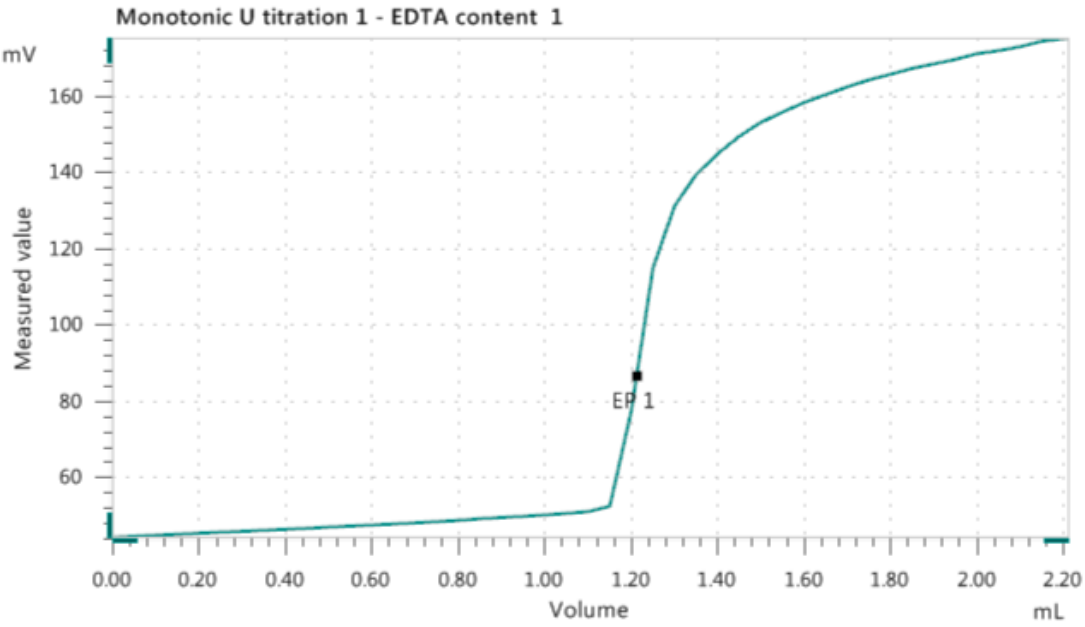
Titration Application Note T–168

EDTA in liquid hand soap according to ASTM D1767



Complexing agents like EDTA are used in soaps and other detergents for the removal of undesired metal ions and for lowering the water hardness. The EDTA content in soaps and detergents can be determined by potentiometric titration using the Cu-ISE for indication and cupric sulfate as titrant.

Metrohm

Method description

Sample

Liquid hand soap

Sample preparation

No sample preparation is required.

Configuration

OMNIS Titrator Professional	2.1001.0310
OMNIS Sample Robot S	2.1010.1010
OMNIS Dosing Module	2.1003.0010
Analog measuring module	6.02101.010
OMNIS 10 mL cylinder unit without accessories, 2x	6.01503.210
Cable MDL PL/SO 0.5 m	6.02102.010
Electrode cable plug-in head G / plug P, 1.5 m for Cu ISE	6.02104.010
Electrode cable plug-in head U / plug P, 1.5 m for Unitrode	6.02104.610
OMNIS Stand-Alone license	6.06003.010
OMNIS instruments license: 1 license	6.06002.010
FEP tubing / M6 / 150 cm, 2x	6.1805.030
FET tubing / M6 / 40 cm, 2x	6.1805.100
Cu ISE	6.0502.140
Unitrode with Pt1000 (Head U)	6.0258.600

Solutions

Titrant	$c(CuSO_4)$ = 0.01 mol/L 2.497 g $CuSO_4 \cdot 5\ H_2O$ is weighed into a 1 L volumetric flask and dissolved in deion. H_2O. The flask is then filled up to the mark with deion. H_2O.
Acetate buffer	116 g ammonium acetate is weighed into a 1 L volumetric flask and dissolved in deion. H_2O. 86 mL glacial acetic acid is added. The flask is then filled up to the mark with deion. H_2O.

Analysis

Approx. 5 g liquid soap is weighed into a titration vessel. About 75 mL deion. H_2O is added using the pumps and the pH is adjusted to approximately 5.0 with glacial acetic acid using a SET titration. The sample is then titrated with $c(CuSO_4)$ = 0.01 mol/L until after the equivalence point.

Parameters

Mode	MET U
Stirring rate	8
Signal drift	30 mV/min
Max. waiting time	32 s
Volume increment	0.05 mL
Stop volume	10 mL
Stop EP	1
Volume after EP	1 mL
EP criterion	30 mV
EP recognition	Greatest

Results

w_{EDTA} / % (n = 3)	s(rel) / %
0.081	1.67

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