

AQUACOUNTER Application Sheet	COM series	DATA No. C3	1st edition
Cosmetics	Quantification of anionic surfactant in synthetic detergent using nitrate ion electrode		

1. Measurement outline

Anionic surfactants (lauryl sulfate Na salt) in detergents are quantified by potentiometric titration with cationic surfactants. The end points were detected by nitrate ion electrode as the indicator electrode. This method conforms to ASTM D4251-83, and it is applied to detergents including α -olefin sulfonic acid, alcohol sulfate, and alcohol ether.



R : Surface-active agent carbon chain

R_4N^+ : Hyamine ion

2. Reagents and Electrodes

(1) Reagents	Titrant	0.05mol/L Hyamine 1622 manufactured by Orion.
	Standard for titrant	0.01mol/L sodium lauryl sulfate (SLS) (Orion)
(2) Electrodes	Indicator electrode	Nitrate ion electrode 8201-10C manufactured by HORIBA to IE jack
	Reference electrode	*Reference electrode RE-201 to RE jack *Standard accessory

3. Measurement conditions example (for COM-1600S)

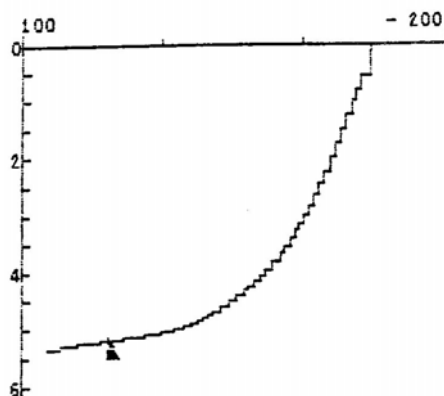
Master File No.1	
Condition file: 1	
Parameters for Condition file 1	
Method	AUTO
Amp No.	2
Buret No.	1
Meas Unit	mV
S-Timer	10 sec
CP	0 mL
DP	2 mL
Direction	N/A
End Sens	150
Over mL	1.50 mL
Max Vol	20 mL
Mode No.	21
Unit	%
Blank	0
Molarity	0.05
Factor	Titer of the titrant
K	397

Mode No.21	
Pre Int	5 sec
Del K	5
Del Sens	0 mV
Int Time	5 sec
Int Sens	3 mV
BrT Speed	2
Pulse	40

4. Procedure

Take approximately 0.3g of sample weighed precisely and dissolve it in 50mL of deionized water.
Then titrate with Hyamine.

5. Measurement example



Sample measurement results

Sample No.	Sample volume (g)	Titration value (mL)	Content (%)
1	0.2705	5.090	29.88
2	0.2785	5.180	29.54
Avg.			17.1 %

6. Note

1) Since this titration has relatively slow reaction speed, the control mode is set long waiting period (5 seconds).

2) Electrode control

It is recommended that a new electrode is immersed in 0.01mol/L NaNO₃ solution for 1 hour or longer. Before starting a series of sample titration, soak the electrodes into sodium lauryl sulfate (SLS) solution so as to activate the electrodes.

After measurements, wash the electrodes with water first, then wash with ethanol. Wipe off the foreign objects attached on the surface. Immersing the electrodes in ethanol for a long period may cause erroneous results.

Key words

Detergent, anionic detergent, nitrate ion electrode, Hyamine, sodium lauryl sulfate salt, sodium lauryl sulfate, JIS K3362, ASTM D4251-83

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