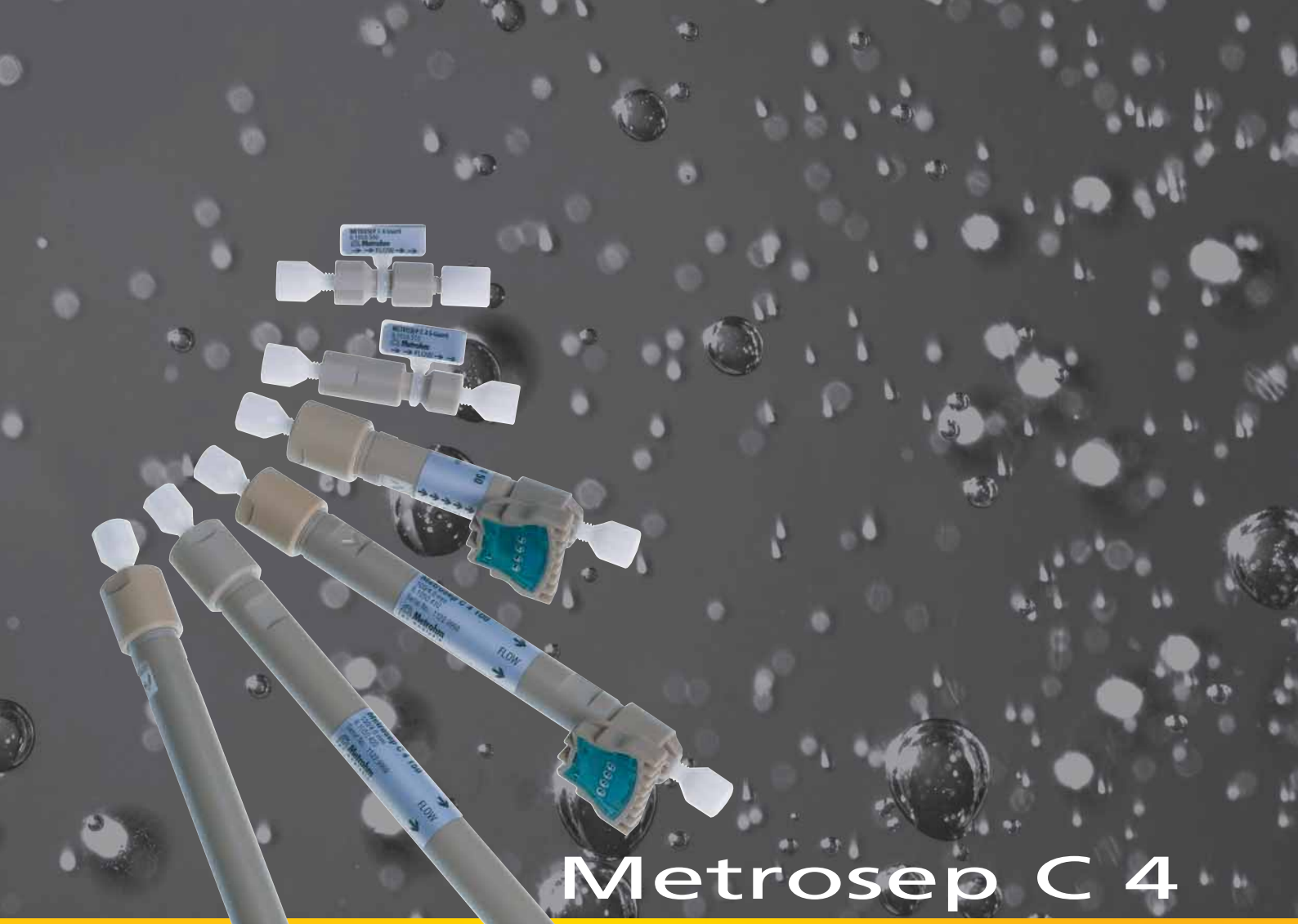


Metrosep C 4

New cation separation column
for ion chromatography

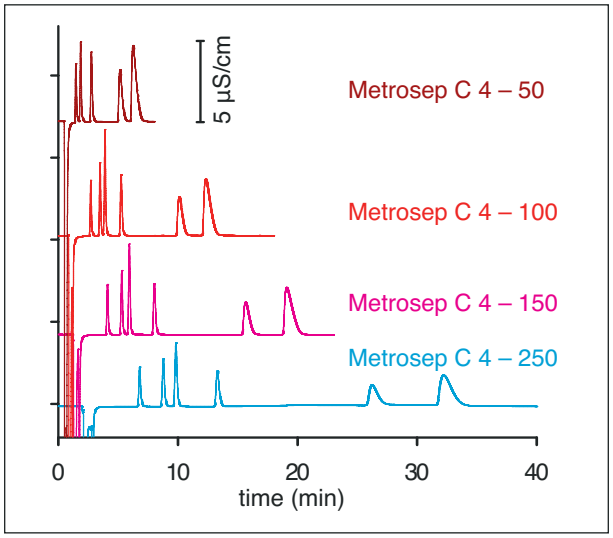
Metrohm

swiss made

New column type

Metrohm is continuously expanding its range of columns and improving existing separation column types by applying the latest production methods and materials. This results in optimized columns with exceptional separation performance, short retention times, high stability and low cost per injection.

The Metrosep C 4 separation column replaces the two column types Metrosep Cation 1-2 and Metrosep C 2. The C 4 column is available as iColumn, i.e. as an intelligent separation column, in column lengths of 50 mm, 100 mm, 150 mm and 250 mm. The diagram shows the influence of the column length on the resolution and the analysis times for the separation of the standard cations.



Influence of column length on resolution and analysis times.

Sample: cation standard (1 mg/L Li^+, 5 mg/L Na^+, 5 mg/L NH_4^+, 10 mg/L of each K^+, Ca^{2+} and Mg^{2+} for C 4 – 100, 150 and 250; C 4 – 50 without NH_4^+); eluent: 1.7 mmol/L HNO_3, 0.7 mmol/L DPA; temperature: 25 °C, flow: 0.9 mL/min.

Modified standard eluent

The standard eluent for the Metrosep C 2 column was an aqueous solution of tartaric acid and dipicolinic acid. As tartaric acid has been found to promote bacterial growth, it has been replaced with nitric acid to prolong column life. The new standard eluent for the C 4 column is composed of 1.7 mmol/L nitric acid (HNO_3) and 0.7 mmol/L dipicolinic acid (DPA). All other standard parameters have also been optimized for this new eluent. This, together with the lowered standard flow of 0.9 mL/min not only increases column life but also ensures optimal analytical results.

Current Column	Recommended Metrosep C 4 column*
Metrosep C 2 – 30	Metrosep C 4 – 50
Metrosep C 2 – 100	Metrosep C 4 – 100
Metrosep C 2 – 150	Metrosep C 4 – 150
Metrosep C 2 – 250	Metrosep C 4 – 250
Metrosep Cation 1-2	Metrosep C 4 – 100
Metrosep C 2 Guard	Metrosep C 4 Guard
Metrosep C 2 S-Guard	Metrosep C 4 S-Guard

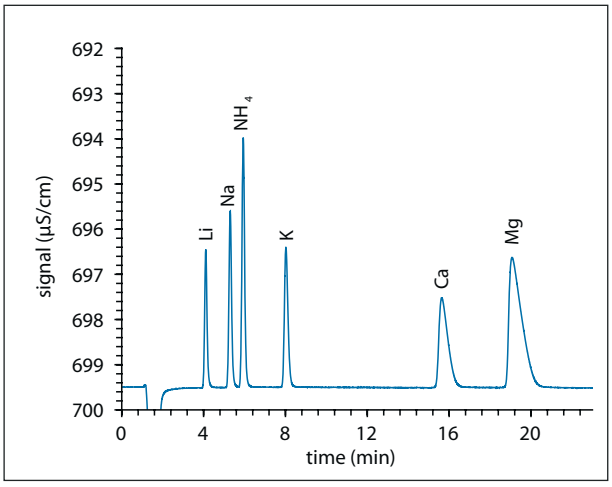
* Please note that additional adaptations may be necessary, as required by the specific application.

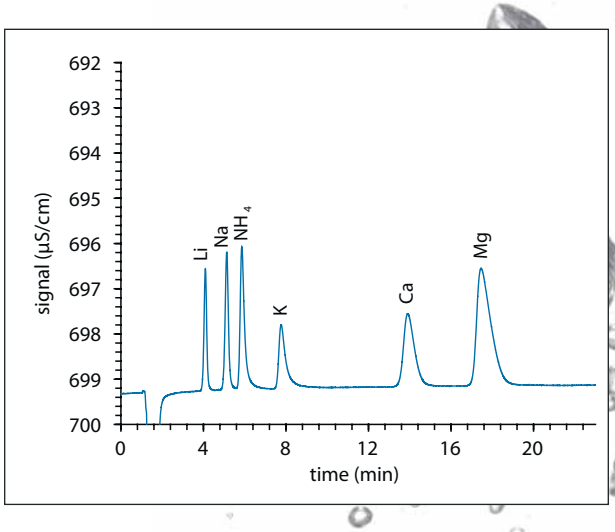
Metrosep C 4

Cation separation column

Advantages of the new column

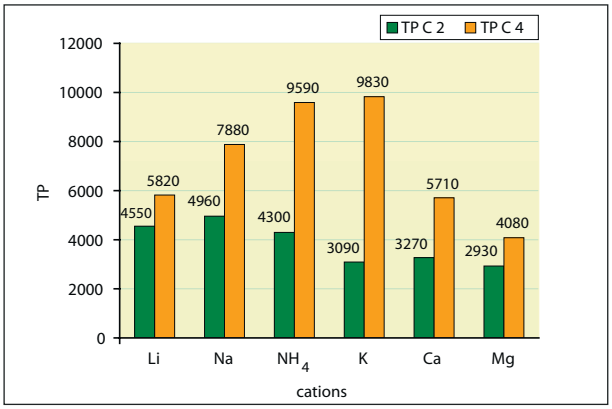
Measurements clearly show the advantages of the new Metrosep C 4 – 150 separation column compared with the Metrosep C 2 – 150 used up to now. Especially for monovalent cations, the new Metrosep C 4 yields peaks that are not only more symmetrical but also sharper and therefore higher. This improves resolution and results in lower detection limits. All the analyses carried out show that the separation performance of the Metrosep C 4 is superior to that of the Metrosep C 2.





Separation of the standard cations on the Metrosep C 4 – 150 (left) and Metrosep C 2 – 150 (right). The measurements result in clear differences with respect to peak shape, peak height, resolution and plate count – the Metrosep C 4 demonstrates its superiority.

Eluent: 1.7 mmol/L HNO_3, 0.7 mmol/L DPA; flow: 0.9 mL/min; sample: cation standard (1 mg/L Li^+, 5 mg/L Na^+, 5 mg/L NH_4^+, 10 mg/L of each K^+, Ca^{2+} and Mg^{2+}).



Separation of the standard cations with Metrosep C 4 – 150 and Metrosep C 2 – 150 – comparison of plate counts. The markedly improved peak shapes result in higher plate counts, which allows for lower detection limits for the Metrosep C 4.

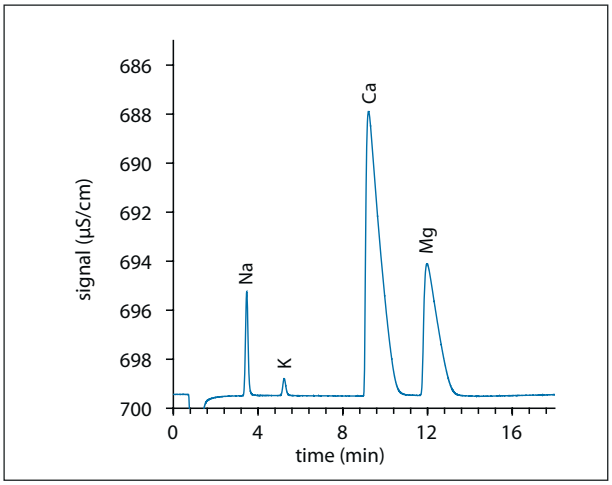
Eluent: 1.7 mmol/L HNO_3, 0.7 mmol/L DPA; flow: 0.9 mL/min; sample: cation standard (1 mg/L Li^+, 5 mg/L Na^+, 5 mg/L NH_4^+, 10 mg/L of each K^+, Ca^{2+} and Mg^{2+}).

Metrosep C 4

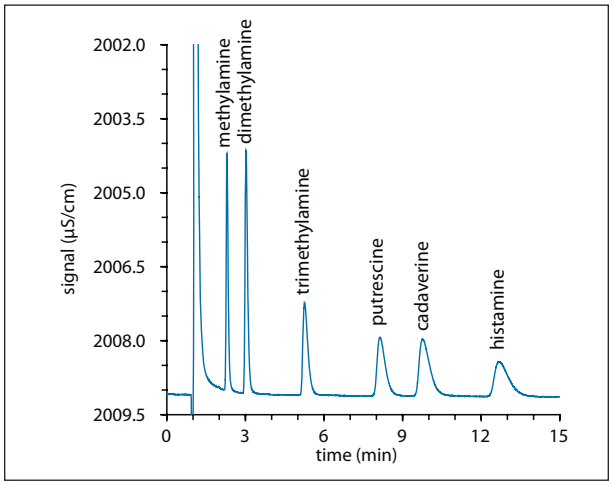
Cation separation column

Application examples

The selectivity for cations of the C 4 column is comparable to that of the C 2 column. This permits the C 4 column to be used in the same application areas as the C 2 column, e.g. for the determination of the standard cations, of amines and transition metals.



Sample: drinking water; column: Metrosep C 4 – 100; eluent: 1.7 mmol/L HNO_3, 0.7 mmol/L DPA; temperature: 25 °C, flow: 0.9 mL/min.



Sample: biogenic amines (5 mg/L methylamine, 10 mg/L of each dimethylamine, trimethylamine, putrescine, cadaverine and histamine); column: Metrosep C 4 – 100; eluent: 6 mmol/L HNO_3; temperature: 25 °C, flow: 0.9 mL/min.

Technical information

Column material
Silica gel with carboxyl groups, particle size 5 µm

Dimensions

6.1050.450:	50 x 4.0 mm
6.1050.410:	100 x 4.0 mm
6.1050.420:	150 x 4.0 mm
6.1050.430:	250 x 4.0 mm

pH range
2...7

Maximum pressure

6.1050.450:	6.0 MPa (60 bar)
6.1050.410:	12.5 MPa (125 bar)
6.1050.420:	15.0 MPa (150 bar)
6.1050.430:	20.0 MPa (200 bar)

Maximum flow
2.0 mL/min (recommended flow: 0.9 mL/min)

Ordering information

6.1050.450	Cation column Metrosep C 4 – 50
6.1050.410	Cation column Metrosep C 4 – 100
6.1050.420	Cation column Metrosep C 4 – 150
6.1050.430	Cation column Metrosep C 4 – 250
6.1050.500	Precolumn Metrosep C 4 Guard
6.1050.510	Precolumn Metrosep C 4 S-Guard

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