INTERNATIONAL STANDARD 2888

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Furfural for industrial use — Determination of acidity to phenolphthalein — Volumetric method

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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 2888 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in July 1972.

It has been approved by the Member Bodies of the following countries :

Australia	Ireland	South Africa, Rep. of
Belgium	Israel	Sweden
Czechoslovakia	Italy	Switzerland
Egypt, Arab Rep. of	Mexico	Thailand
France	Netherlands	Turkey
Germany	New Zealand	United Kingdom
Hungary	Romania	U.S.S.R.

No Member Body expressed disapproval of the document.

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Furfural for industrial use — Determination of acidity to phenolphthalein — Volumetric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of acidity to phenolphthalein of furfural for industrial use.

2 REFERENCES

ISO/R 758, *Method for the determination of density of liquids at 20 °C.*

ISO ..., *Chemical products for industrial use — Sampling.*[1]

3 PRINCIPLE

Titration of the acidity in a test portion with a standard volumetric sodium hydroxide solution, using phenolphthalein as indicator.

4 REAGENTS

Distilled water, or water of equivalent purity, freshly boiled and cooled, shall be used in the test.

4.1 Sodium hydroxide, 0,100 M standard volumetric solution.

4.2 Sulphuric acid, approximately 0,05 M solution.

4.3 Phenolphthalein, 5 g/l ethanolic solution.

Dissolve 0,5 g of phenolphthalein in 100 ml of 95 % (*V/V*) ethanol and make faintly pink by the addition of dilute sodium hydroxide solution.

5 APPARATUS

Ordinary laboratory apparatus and

5.1 Burette, capacity 10 ml, graduated in 0,02 ml divisions.

6 SAMPLING

CAUTION : Furfural has an irritant vapour and is flammable.

Follow the principles described in ISO ... . Attention is drawn to the following recommendation : place the laboratory sample representative of the material taken from the bulk in a clean, dry, dark coloured glass-stoppered bottle of such a size that it is nearly filled by the sample.

If it is necessary to seal this bottle, care shall be taken to avoid the risk of contamination.

7 PROCEDURE

7.1 Test portion

Take 10,0 ml of the laboratory sample at 20 °C.

7.2 Determination

Place approximately 200 ml of water in a 500 ml conical flask and add 0,5 ml of the phenolphthalein solution (4.3). Neutralize the water by addition of the standard volumetric sodium hydroxide solution (4.1) or the sulphuric acid solution (4.2) as required. Add the test portion (7.1), swirl the flask to dissolve the sample and titrate, using the burette (5.1), with the standard volumetric sodium hydroxide solution (4.1), until the appearance of a pale pink colour which persists for at least 10 to 15 s.

1) In preparation.

8 EXPRESSION OF RESULTS

The acidity, expressed as equivalents per kilogram, is given by the formula

$$\frac{V}{100 \times \rho}$$

and, as a percentage by mass of acetic acid (CH_3COOH), by the formula

$$\frac{0{,}006\,0 \times V}{10 \times \rho} \times 100 = \frac{0{,}060 \times V}{\rho}$$

where

V is the volume, in millilitres, of the standard volumetric sodium hydroxide solution (4.1) used for the titration;

ρ is the density, in grams per millilitre, of the sample at 20 °C determined by the method described in ISO/R 758;

0,006 0 is the mass, in grams, of acetic acid corresponding to 1 ml of 0,100 M sodium hydroxide solution.

9 TEST REPORT

The test report shall include the following particulars :

a) the reference of the method used;

b) the results and the method of expression used;

c) any unusual features noted during the determination;

d) any operation not included in this International Standard or the documents to which reference is made, or regarded as optional.

ANNEX

This document is one of a series of International Standards specifying methods of test for furfural for industrial use. A list of methods established or in course of preparation is as follows :

ISO 2511 – List of methods of test.

ISO 2512 – Determination of total content of carbonyl compounds – Volumetric method.

ISO 2888 – Determination of acidity to phenolphthalein – Volumetric method.

ISO ... – Determination of total sulphur by combustion.[1)]

1) In preparation.