International Standard 6839

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Anionic surface active agents — Determination of solubility in water

Agents de surface anioniques — Détermination de la solubilité dans l'eau

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6839 was developed by Technical Committee ISO/TC 91, *Surface active agents*, and was circulated to the member bodies in February 1982.

It has been approved by the member bodies of the following countries:

Australia	Germany, F.R.	Poland
Austria	Hungary	Romania
Belgium	Ireland	South Africa, Rep. of
China	Italy	Spain
Czechoslovakia	Japan	Switzerland
Egypt, Arab Rep. of	Mexico	USSR
France	Netherlands	

No member body expressed disapproval of the document.

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Anionic surface active agents — Determination of solubility in water

0 Introduction

The method described in this International Standard is one of the simplest of the methods which can be used for this purpose; it is sufficiently accurate and is suitable for a number of practical uses.

1 Scope and field of application

This International Standard specifies a method of establishing the curve representing the solubility of an anionic surface active agent in water as a function of temperature, and, consequently, of allowing evaluation of its solubility at a given temperature.

The method is applicable both to pure surface active agents and to technical products or formulations of liquid anionic surface active agents, provided that the solutions of these products are optically clear and are not very strongly coloured.

NOTE — The determination of solubility may be carried out without restriction in the temperature range from 0 to 90 °C; at temperatures lower than 0 °C, the determination is possible provided that the solution does not freeze.

The solubility curve obtained in the case of pure products may possibly allow the Krafft temperature to be determined.

2 Reference

ISO 607, *Surface active agents and detergents — Methods of sample division.*

3 Principle

Preliminary determination on an aqueous solution of known anionic surface active agent concentration of the temperatures at which the solution changes, on heating, from being cloudy to clear and, on cooling, from being clear to cloudy.

Placing in a bath, controlled at a temperature within the range established in the preliminary determination, of two solutions of the same concentration, one being colder and cloudy and the other being warmer and clear, and noting the appearance of the two solutions at temperature equilibrium.

Repetition of the test, varying the temperature of the bath within the range established by the preliminary determination, until the clear solution remains clear and the cloudy solution remains cloudy, or the solutions change very slowly from being cloudy to clear or vice versa.

From the surface active agent concentrations and the limiting temperatures of solubility, plotting the solubility curve.

4 Reagent

During the determination, use only distilled water or water of equivalent purity.

5 Apparatus

Usual laboratory equipment, and

5.1 Test tubes, made of borosilicate glass, of diameter 20 mm and length 200 mm.

5.2 Precision thermometers, complying with the requirements of ISO 653.

5.3 Thermostatically controlled water bath, capable of being controlled at −5 °C to + 90 °C, to within ± 0,1 °C, with a transparent cell.

6 Sampling

The laboratory sample of anionic surface active agent shall be prepared and stored in accordance with the instructions given in ISO 607.

7 Procedure

7.1 Test portion

Weigh, to the nearest 0,01 g, the quantity of laboratory sample corresponding to one of the surface active agent concentrations to be studied [concentrations usually between 1 and 50 % (*m*/*m*)] then prepare approximately 100 ml of solution.

If the solution contains dispersed impurities, it is advisable to filter it after heating to a temperature higher than that at which it is cloudy.