



HICHROM

Chromatography Columns and Supplies

LC COLUMNS Kromasil Eternity

Catalogue 9

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Kromasil® Eternity™

- Proprietary organic/inorganic layer
- pH stable from 1 to 12
- 2.5µm and 5µm particle sizes
- Long column lifetime

Kromasil® Eternity™ is Akzo Nobel's latest innovation for separation and purification of compounds under reversed-phase HPLC and UHPLC, with an extended operating pH range of 1 to 12 (C18) or 2 to 12 (PhenylHexyl).

Kromasil Eternity Phases

Phase	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	Endcapping	pH Range
C18	2.5, 5	100	330	14	proprietary	1 - 12
PhenylHexyl	2.5, 5	100	330	12	proprietary	2 - 12

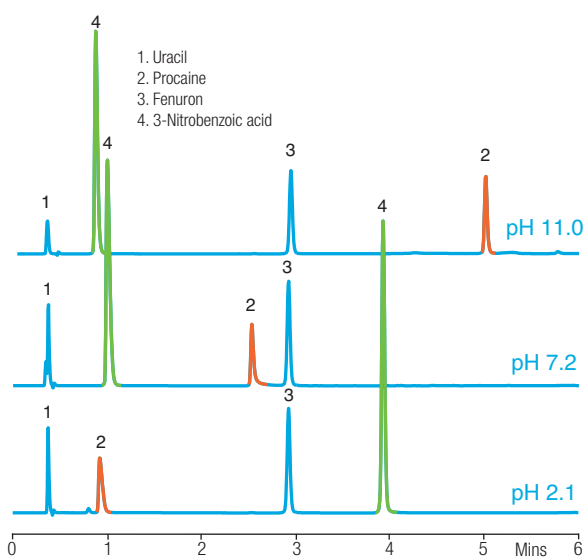
Kromasil Eternity is based on a proprietary grafting technology, whereby the 100Å bare silica is modified by bonding with an organosilane layer. Under specific proprietary conditions, the organosilane layer penetrates the silica, which results in a merged organic/inorganic interfacial gradient. The pores are virtually returned to their original size resulting in a surface presenting both inorganic (-OH) and organic (-R) silicic acid moieties. It is this process step which gives Kromasil Eternity its extreme chemical stability, extending the pH range and column lifetime. This modified silica is then functionalised with monofunctional C18 or PhenylHexyl, followed by a proprietary endcapping process.

pH Variation in Method Development

The wide pH range offered by Kromasil Eternity enables greater selectivity flexibility when analysing ionisable compounds. Even under harsh pH conditions, Kromasil Eternity columns show long lifetimes. The test mixture used in Figure 7 contains a neutral, an acidic and a basic compound. Under alkaline conditions, the basic procaine is retained more than 3-nitrobenzoic acid. At pH 2.1, 3-nitrobenzoic acid is retained more than the other compounds. These changes in relative retention provide useful method development options.

Scale-up and Scale-down

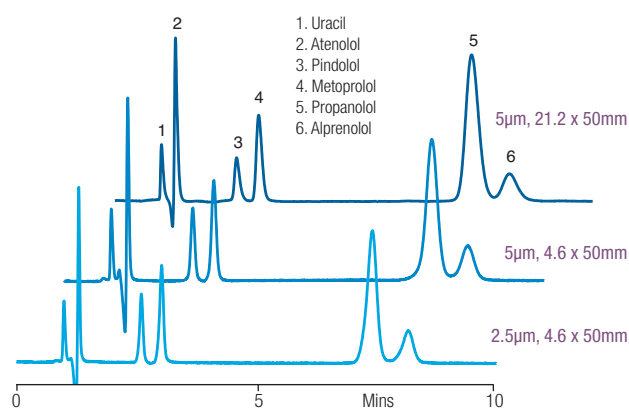
Kromasil Eternity C18 and PhenylHexyl are available as 2.5 and 5µm particle sizes. These cover a wide range of applications, including classical analytical HPLC using 5µm in 250mm length columns and rapid HPLC using 2.5µm in 50mm length columns under both HPLC and UHPLC conditions. Kromasil Eternity is also a good choice for semi-preparative applications, due to its high efficiency and chemical stability. Figure 8 shows how easily a separation can be scaled down from 5µm to 2.5µm or scaled up to 21.2mm i.d. columns. Identical retention times are obtained despite the different particle sizes and column dimensions.



Test conditions

Column: Kromasil Eternity C18 (2.5µm, 50 x 4.6mm)
 Eluent: A: CH₃CN B: 20mM sodium phosphate, pH as shown
 Gradient: 0 – 0.5min: 10% A, 5.5min: 50% A
 Flow rate: 1.5ml/min
 Temperature: 25°C
 Detection: UV, 254nm

Figure 7. pH variation to control selectivity



Test conditions

Column: Kromasil Eternity C18 (dimensions as shown)
 Eluent: CH₃CN – 50mM triethylamine acetate, pH 11 (40:60)
 Flow rate: 0.43ml/min and 9.0ml/min for 4.6 and 21.2mm i.d. columns respectively
 Linear flow rate: 2.55cm/min
 Temperature: 20°C
 Detection: UV, 230nm

Figure 8. Scale-up or scale-down

Kromasil® Eternity™ (continued)

Preparative HPLC

Methods developed on Kromasil® Eternity™ can easily be scaled up for preparative HPLC, at both acidic and basic pH. Figure 9(a) shows the analytical separation of capsaicin and dihydrocapsaicin on a 50 x 2.1mm Kromasil Eternity PhenylHexyl column. Figure 9(b) shows the separation with increased loading, on a 250 x 4.6mm column, whereas Figure 9(c) shows the scale-up of flow rate and sample load on to a 250 x 21.2mm preparative column. A 100% pure fraction of capsaicin was obtained.

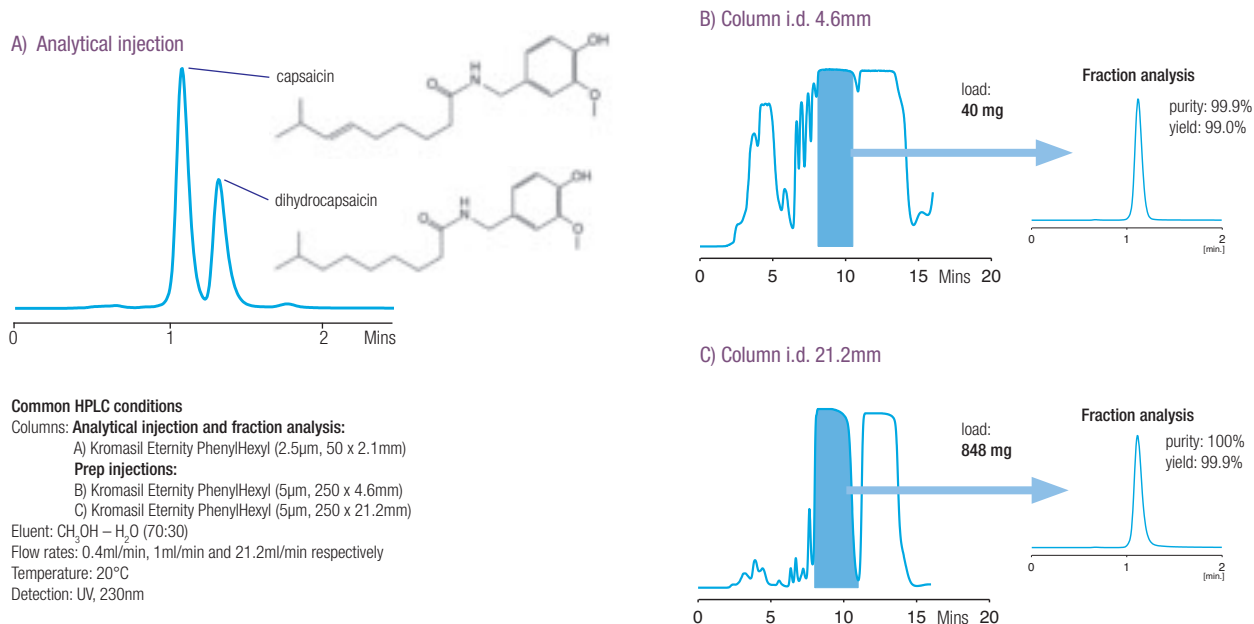


Figure 9. Preparative separation of capsaicin from dihydrocapsaicin

Ordering Information – Kromasil Eternity

Analytical Columns

2.5µm Phase	Column Dimensions (mm)			
	50 x 2.1	100 x 2.1	50 x 4.6	100 x 4.6
C18	EH2CLD05	EH2CLD10	EH2CLA05	EH2CLA10
PhenylHexyl	EH2PXD05	EH2PXD10	EH2PXA05	EH2PXA10

5µm Phase	Column Dimensions (mm)					
	50 x 2.1	150 x 2.1	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6
C18	E05CLD05	E05CLD15	E05CLA05	E05CLA10	E05CLA15	E05CLA25
PhenylHexyl	E05PXD05	E05PXD15	E05PXA05	E05PXA10	E05PXA15	E05PXA25

Semi-Preparative and Preparative Columns

5µm Phase	Column Dimensions (mm)					
	50 x 10.0	150 x 10.0	250 x 10.0	50 x 21.2	150 x 21.2	250 x 21.2
C18	E05CLP05	E05CLP15	E05CLP25	E05CLQ05	E05CLQ15	E05CLQ25
PhenylHexyl	E05PXP05	E05PXP15	E05PXP25	E05PXQ05	E05PXQ15	E05PXQ25

30mm i.d. columns also available – please enquire for details.
Please contact Hichrom for availability of guard cartridges.