IC Application Note S–355

Determination of monofluorophosphate in toothpaste



Monofluorophosphate is used in toothpaste to prevent dental caries. USFDA allows up to 1.5 g/kg fluoride corresponding to 11.5 g/kg sodium monofluorophosphate on over the counter dentifices for adults and children above 6 years. Here a toothpaste is analyzed for monofluorophosphate by ion chromatography applying conductivity detection after chemical suppression.

Results

Anion	Conc. [g/kg]	RSD (spiked) [%]
1 Monofluorophosphate	8.40	104



Sample

Toothpaste

Sample preparation

0.5 g of sample is extracted in 25 mL ultrapure water under sonication, the solution is made up to 100 mL and subsequently injected through 0.2 μm filter.

Columns

Metrosep A Supp 5 - 250/4.0	6.1006.530
Metrosep A Supp 4/5 Guard/4.0	6.1006.500

Solutions

Eluent	3.2 mmol/L sodium carbonate 1.0 mmol/L sodium hydrogen carbonate 5% acetonitrile
Suppressor regenerant	100 mmol/L sulfuric acid
Rinsing solution	Ultrapure water

Injection volume

Flow rate

Parameters

Injection volume	5 µL
P _{max}	15 MPa
Recording time	36 min
Column temperature	ambient

0.7 mL/min





Analysis

Conductivity detection after chemical suppression

Instrumentation

930 Compact IC Flex Oven/ChS/PP	2.930.2300
IC Conductivity Detector	2.850.9010
858 Professional Sample Processor	2.858.0020
MSM Rotor A	6.2832.000
Adapter sleve for Suppressor Vario	6.2842.020

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