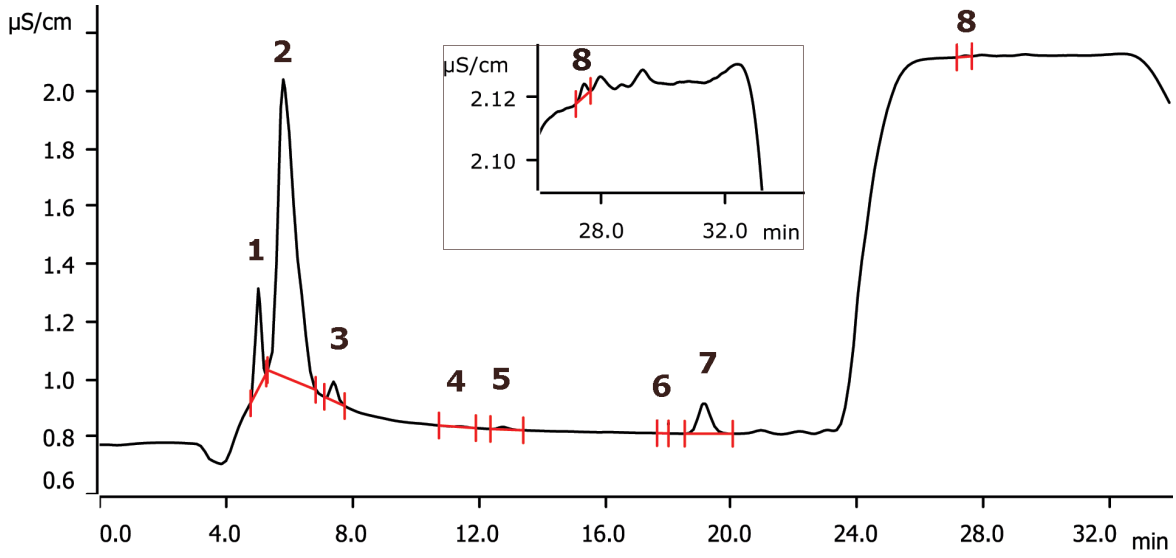
IC Application Note S–352

Determination of pyrophosphate and standard anions in 30% hydrogen peroxide (H_2O_2)



Pyrophosphate is used as a stabilizer in aqueous hydrogen peroxide solution. "Reagent grade" solutions may contain pyrophosphate in the higher mg/L range, while "electronic grade" hydrogen peroxide should be free of this stabilizer. Here the determination of pyrophosphate in a high purity H_2O_2 solution (30%) is performed applying Inline Preconcentration with Matrix Elimination (MiPCT-ME) and a Dose-in Gradient.

Results

Anion	Conc. [µg/L]	RSD [%]	Anion	Conc. [µg/L]	RSD [%]	Recovery [%]
1 Fluoride	4.7	4.4	6 Phosphate	n.d.	-	119
3 Chloride	1.9	2.4	7 Sulfate	7.7	0.2	111
4 Bromide	n.d.	-	8 Pyrophosphate	2.0	7.5	115
5 Nitrate	0.5	1.6				

Peak group 2 correspond to short chain organic acids, these are not identified.

Metrohm

Sample

Hydrogen peroxide (30%)

Sample preparation

Metrohm intelligent Preconcentration Technique with Inline Matrix Elimination (MiPCT-ME).

Columns

Metrosep A Supp 7 - 150/4.0	6.1006.620
Metrosep A Supp 4/5 Guard/4.0	6.1006.500
Metrosep A PCC 1 HC/4.0	6.1006.310
Metrosep A Trap 1 - 100/4.0	6.1014.000
2 x Metrosep I Trap 1 - 100/4.0	6.1014.200

Solutions

Eluent A (Inline Eluent Production)	3.6 mmol/L sodium carbonate
Eluent B (eluent concentrate)	72 mmol/L sodium carbonate
Suppressor regenerant	100 mmol/L sulfuric acid 20 mmol/L oxalic acid
Rinsing solution	Ultrapure water
Matrix elimination	Ultrapure water

Analysis

Conductivity detection after sequential suppression

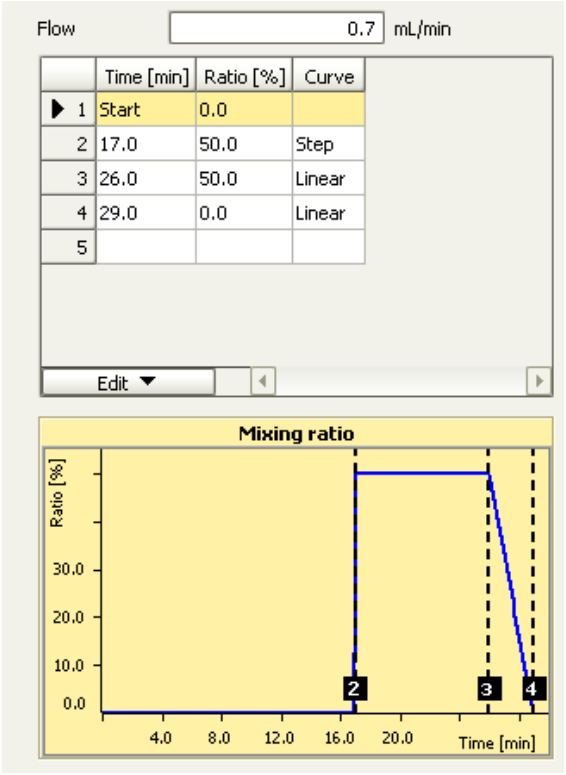
Instrumentation

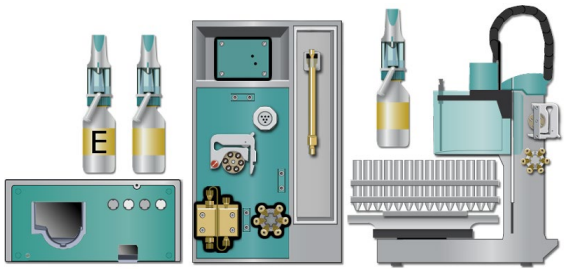
930 Compact IC Flex Oven/SeS/PP/Deg	2.930.2560
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0010
941Eluent Production Module	2.941.0010
2 x 800 Dosino	2.800.0010
MSM-HC Rotor A	6.2842.000
IC equipment: MiPCT-ME	6.5330.160
ELGA PURELAB flex 5	

Parameters

Flow rate	0.7 mL/min
Injection volume	1000 µL
P_{max}	15 MPa
Recording time	34 min
Column temperature	45 °C

Dose-in Gradient





www.metrohm.com

Metrohm