

# Chromaster

## - Analysis of anion surfactants -

Anion surfactants interfere with wastewater treatment processes due to their foaming properties. A standard analysis mixture consists of five sodium alkylbenzenesulfonates of varying alkyl chain length (C10-C14) at a concentration of 0.004 mg/L each, for a total surfactant concentration of 0.02 mg/L. The method includes a solid phase extraction step followed by HPLC analysis, and is described in Table 24 of the bulletin. The data describes the analysis of a five component mixture of sodium alkylbenzenesulfonates at a concentration of 0.004 mg/L each, concentrated 250-fold to a concentration of 1 mg/L in a pretreatment step.

### Analysis of anion surfactants

Sample: Alkyl benzenesulfonate (the active ingredient of a synthetic detergent)

[Solid phase extraction procedure]

NOBIAS RP-OD1<sup>\*1</sup>

Conditioning

- ← Metanol 5 mL
- ← Purified water 5 mL

Sample loading

- ← Sample 100 mL
- ← Metanol 25%

Elution

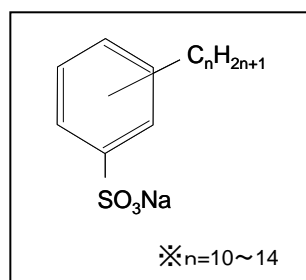
- ← Metanol 5 mL

Condensed to 2 mL

- ← Nitrogen gas is gently blown onto the sample

HPLC

[Structural formula of the anion surfactant]



\*1

NOBIAS RP-OD1

This is a reverse-phase polymer-based column, and it is a solid-phase packed column in which an octadecyl silyl group is linked to a hydrophilic methacrylate substrate.

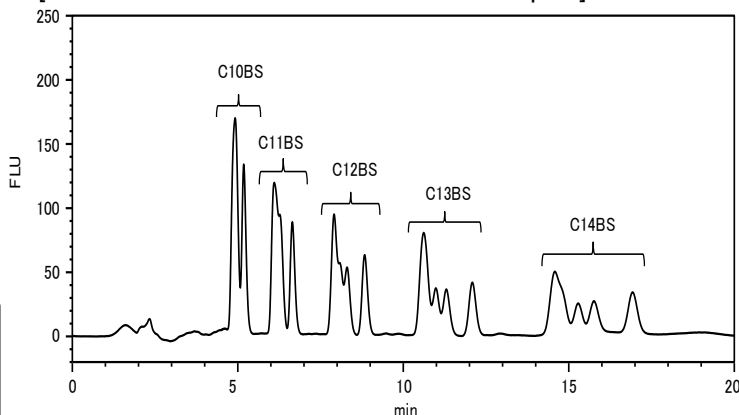
[System configuration]

Chromaster 5110 pump  
Chromaster 5210 AutoSampler  
Chromaster 5310 Column Oven  
Chromaster 5440 Fluorescent Detector  
Empower 2 Data Processing System

[LC conditions]

Column	HITACHI-Inertsil ODS-3 (3 $\mu$ m) 4.6 mm I.D. $\times$ 150 mm
Eluent	0.1 mol/L sodium perchlorate - (CH <sub>3</sub> CN : H <sub>2</sub> O = 65 : 35)
Flow rate	0.6 mL/min
Temperature	40°C
Detection	FL Ex 221 nm, Em 284 nm
Inj.vol	20 $\mu$ L

[Results of measurement of standard samples]



C10BS : Sodium Decylbenzenesulfonate

C11BS : Sodium Undecylbenzenesulfonate

C12BS : Sodium Dodecylbenzenesulfonate

C13BS : Sodium Tridecylbenzenesulfonate

C14BS : Sodium Tetradecylbenzenesulfonate

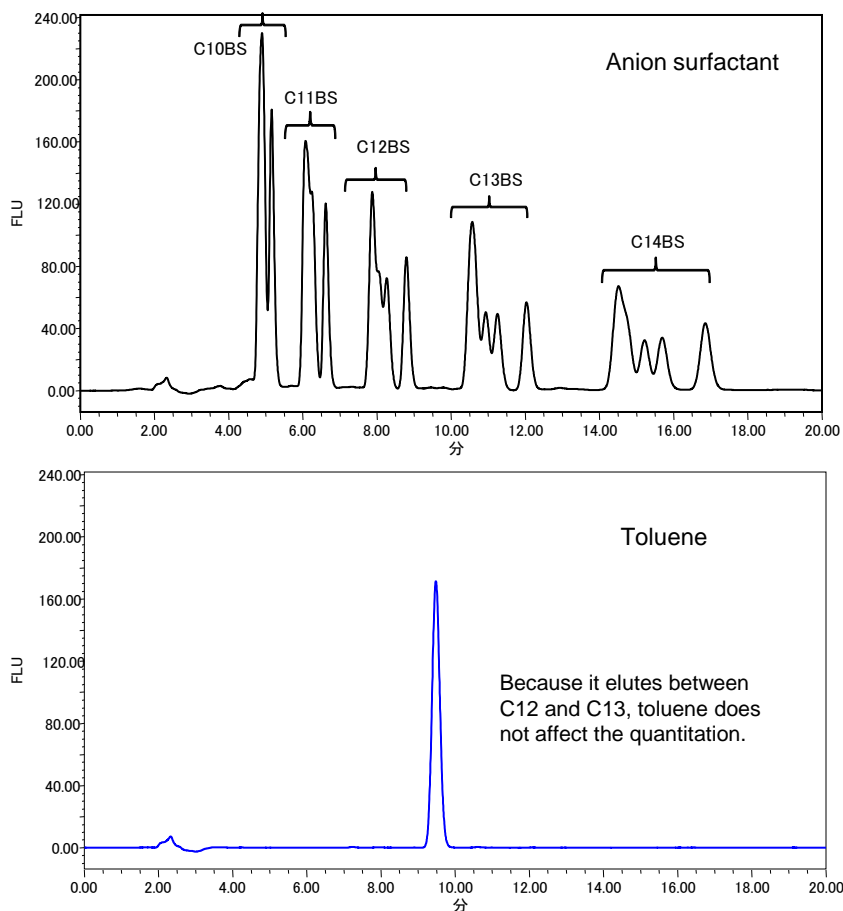
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## - Analysis of anion surfactants-

The toluene used in the pretreatment for the analysis of a non-ionic surfactant, another test item, can affect the analysis of the anion surfactant.

An evaluation of elution conditions indicates that toluene is eluted between C12 and C13; therefore, high-precision analyses with any impact on quantitation are possible.

### [Verification of separation from toluene]



### [LC conditions]

Column	HITACHI-Inertsil ODS-3 (3 μm) 4.6 mm I.D. × 150 mm
Eluent	0.1 mol/L sodium perchlorate - (CH <sub>3</sub> CN : H <sub>2</sub> O = 65 : 35)
Flow rate	0.6 mL/min
Temperature	40°C
Detection	FL Ex 221 nm, Em 284 nm
Inj.vol	20 μL

NOTE: These data are an example of measurement; the individual values cannot be guaranteed.

Page .2