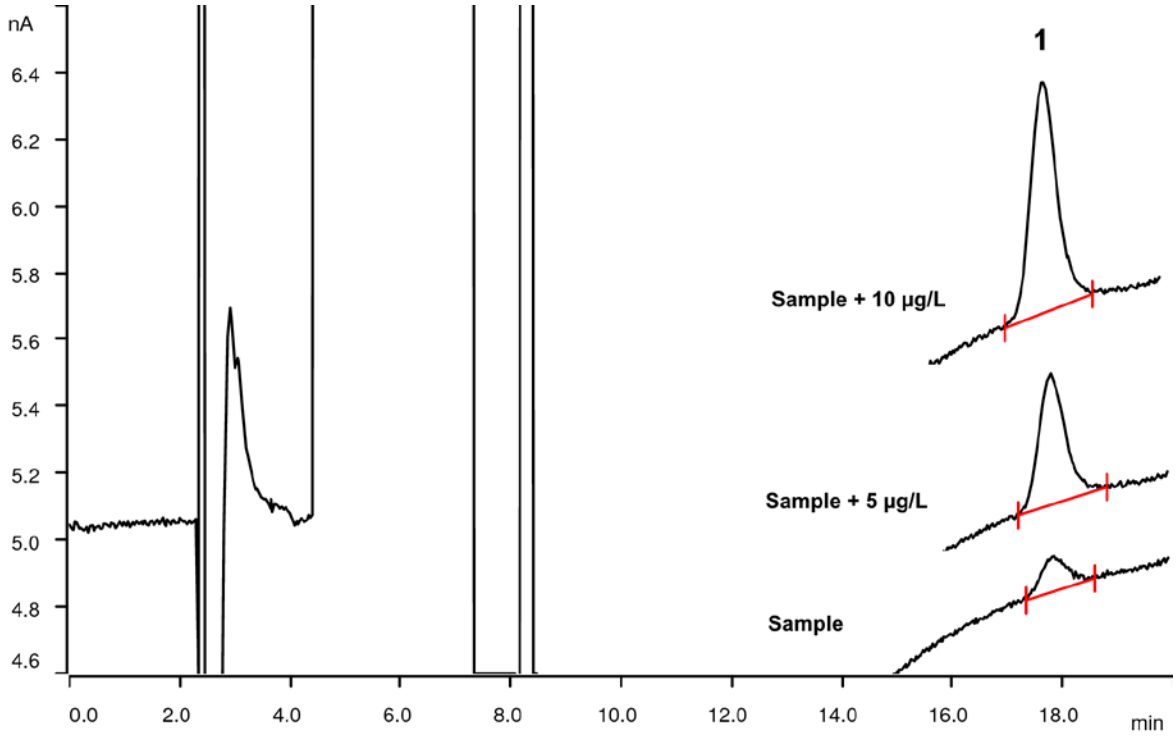
IC Application Note N–73

Trace analysis of iodide in sodium chloride applying amperometric detection



Pure sodium chloride contains much less iodide than e.g. table salt which usually is fortified with it. Trace determination of iodide is easily performed applying ion chromatography with amperometric detection. This detection mode is specially selective and sensitive. The actual separation is achieved using a Metrosep A Supp 5 - 250/4.0 column. The detection happens at a silver working electrode. LOQ is at approximately 1.0 µg/L (in solution) and 50 µg/kg in the sample. The use of a shorter column might further improve the LOQ.

Results

Anion	Conc. [µg/L]	RSD [%, n = 3]	Spike 1 [µg/L]	Recovery [%]	Spike 2 [µg/L]	Recovery [%]
Iodide	1.55	4.2	6.75	104.1	12.03	104.8

	Conc. [µg/kg]
Iodide	77.5

Metrohm

Sample

Sodium chloride

Sample preparation

20 g dissolved and diluted to 1 L with ultrapure water

Columns

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

Solutions

Eluent	6.4 mmol/L sodium carbonate 2.0 mmo/L sodium hydrogen carbonate

Parameters

Flow rate	0.8 mL/min
Injection volume	50 µL
Pmax	15 MPa
Recording time	20 min
Column temperature	40 °C

PAD Parameters

Cell	Wall-Jet cell
Working electrode	Silver
Reference electrode	Ag/AgCl
Spacer	50 µm
Measuring potential	0.15 V
Range	200 nA
Temperature	35 °C
Mode	DC

Analysis

Amperometric detection

Instrumentation

930 Compact IC Flex Oven/Deg	2.930.2160
IC Amperometric Detector	2.850.9110
858 Professional Sample Processor	2.858.0020
IC equipment Wall-Jet cell: without electrodes	6.5337.000
Ag working electrode	6.1257.240
Ag/AgCl reference electrode	6.1257.720