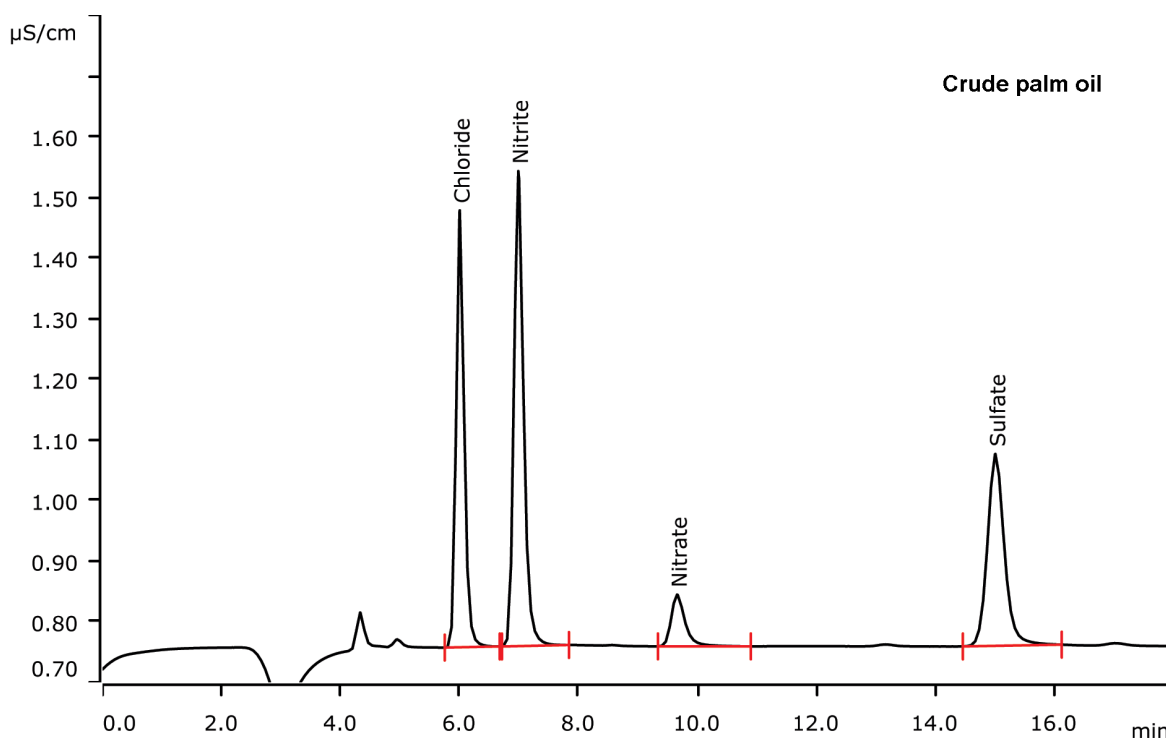


Halogens in palm oil production applying Metrohm Combustion IC



Palm oil is a vegetable oil widely used in the manufacture of foods, soaps, and personal care products. Moreover, it is an important feedstock for biodiesel. Depending on the stage of refining, the color of palm oil can be red, reddish, or even white. During refining, the color-giving carotenes are removed to give the oil a paler color. In this work, the chlorine and sulfur content of different palm oils is determined by Combustion IC.

Results

	Chlorine [mg/kg]	Sulfur [mg/kg]
Crude palm oil (red)	7.5	4.1
Washed palm oil (reddish)	3.1	2.7
Full refined palm oil (white)	1.8	1.5

Nitrite and nitrate not quantified

Sample

Palm oil

Sample preparation

The sample is analyzed by Combustion IC with flame sensor technology and intelligent Partial Loop Injection Technique 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	STREAM
Absorber solution	100 mg/L hydrogen peroxide

Parameters

Flow rate	0.7 mL/min
Injection volume (IC)	100 µL (MiPT)
P _{max}	15 MPa
Recording time	18 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
Water inlet	0.1 mL/min

Analysis

Conductivity after sequential suppression

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)

