
INTERNATIONAL STANDARD



4316

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Surface active agents — Determination of pH of aqueous solutions — Potentiometric method

Agents de surface — Détermination du pH des solutions aqueuses — Méthode potentiométrique

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Descriptors : surfactants, dissolved matter, chemical analysis, determination of content, pH, potentiometric analysis.

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

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 4316 was developed by Technical Committee ISO/TC 91, *Surface active agents*, and was circulated to the member bodies in August 1975.

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

[ISO 4316:1977](https://standards.iteh.ai/catalog/standards/sist/b2106089-1742-4c5c-9c82-d870dda5572d/iso-4316-1977)

Australia	India	Spain
Austria	Iran	Switzerland
Belgium	Italy	Thailand
Brazil	Netherlands	Turkey
Canada	New Zealand	United Kingdom
Egypt, Arab Rep. of	Poland	U.S.A.
France	Portugal	Yugoslavia
Germany	Romania	
Hungary	South Africa, Rep. of	

The member body of the following country expressed disapproval of the document on technical grounds :

Japan

Surface active agents — Determination of pH of aqueous solutions — Potentiometric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the pH of aqueous solutions of surface active agents.

This method is applicable only if so indicated in the specific standard for each product.

2 REFERENCE

ISO 607, *Surface active agents — Detergents — Methods of sample division*.¹⁾

3 PRINCIPLE

Potentiometric measurement of the potential difference between a glass electrode and a reference electrode dipping in an aqueous solution of the surface active agent.

4 REAGENTS

4.1 Distilled water, free from carbon dioxide and protected from its absorption.

4.2 Standard buffer solutions.

Two standard buffer solutions, chosen from those commonly used, are necessary to calibrate the pH meter. Their pH values should, if possible, be on either side of the expected pH of the test solution but, if not, one should not differ from the expected pH by more than 1 pH unit.

5 APPARATUS

5.1 pH meter, including a temperature compensation system, and graduated in 0,1 pH unit.

5.2 Glass electrode.

5.3 Electrode, calomel/saturated potassium chloride type.

5.4 Combined electrode, as an alternative to the glass electrode (5.2) and reference electrode (5.3).

6 SAMPLING

The laboratory sample of the surface active agent shall be prepared and stored according to the instructions given in ISO 607.

7 PROCEDURE

7.1 Test portion

Weigh, to the nearest 0,01 g, approximately 10 g of the laboratory sample.

7.2 Determination

7.2.1 Preparation of the test solution

The preparation and the concentration of the test solution from the test portion (7.1) shall be indicated in the specific standard for each product.

7.2.2 Calibration

Calibrate the pH meter (5.1) according to the manufacturer's instructions, using the two standard buffer solutions (4.2) chosen, at the temperature specified in 7.2.3.

7.2.3 pH measurement

For all measurements, the temperatures of the electrodes, of the water used for washing and of the standard buffer solutions or the test solutions, shall be adjusted to 20 ± 1 °C and should be as close to each other as possible. These temperatures shall not differ by more than 1 °C.

1) In preparation. (Revision of ISO/R 607.)

Once the apparatus has been calibrated, wash the electrodes first with the water (4.1) and then with the test solution (7.2.1). Mix the test solution (7.2.1), place a sufficient volume in the measuring vessel and dip the electrodes in it. Check that the reading of the pH meter is stable for 1 min and then record the value.

Repeat the same operations with a fresh portion of the test solution. If the second measurement differs from the first by 0,1 pH unit (or more), carry out a third measurement. If this value is inconclusive, repeat the test, including the calibration.

NOTE — In the case of cationic surface active agents, re-calibrate the pH meter after every measurement.

8 EXPRESSION OF RESULTS

The mean value should be rounded to the nearest 0,1 pH unit. Express the results in pH units at 20 °C.

9 TEST REPORT

The test report shall include the following particulars :

- a) all information necessary for the complete identification of the sample;
- b) the concentration of the test solution;
- c) the reference of the method used (reference to this International Standard);
- d) the results and the method of expression used;
- e) the test temperature;
- f) the model of the pH meter;
- g) any operation not included in this International Standard, or regarded as optional, as well as any incidents which may have affected the results.

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