column material for analytical, semi-preparative and process-scale applications. Eurospher II features very narrow particle and pore size distributions, as well as outstanding mechanical stability. Eurospher II silica gel is perfectly suited to take on routine analyses as well as the most ambitious chromatography tasks.

Physical properties of Eurospher II silica gel:

Silica gel:	ultra pure, > 99.99 %
Metal content:	< 10 ppm
Particle size:	3 µm, 5 µm, 10 µm, (15 µm, 20–45 µm upon request)
Particle shape:	spherical
Pore size:	100 Å
Specific surface:	320 ± 20 m^2/g
Pore volume:	0.8 ml/g
Density:	430 g/l

Eurospher II offers outstanding mechanical and chemical stability. With physical properties very similar to those of Kromasil 100, Eurospher II columns can be used to replace Kromasil® columns, providing excellent peak symmetry for acids, bases, and neutrals.

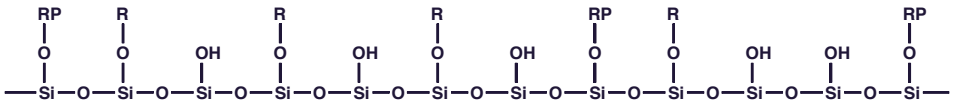
Eurospher II is comparable with Kromasil® and even outperforms it in some respects:

- nearly the same particle shape as Kromasil 100
- Eurospher II has a lower metal impurity specification
- higher mechanical stability compared to Kromasil 100
- comparable selectivity in RP mode of Eurospher II C18 H and Kromasil 100 C18

Modifications

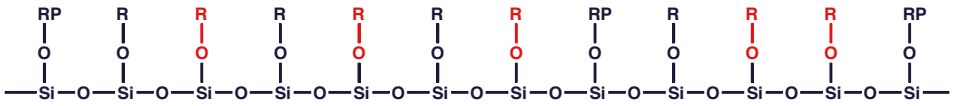
With the wide range of different surface modifications available, all application fields in reversed phase and normal phase modes are covered. Every Eurospher II modification offers high chemical stability and loading capacity thanks to mono- and multi-functional silanes. With several different levels of endcapping, Eurospher II offers a wide variety of surface modification types for analytical as well as preparative columns. Our long experience and knowledge in producing HPLC columns ensures the highest reproducibility.

Standard liquid endcapping (~50%)



RP: C_8 or C_{18} chain

High efficiency endcapping (~99%)

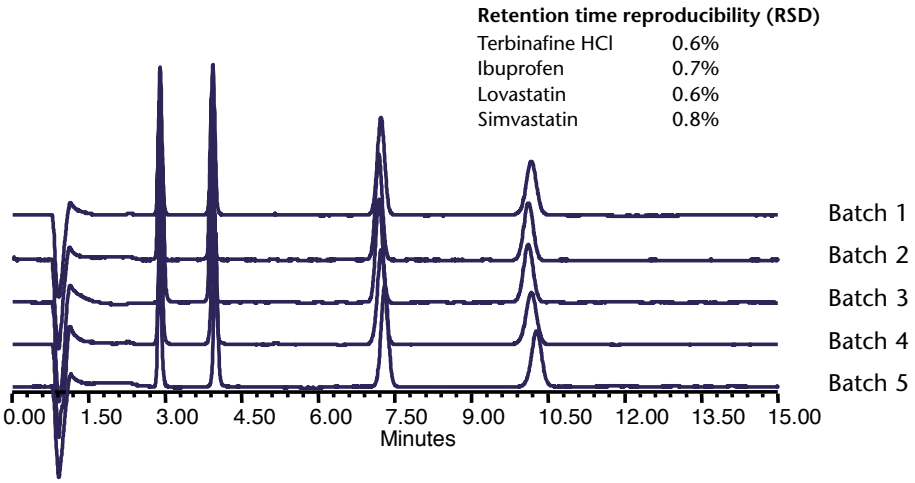


In summary four different Eurospher II C18 types are now available. Eurospher II reversed phase columns are up to the challenge by delivering outstanding selectivity of positional isomers, steric isomers, and polar compounds.

Modification	USP code	% carbon	pH range
C18	L1	16% (~ 50% endcapping)	2–8
C18 H	L1	17% (> 99% endcapping)	1–12
C18 P	L1	20% (~ 99% endcapping)	1–12
C18 A	L1	10% (~ 50% hydrophilic endc.)	2–8
Phenyl	L11	12 (~ 50% endcapping)	2–8
C8	L7	10% (~ 50% endcapping)	2–8
C8 A	L7	8% (> 50% endcapping)	2–8
C4	L26	7% (~ 50% endcapping)	2–8
HILIC	–	7% (no endcapping)	2–8
NH_2	L8	4% (no endcapping)	2–8
CN	L10	7% (no endcapping)	2–8
Diol	L20	5% (no endcapping)	2–8
Si	L3	0% (no endcapping)	2–8

Whether your application requires high pH or low pH conditions, Eurospher II C18 H and C18 P columns perform equally well.

Exellent batch-to-batch reproducibility Eurospher II 100-5 C18 H



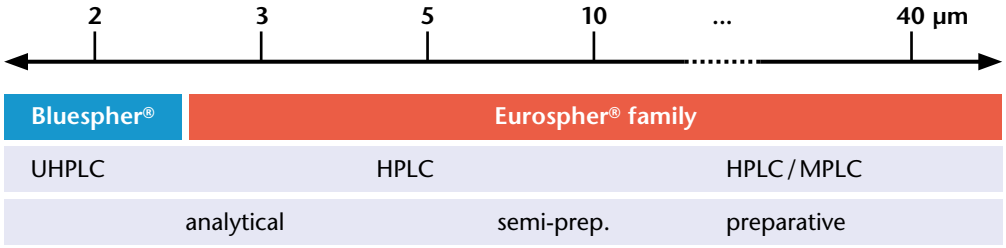
Applications

The choice of the appropriate column for a particular application can be a daunting task. With a range of bonded phases offering different selectivity, the Eurospher II family includes columns to meet most separation needs. The chart below will help you to choose the best Eurospher II column for a particular application.

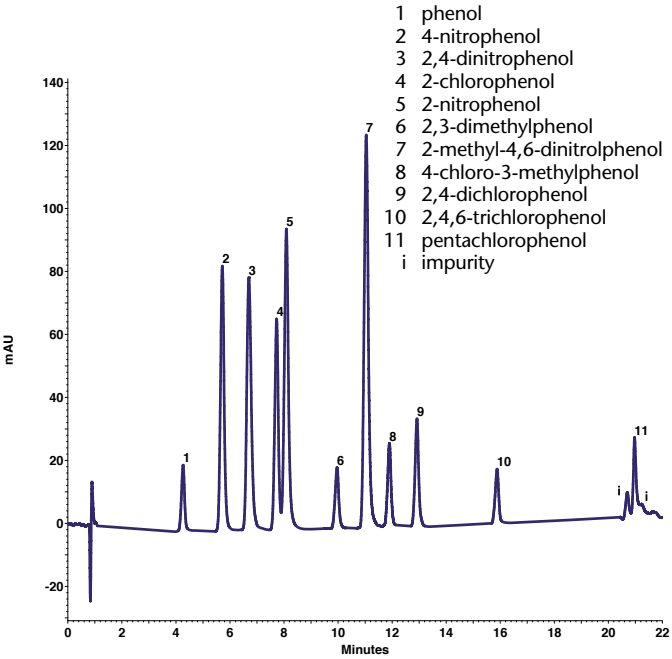
Phase type	non polar	polar	acidic	basic	Chelator	hydroph. retention	shape selectivity	extreme aqueous	pH > 9	LC-MS
C18										
C18 H										
C18 P										
C18 A										
Phenyl										
C8										
C8 A										
C4										
HILIC										
NH_2										
CN										
Diol										
Si										

excellent good suitable not recommended

Comparable selectivities from 2 µm to 45 µm: The Eurospher and Bluespher column families

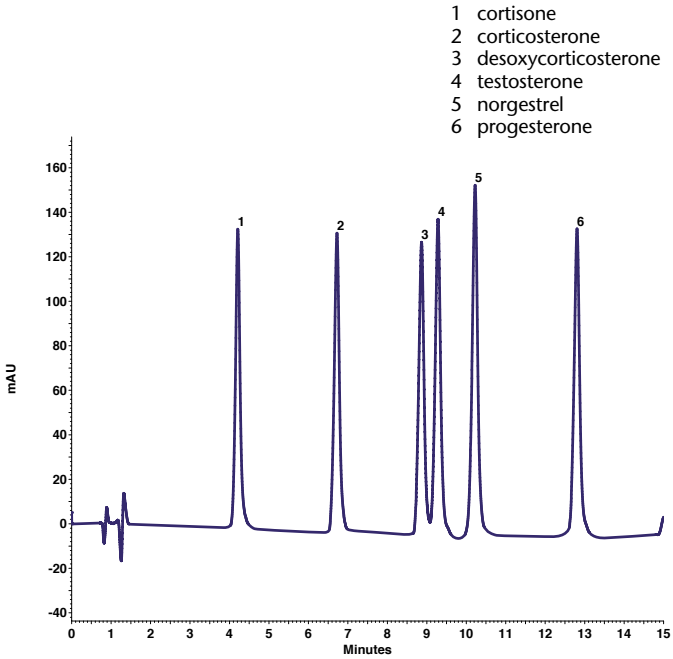


Phenols: Eurospher II C18 P



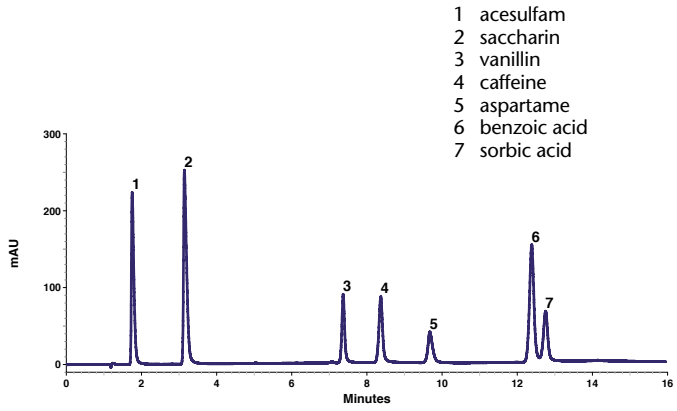
Column:	Eurospher II 100-3 C18 P 100 x 3 mm
Mobile phase:	A: water (+ 0.1 % formic acid) B: methanol (+ 0.1 % formic acid)
Gradient:	0–20 min 30 %–90 % B; 5 min hold
Flow rate:	0.5 ml/min
Temperature:	40 °C
Detection:	UV 280 nm
Inj. volume:	1 µl

Steroids: Eurospher II C18 P



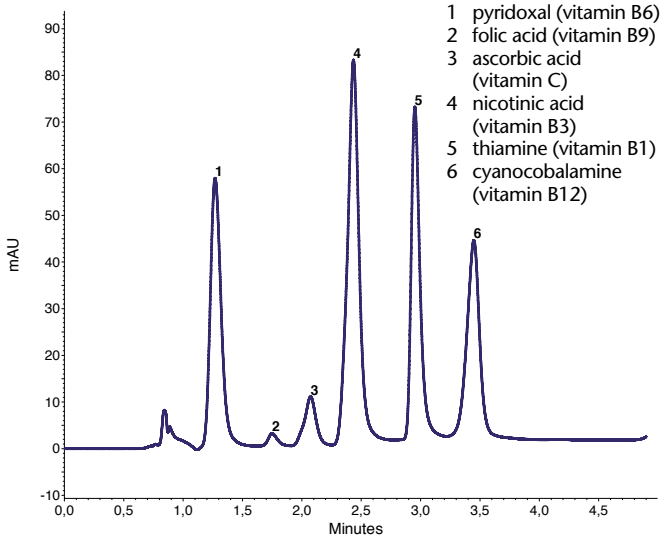
Column:	Eurospher II 100-3 C18 P 100 x 3 mm
Mobile phase:	A: water (+ 0.1 % formic acid) B: methanol (+ 0.1 % formic acid)
Gradient:	0–20 min 50 %–95 % B; 5 min hold
Flow rate:	0.5 ml/min
Temperature:	40 °C
Detection:	UV 240 nm
Inj. volume:	1 µl

Additives: Eurospher II C18



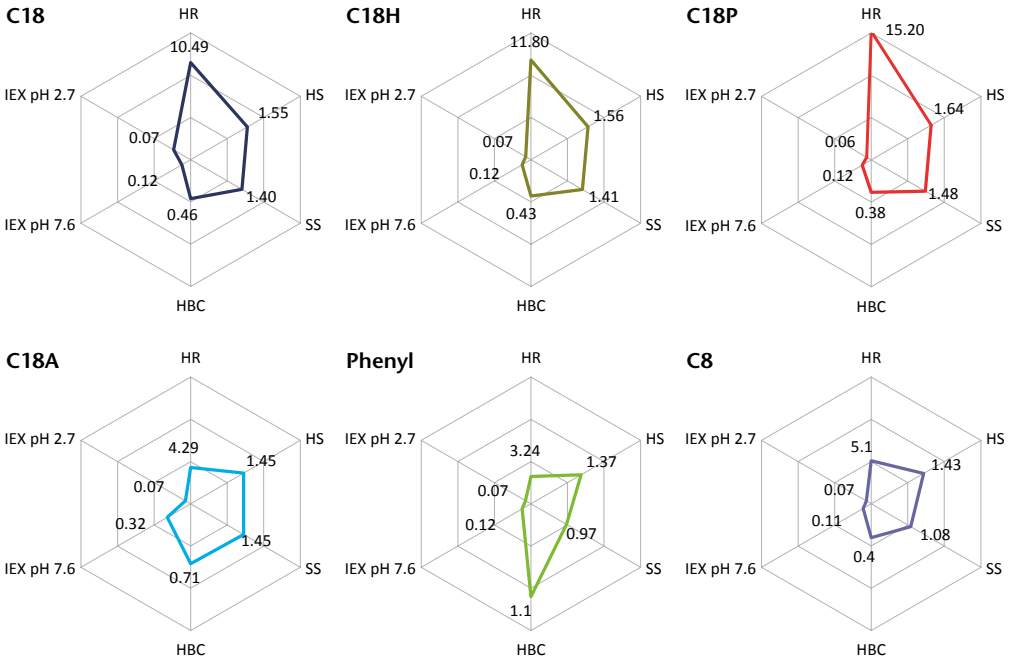
Column:	Eurospher II 100-3 C18 100 x 3 mm
Mobile phase:	A: 20 mM KH_2PO_4; pH 3 B: methanol
Gradient:	0–6 min 10 %–25 % B 6–8 min 25 % B 8–12 min 25 %–40 % B 12–16 min 40 % B 16–18 min 40 %–10 % B
Flow rate:	0.6 ml/min
Temperature:	45 °C
Detection:	UV 220 nm
Inj. volume:	2 µl

Water soluble Vitamins: Eurospher II HILIC



Column:	Eurospher II 100-5 HILIC 150 x 3 mm		
Mobile phase:	A: 25 mM NH_4-acetate pH 4 B: Acetonitrile		
Gradient:	0–0.7 min 20 % A; 0.7–1.4 min 20–30 % A; 1.4–5.0 min 20 % A		
Flow rate:	1.0 ml/min	Temperature:	25 °C
Detection:	UV 254 nm	Inj. volume:	10 µl

A range of selectivities to fit your application



Selectivity plots for phases are based on Tanaka tests:
HR: hydrophobic retention | HS: hydrophobic selectivity | SS: steric selectivity | HBC: hydrogen bonding capacity
IEX pH 7.6: ion exchange capacity at pH 7.6 | IEX pH 2.7: ion exchange capacity at pH 2.7

Modification type	Application areas	Separation mechanism
C18	for acidic, basic and neutral analytes in reversed phase mode (sulphonamides; anabolic steroids; anti-psychotics; beta blocker; Sudan dyes; phenols, preservatives etc.)	hydrophobic interaction
C18 H	recommended alternative for Kromasil 100 C18 columns; for acidic, basic and neutral analytes in reversed phase mode with extended pH range	hydrophobic interaction
C18 P	alternative selectivity to C18 phase; stationary phase in Eurospher II C18 family with the highest carbon load; fully endcapped; excellent shape selectivity and pH stability	hydrophobic and steric interaction
C18 A	polar endcapped C18 phase for alternative selectivity; 100 % aqueous applications with very polar compounds (basic pharmaceutical ingredients, water soluble vitamins, catecholamines as well as organic acids)	hydrophobic and polar interaction
Phenyl	alternative selectivity for aromatic and mode rately polar analytes or mixtures with varying polarity and aromaticity	pi-pi interaction with aromatics
C8	similar selectivity to C18 phase but less retention due to the lower hydrophobicity; useful for determination of water soluble vitamins, steroids, catecholamines, sedatives etc.	reduced hydrophobic interaction comparing to C18 phase
C8 A	alternative selectivity to C8 with stronger interactions for polar compounds; 100 % aqueous applications with very polar compounds	hydrophilic and weak electrostatic interaction
C4	universal packing material for different application areas; can also be used in HIC mode (Hydrophobic Interaction Chromatography)	hydrophobic and hydrophilic interaction
HILIC	especially suited for the separation of hydrophilic, polar and ionic analytes which are only poorly retained on reversed phase columns; behavior is the other way round on Eurospher II HILIC compared to RP which makes it an ideal tool to enhance chromatographic separations for these molecules	hydrophilic and weak electrostatic interaction
NH_2	most flexible phase in the Eurospher II family; can be used in three modes: normal phase, reversed phase and ion chromatography mode (weak anion exchanger); different selectivity to the silica packing; in reversed phase mode mainly used for analysis of carbohydrates	hydrophilic and ionic interaction
CN	for a wide range of application in normal pase mode as well as reversed phase mode (steroids, carbohydrates polar compounds)	hydrophobic and hydrophilic interaction
Diol	alternative to the silica packing with shorter equilibration time and comparable selectivity; due to the lower activity of these packings it can be also used for SEC-applications	hydrophilic interaction
Si	wide range of different applications, i.e. SEC (size exclusion chromatography) but also for normal phase HPLC; good choice for analytical and preparative purposes to separate polar compounds	hydrophilic interaction

Column hardware

We design and manufacture HPLC column hardware ranging from 2 mm ID to 50 mm ID under strict quality control. A specially treated inner surface ensures consistent column packing and high column stability. A wide range of column lengths from 5 mm up to 300 mm are available. An easily exchangeable integrated precolumn for analytical columns is available upon request.

Ordering information

▶ **The last 7 digits** of the Order No. comprise the stationary phase.

Eurospher II packing material	3 µm	5 µm	10 µm	15 µm	20–45 µm
	Recommended for analytical columns			Recommended for preparative columns	
C18	...E181E2G	...E181E2J	...E181E2N	...E181E2Q	...E181E2X
C18 H	...E185E2G	...E185E2J	...E185E2N	...E185E2Q	...E185E2X
C18 P	...E182E2G	...E182E2J	...E182E2N	...E182E2Q	...E182E2X
C18 A	...E184E2G	...E184E2J	...E184E2N	...E184E2Q	...E184E2X
Phenyl	...E050E2G	...E050E2J	...E050E2N	...E050E2Q	...E050E2X
C8	...E081E2G	...E081E2J	...E081E2N	...E081E2Q	...E081E2X
C8 A	...E084E2G	...E084E2J	...E084E2N	...E084E2Q	...E084E2X
C4	...E041E2G	...E041E2J	...E041E2N	...E041E2Q	...E041E2X
HILIC	...E120E2G	...E120E2J	...E120E2N	call	call
NH_2	...E190E2G	...E190E2J	...E190E2N	...E190E2Q	...E190E2X
CN	...E200E2G	...E200E2J	...E200E2N	...E200E2Q	...E200E2X
Diol	...E410E2G	...E410E2J	...E410E2N	...E410E2Q	...E410E2X
Si	...E000E2G	...E000E2J	...E000E2N	...E000E2Q	...E000E2X

For 2 µm columns with comparable selectivities: www.knauer.net/bluespher

▶ **The first 3 digits** of the Order No. comprise the column dimensions.

Analytical and semipreparative columns ID	2 mm	3 mm	4 mm	4.6 mm	8 mm	16 mm
5 mm (precolumn)	P5B...	P5C...	P5D...	P5D...	n.a.	n.a.
30 mm length	03B...	03C...	03D...	03E...	03G...	03I...
50 mm length	05B...	05C...	05D...	05E...	05G...	05I...
100 mm length	10B...	10C...	10D...	10E...	n.a.	n.a.
125 mm length	12B...	12C...	12D...	12E...	12G...	12I...
150 mm length	15B...	15C...	15D...	15E...	n.a.	n.a.
250 mm length	25B...	25C...	25D...	25E...	25G...	25I...
300 mm length	n.a.	n.a.	30D...	n.a.	30G...	n.a.

Preparative columns ID	20 mm	30 mm	50 mm
	With axial compression		
30 mm (precolumn)	03P...		03R...
150 mm length	15P...	15Q...	15R...
250 mm length	25P...	25Q...	25R...

All analytical column types from 2 mm ID up to 4.6 mm ID are available with integrated pre-columns.

Kromasil is a brand name of EKA Chemicals AB.

www.knauer.net/eurospherii

Technical data are subject to change without notice.

Visit www.knauer.net for details on complete HPLC systems, HPLC columns, and osmometers.

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