



SLOVENSKI STANDARD
SIST EN 1262:1997
01-december-1997

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Surface active agents - Determination of the pH value of surfactant solutions or dispersions

Grenzflächenaktive Stoffe - Messung des pH-Wertes von Tensidlösungen oder -dispersionen

Agents de surface - Détermination de la valeur du pH des solutions ou des dispersions d'agents de surface

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Ta slovenski standard je istoveten z: **EN 1262:1996**

ICS:

71.100.40 Površinsko aktivna sredstva Surface active agents

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en

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

July 1996

ICS 71.100.40

Descriptors: surfactants, soluble matter, suspensions, pH, measurements

English version

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REPUBLIKA SLOVENIJA
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO
Urad RS za standardizacijo in meroslovje
LJUBLJANA

SIST. EN 1262

PREVZET PO METODI RAZGLASITVE

-12- 1997

This European Standard was approved by CEN on 1996-06-28. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 276 "Surface active agents", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 1997, and conflicting national standards shall be withdrawn at the latest by January 1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This European Standard specifies a method for preparing solutions or dispersions of surface active agents for determining their pH value.

The method is applicable to aqueous environments containing anionic, cationic and non-ionic surfactants, ampholytic surfactants and surfactant-containing products.

2 Definitions

For the purposes of this standard the following definition applies :

active matter : All of the surface active agents responsible for a specified activity in a formulation.

3 Principle

The pH of the sample solution or dispersion is determined by potentiometric measurement using a glass/calomel electrode and commercial pH meter.

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4 Reagents

4.1 Water

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Use only freshly distilled water from which carbon dioxide has been removed and having a conductivity not exceeding 0,5 mS/m at 25 °C and a pH between 6,5 and 7,0, or water of equivalent purity.

4.2 Standard buffer solutions

Two standard buffer solutions are required to calibrate the pH meter. The pH values of the buffer solutions shall bracket the expected pH of the test solution. Buffer solutions of pH 4,0 and 9,0 are normally suitable.

4.3 Ethanol 96 % (V/V), analytical grade

To determine its suitability, ethanol is mixed with freshly distilled water or water of equivalent purity, in a ratio of 50 : 50 (m/m) ; the pH shall be between 6,5 and 7,0, otherwise a more suitable ethanol grade shall be used.

4.4 Sodium chloride, analytical grade

5 Apparatus

Ordinary laboratory apparatus and the following are required.

5.1 pH meter, capable of reading to $\pm 0,1$ pH units.

5.2 Glass pH electrode with calomel reference electrode, or a combined pH glass electrode.

NOTE : All electrodes should be stored, cleaned, conditioned and used in accordance with the manufacturer's recommendations.

6 Preparation of product solutions or dispersions

6.1 General

Most surfactants form clear dilute solutions in water.

Surfactants which do not form a clear solution in water are first dissolved in ethanol and then mixed with water ; this procedure sometimes produces dispersions which cream after a certain time, i.e. form two phases.

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6.2 Water soluble products standards.iteh.ai

6.2.1 Solution A : 1 % m/m active matter in water

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Weigh, to the nearest 0,01 g, a test portion corresponding to 1 g active matter into a 150 ml beaker and make up to 100,00 g solution with water (4.1). If necessary, warm to not more than 50 °C to assist dissolution and cool to room temperature.

6.2.2 Solution B : 5 % m/m solution in water

Weigh, to the nearest 0,01 g, a test portion of 5 g into a 150 ml beaker and make up to 100,00 g solution with water (4.1). If necessary, warm to not more than 50 °C to assist dissolution and cool to room temperature.

6.3 Sparingly water-soluble or water-insoluble products

Solution C : 5 % m/m sample in ethanol/water mixture.

Weigh, to be nearest 0,01 g, a test portion of 5 g into a 150 ml beaker and add 47,5 g ethanol (4.3). If necessary, warm to not more than 50 °C to assist dissolution. Add 47,5 g water (4.1) and cool to room temperature.

NOTE : For water-insoluble samples the addition of water produces a finely dispersed precipitate.

If required by a customer or product specification the quantity of test portion used to prepare solutions A, B and C may be different from those specified in 6.2 and 6.3. In this case the concentration of the test solution used shall be specified in the test report.

6.4 Highly concentrate surfactant formulations

Concerning measurements in highly concentrated solutions of surfactants or molten products they can only be compared if all parameters and test conditions are defined. At high concentrations measurements obtained do not correspond to scientific pH definition.

7 Procedure

7.1 Calibration

Calibrate the pH meter (5.1) according to the manufacturer's instructions using the two standard buffer solutions (4.2).

7.2 Determination

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Split the sample solution (A, B or C) into two equal portions to enable duplicate measurements to be carried out.

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Wash the electrodes first with water (see 4.1) and then with a little of the first part of the test solution. Immerse the electrodes in the first part of the test solution, stir slowly. Note the reading of the pH meter 1 min after a stable value has been achieved.

Remove the electrodes and rinse with a little of the second part of the test solution. Immerse the electrodes in the second part of the test solution and repeat the pH measurement.

If the two measurements differ by more than 0,2 pH units repeat the whole test, including calibration.

NOTE 1 : In the case of cationic surface active agents, the pH meter should be recalibrated after each measurement.

NOTE 2 : All pH measurements are carried out at a temperature in the range from 20 °C to 25 °C.

8 Expression of results

Calculate the mean value of the two pH readings to the nearest 0,1 pH unit at the test temperature.

9 Repeatability and reproducibility

9.1 Repeatability

(single observer, single instrument)

When two results are obtained by a single observer under identical conditions, they will be regarded as acceptable and complying with the standard if they differ by no more than 0,2 pH units.

9.2 Reproducibility

(different observers, different instruments)

When two results are obtained in two different laboratories under comparable conditions, they will be regarded as acceptable and complying with the standard if they differ by no more than 0,3 pH units.

If a comparability of less than 0,3 pH units is aimed for, all relevant influencing parameters such as temperature compensation, electrode slope, calibration method, alkali error/acid error, dilution factor shall be very precisely described.

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10 Test report

The test report shall include the following :

- a) all information necessary for the complete identification of the sample ;
- b) the reference to the method used (reference to this standard), solution A or B or C ;
- c) the two standard buffer solutions used for the calibration of the pH meter ;
- d) the exact temperature of the measurements, with an accuracy of ± 1 °C ;
- e) the age of the solution or dispersion at the time conducting the measurements ;
- f) the appearance of the solution or dispersion (clear, cloudy, creamy) at the time of conducting the measurements ;
- g) the results ;
- h) any operation not included in this standard or regarded as optional, as well as any incidents which may have affected the results.