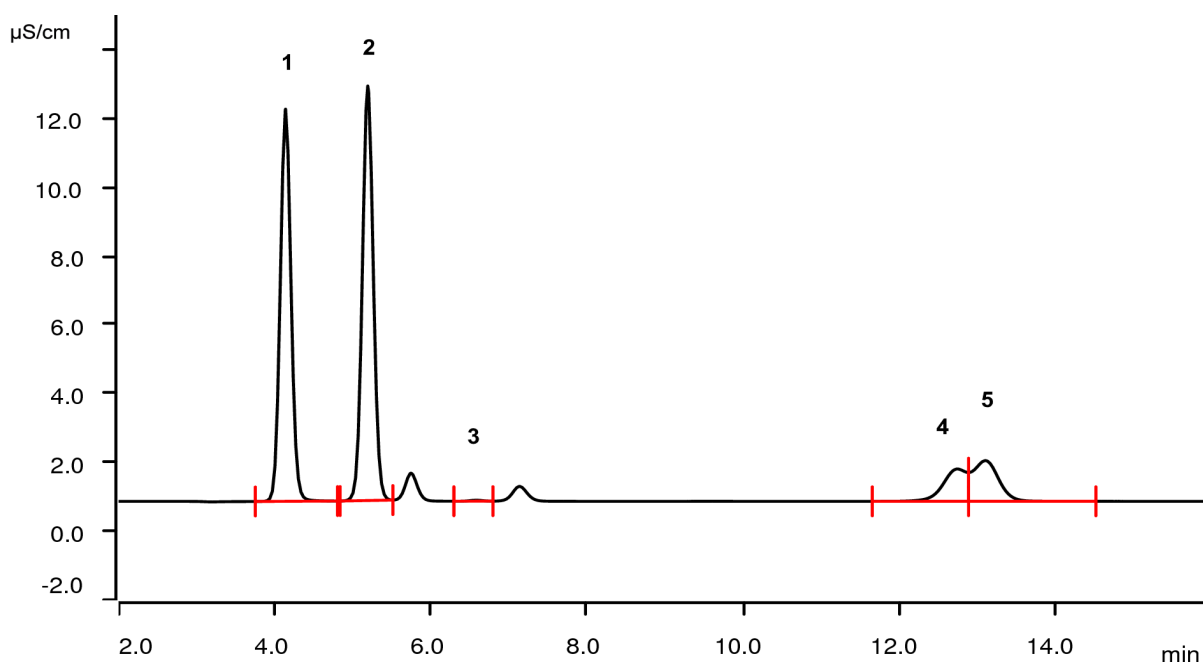


## IC Application Note CIC-030

# Fluorine determination from fluorochemicals in fabrics applying Combustion IC

Fluoride released from fabrics after pyrohydrolysis is determined by IC on a Metrosep A Supp 4 - 250/4.0 column.



Chromatogram of fluoride, chloride, bromide, sulfite, and sulfate from a textile sample after pyrohydrolysis.

In textiles, the water-repelling effect may be introduced by different treatments, such as the application of fluorochemicals. These compounds, especially perfluoroorganic substances, are extremely persistent in the environment and are therefore listed as emergent contaminants. Combustion IC with pyrohydrolysis and subsequent ion chromatographic determination is applied to analyze the fluorine content in fabrics.

## Results

		Concentration [mg/kg, N = 4]	RSD [% , N = 4]
1	Fluorine	992	0.6
2	Chlorine	n.q.	-
3	Bromine	n.q.	-
4/5	Sulfur	n.q.	-

n.q. = not quantified; peaks 4 and 5 are sulfite and sulfate.

## Sample

Water-resistant fabric.

## Sample preparation

A 20 mg sample of fabric is weighed into a sacrificial vial. The subsequent analysis is performed by Combustion IC with flame sensor technology and intelligent Partial Loop Injection Technique with Inline Matrix Elimination.

## Columns

Metrosep A Supp 4 - 250/4.0	6.1006.430
Metrosep A Supp 4 Guard/4.0	6.1006.600
Metrosep A PCC 2 HC/4.0	6.1006.340
Metrosep I Trap 1 - 100/4.0	6.1014.200
Metrosep A Trap 1 - 100/4.0	6.1014.000

## Solutions CIC

Eluent	1.8 mmol/L sodium carbonate 1.7 mmol/L sodium hydrogen carbonate
Suppressor regenerant	100 mmol/L sulfuric acid
Rinsing solution	STREAM
Absorber solution	Ultrapure water

## Analysis

Conductivity after sequential suppression

## Parameters

Flow rate	0.7 mL/min
Injection volume (IC)	15 µL (MiPT)
P <sub>max</sub>	12 MPa
Recording time	20 min
Column temperature	35 °C

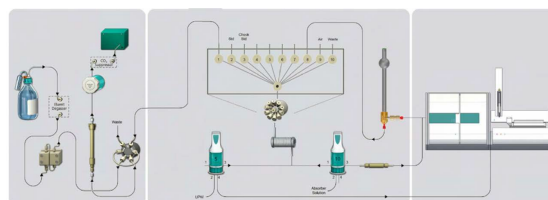
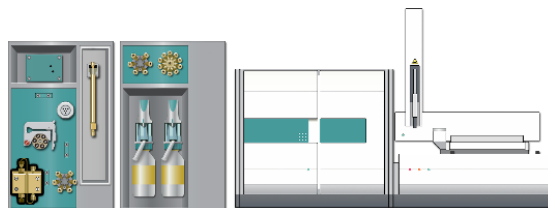
## Combustion parameters

Argon	100 mL/min
Oxygen	300 mL/min
Oven temperature	1050 °C
Post-combustion time	240 s
Initial volume of absorption solution	2.0 mL
Absorber solution feed	0.2 mL/min
Water inlet	0.2 mL/min
Post-combustion rinsing volume	1.0 mL

## Instrumentation

930 Compact IC Flex Oven/SeS/PP/Deg	2.930.2560*
IC Conductivity Detector	2.850.9010*
MSM Rotor A	6.2832.000*
Adapter sleeve for Suppressor Vario	6.2842.020*
920 Absorber Module	2.920.0010*
Combustion Module (oven and ABD)	2.136.0700*
Autosampler MMS 5000	2.136.0800
Kit for solid sampling	6.7302.000

\* available as 930 Metrohm Combustion IC (2.930.9010)



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