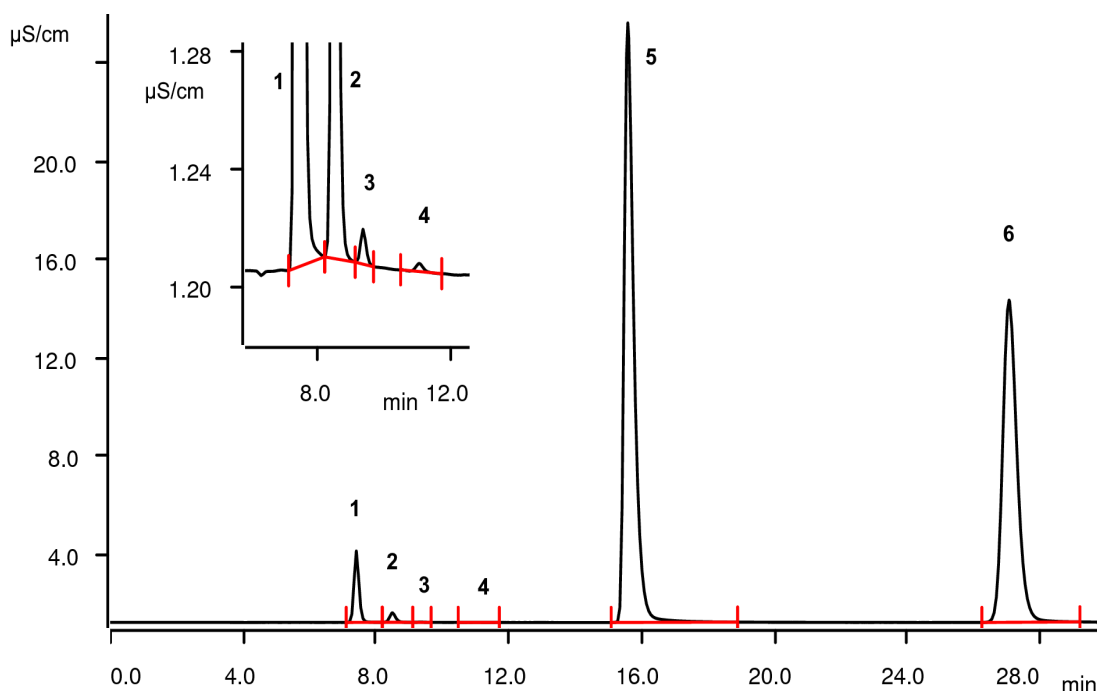


Sulfamic acid besides hydramine and other anions in chemical solutions

Separation of sulfamate, hydramine, chloride, nitrite, nitrate, and sulfate in chemical products on a Metrosep A Supp 5 – 250/4.0 column and conductivity detection.



Chromatogram of a sample after Inline Dilution and Inline Ultrafiltration; the insert shows an enlarged section from 6–12 min.

Sulfamic acid is a reasonably strong acid, used in descaling agents and for cleaning of dairy and brewing equipment. Here, a chemical solution is analyzed for sulfamate, chloride, nitrite, nitrate, and sulfate. As the solution can also contain hydramine, sufficient separation from the ions of interest is required.

Results

Anion	Conc. direct [g/L]	RSD [%]	Anion	Conc. direct [g/L]	RSD [%]
1 Sulfamate	20.94	0.65	4 Nitrite	2.16	0.32
2 Hydramine	n.q.	-	5 Nitrate	177.87	0.72
3 Chloride	2.18	0.01	6 Sulfate	109.95	0.78

n.q. = not quantified.

Sample

Chemical cleaning product (liquid).

Sample preparation

The sample is injected applying Inline Dilution (1:1000 with ultrapure water) and subsequent Inline Ultrafiltration.

Columns

Metrosep A Supp 5 - 250/4.6	6.1006.530
Metrosep A Supp 5 Guard/4.0	6.1006.500

Instrumentation

930 Compact IC Flex Oven/SeS/Deg	2.930.2560
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0020
800 Dosino	2.800.0010
Magnetic stirrer	2741
MSM-HC Rotor A	6.2842.000
IC equipment: Inline ultrafiltration	6.5330.110
IC equipment: Inline dilution	6.5330.120
Magnetic Stirrer	2.741.0010

Solutions

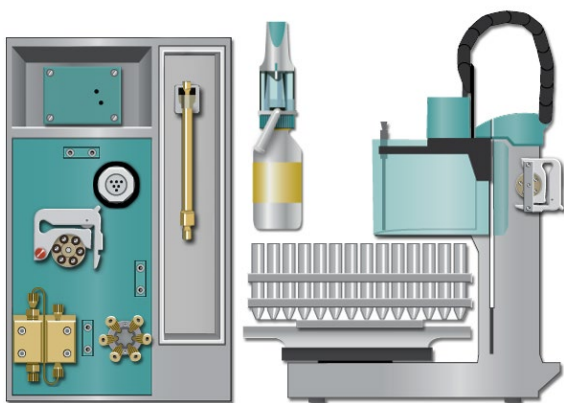
Eluent	3.2 mmol/L sodium carbonate 1.0 mmol/L sodium hydrogen carbonate
Regenerant	250 mmol/L phosphoric acid
Suppressor rinsing	STREAM

Parameters

Flow rate	0.7 mL/min
Injection volume	5 µL
P _{max}	15 MPa
Column temperature	30 °C
Recording time	30 min

Analysis

Conductivity after sequential suppression



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