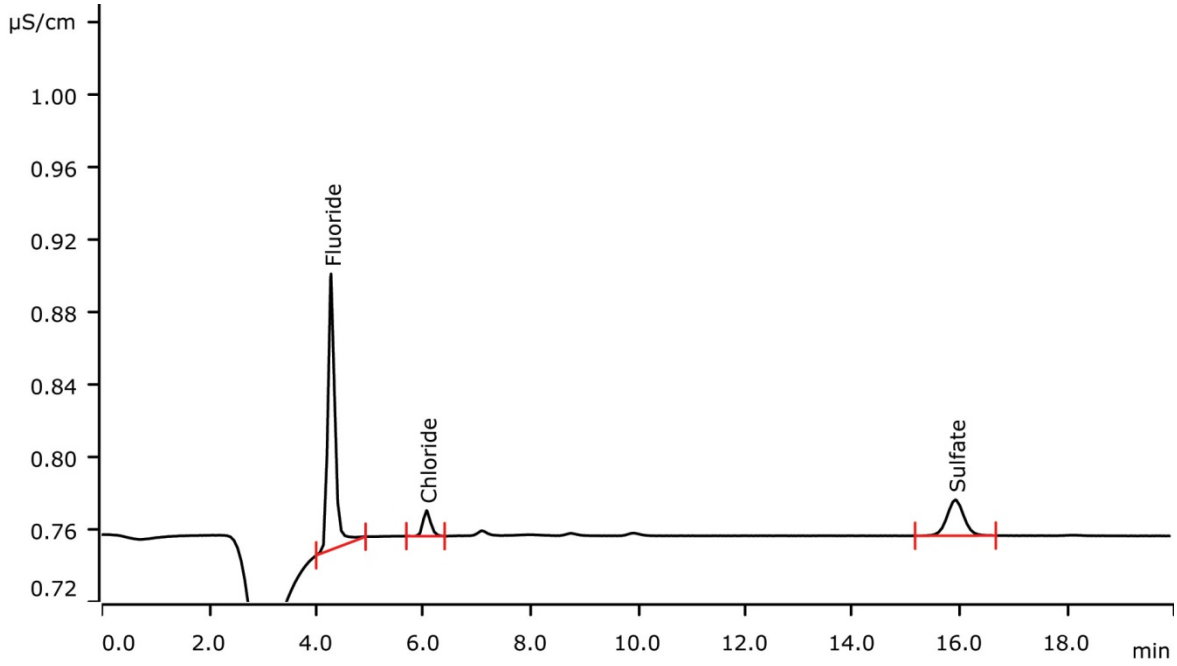
IC Application Note CIC–008

Fluorine in polyisobutene using Metrohm Combustion IC



Polyisobutene (PIB) is an important raw material for a large range of products. Quality control requires the determination of the fluorine content. This task is easily done by Metrohm Combustion IC applying flame sensor technology and Inline Matrix Elimination.

Results

	Mean [mg/kg] (n = 3)	RSD [%] (n = 3)
Fluoride	7.9	2.2
Chloride	n.q.	n.q.
Sulfate	n.q.	n.q.

Metrohm

Sample

Polyisobutene diluted with n-hexane (1:1)

Sample preparation

Combustion with flame sensor technology, intelligent Partial-Loop Injection (MiPT) with Inline Matrix Elimination

Columns

Metrosep A Supp 5 - 150/4.0	6.1006.520
Metrosep A Supp 4/5 Guard/4.0	6.1006.500
Metrosep A PCC 1 HC/4.0	6.1006.310

Solutions

Eluent	3.2 mmol/L sodium carbonate 1.0 mmol/L sodium hydrogen carbonate
Suppressor regenerant	100 mmol/L sulfuric acid
Rinsing solution	Ultrapure water
Absorption solution	100 mg/L hydrogen peroxide

Parameters

Flow rate	0.7 mL/min
Injection volume	50 µL
P_{max}	15 MPa
Recording time	20 min
Column temperature	30 °C

Combustion parameters

Argon	100 mL/min
Oxygen	300 mL/min
Oven temperature	1050 °C
Post-combustion time	120 s
Initial volume of absorption solution	2.0 mL

Analysis

Conductivity after sequential suppression

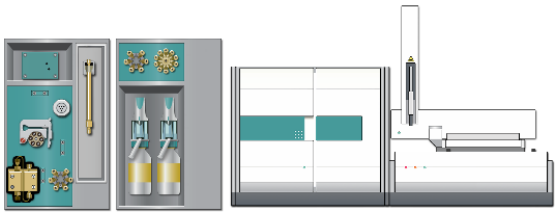
Instrumentation

881 Compact IC pro – Anion – MCS	2.881.0030*
IC Conductivity Detector	2.850.9010*
920 Absorber Module	2.920.0010*
Combustion Module	2.136.0700*
Autosampler MMS 5000	2.136.0800
Kit for liquid samples	6.7303.000

* available as 881 Metrohm Combustion IC (2.881.3030)

Calibration MiPT

Calibration range	Factor of 16.6		
Standard solution			
Fluoride	500 µg/L		
1. Level	30 µg/L	=	12 µL
2. Level	50 µg/L	=	20 µL
3. Level	100 µg/L	=	40 µL
4. Level	150 µg/L	=	60 µL
5. Level	250 µg/L	=	100 µL
6. Level	500 µg/L	=	200 µL



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