
INTERNATIONAL STANDARD



4314

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Surface active agents – Determination of free alkalinity or free acidity – Titrimetric method

Agents de surface – Détermination de l'alcalinité libre ou de l'acidité libre – Méthode titrimétrique

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Descriptors : surfactants, chemical analysis, determination of content, acidity, alkalinity, volumetric 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 4314 was drawn up by Technical Committee ISO/TC 91, *Surface active agents*, and was circulated to the member bodies in August 1975.

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

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

No member body expressed disapproval of the document.

Surface active agents – Determination of free alkalinity or free acidity – Titrimetric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a titrimetric method for the determination of free alkalinity or free acidity 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 DEFINITION

free alkalinity or free acidity : The alkalinity or acidity determined using phenolphthalein as indicator, expressed as the "alkali value" or the "acid value" as the case may be, i.e. in milligrams of potassium hydroxide present in 1 g of the product or required to neutralize 1 g of the product.

4 PRINCIPLE

Titration of an ethanolic or propanolic solution of the product with a standard volumetric potassium hydroxide or hydrochloric acid or sulphuric acid solution whichever is appropriate, in the presence of phenolphthalein as indicator.

5 REAGENTS

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

5.1 Ethanol, 95 % (V/V), or propan-2-ol, 50 % (V/V), neutralized solution.

Reflux the selected solution gently for 5 min to eliminate carbon dioxide. Cool to ambient temperature and neutralize with the potassium hydroxide solution (5.2) in the presence of the phenolphthalein solution (4 drops per 200 ml), until the indicator just turns pink.

5.2 Potassium hydroxide, 0,1 N standard volumetric solution.

5.3 Hydrochloric acid or sulphuric acid, 0,1 N standard volumetric solution.

5.4 Phenolphthalein, 10 g/l solution in 95 % (V/V) ethanol.

6 APPARATUS

Ordinary laboratory apparatus, and in particular :

6.1 Conical flask, capacity 250 ml, complying with the requirements of ISO 1773.

6.2 Burette, capacity 25 ml, complying with the requirements of class A of ISO 385.

7 SAMPLING

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

8 PROCEDURE

8.1 Test portion

Weigh, to the nearest 0,001 g, about 10 g of the laboratory sample into the conical flask (6.1).

8.2 Determination

Add 100 ml of the ethanol or the propan-2-ol (5.1) and shake to dissolve the test portion (8.1) completely. Add 4 to 5 drops of the phenolphthalein solution (5.4).

If the solution remains colourless, titrate, using the burette (6.2), with the potassium hydroxide solution (5.2). If the solution is pink, titrate in the same manner with either the hydrochloric acid or sulphuric acid solution (5.3).

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

9 EXPRESSION OF RESULTS

The alkali value (IB) or acid value (IA), expressed in milligrams of potassium hydroxide per gram of product, is given by the formula

$$\frac{V \times T \times 56,1}{m}$$

where

V is the volume, in millilitres, of the standard volumetric solution (5.2) or (5.3) used;

T is the exact normality of the standard volumetric solution used;

m is the mass, in grams, of the test portion.

10 TEST REPORT

The test report shall include the following particulars :

- a) all information necessary for the complete identification of the sample;
- b) the reference to the method used;
- c) the results obtained and the form in which they are expressed;
- d) the test conditions;
- e) 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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