H. 20-05
H. 20-07

INTERNATIONAL STANDARD ISO 2887

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

*sec*Butyl alcohol, methyl ethyl ketone, *iso*butyl methyl ketone, *iso*amyl ethyl ketone, diacetone alcohol, and hexylene glycol for industrial use — Determination of acidity to phenolphthalein — Volumetric method

First edition — 1973-12-15

UDC 661.72 : 543.241

Ref. No. ISO 2887-1973 (E)

Descriptors : butanols, ketones, methyl ethyl ketone, acyclic alcohols, glycols, chemical analysis, acidity, volumetric analysis.

Price based on 2 pages

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 2887 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	India	South Africa, Rep. of
Belgium	Ireland	Sweden
Czechoslovakia	Israel	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.

Printed in Switzerland

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1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the acidity to phenolphthalein of *sec*butyl alcohol (butan-2-ol), methyl ethyl ketone (butan-2-one), *iso*butyl methyl ketone (4-methylpentan-2-one), *iso*amyl ethyl ketone (5-methylheptan-3-one), diacetone alcohol (4-hydroxy-4-methylpentan-2-one) and hexylene glycol (2-methylpentane-2,4-diol) 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

Dilution of a test portion with water (or with ethanol or propan-2-ol if the sample is not completely soluble in water) and removal of carbon dioxide by passing a stream of nitrogen through the solution.

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

4 REAGENTS

Distilled water, or water of equivalent purity, shall be used in the test.

4.1 Ethanol, 95 % (*V/V*) or **propan-2-ol,** 99 % (*V/V*).

4.2 Nitrogen, free from ammonia and carbon dioxide, supplied from a cylinder fitted with a pressure regulator enabling the flow rate to be controlled at 500 ± 50 ml/min.

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

4.4 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 Conical flask, capacity 500 ml, of borosilicate glass.

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

6 SAMPLING

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 100,0 ml of the laboratory sample at 20 °C.

7.2 Determination

Place 100 ml of water (in the case of diacetone alcohol or hexylene glycol) or 100 ml of the ethanol or the propan-2-ol (4.1) (in the case of the other products) in the flask (5.1), and pass a stream of the nitrogen (4.2), at a rate of 500 ± 50 ml/min for 10 to 15 min. Add 0,5 ml of the phenolphthalein solution (4.4) and titrate with the standard volumetric sodium hydroxide solution (4.3) until the appearance of a pale pink colour.

Add the test portion (7.1) and pass a stream of the nitrogen (4.2), at a rate of 500 ± 50 ml/min for 10 to 15 min. Add 0,5 ml of the phenolphthalein solution (4.4) and titrate with the standard volumetric sodium hydroxide solution (4.3) until the appearance of a pale pink colour.

1) In preparation.

8 EXPRESSION OF RESULTS

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

$$\frac{V}{1\,000\,\rho}$$

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

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

where

V is the volume, in millilitres, of the standard volumetric sodium hydroxide solution (4.3) 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.