

Ti Application Note No. T- 67

Title:	Determination of tallow ethoxylates (non-ionic surfactants)
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Summary:	Determination of tallow ethoxylates (non-ionic surfactants) by potentiometric titration with sodium tetraphenylborate using the NIO electrode.
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Sample:	Tallow ethoxylates
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Sample Preparation:	none
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Instruments and Accessories:	702, 716, 736, 751 or 785 Titrino or 726 Titroprocessor, 722 Propeller Rod Stirrer, 6.0507.010 NIO electrode, 6.0726.100 Ag/AgCl reference electrode [bridge electrolyte c(NaOH) = 3 mol/L]
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Analysis:	Weigh approx. 30 mg sample into a beaker (precision 0.1 mg) and dissolve it in about 50 mL dist. water. Add 10 mL c(BaCl ₂) = 0.1 mol/L and 40 mL dist. water, then titrate with sodium tetraphenylborate c(STPB) = 0.01 mol/L.
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Calculation:	As non-ionic surfactants do not react stoichiometrically with Ba²⁺ and STPB, a so-called calibration factor has to be determined. This calibration factor f can either be given as mL STPB / g NIO or as mg NIO / mL STPB. $f_1: \text{ mL STPB / g NIO} = \text{EP1} / \text{C00}$ $f_2: \text{ mg NIO / mL STPB} = \text{C00} * \text{C01} / \text{EP1}$ EP1 = titrant consumption in mL C00 = approx. 0.03 (sample weight in g) C01 = 1000 (conversion factor in mg/g)
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Results:	$f_1: \text{ AVG}(3) = 306.3 \pm 3.1 \text{ mL STPB / g NIO}$ $f_2: \text{ AVG}(3) = 4.00 \pm 0.04 \text{ mg NIO / mL STPB}$
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Remarks:	It is not possible to separate different non-ionic surfactants by titration.
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