International Standard 756/1

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Propan-2-ol for industrial use — Methods of test — Part 1 : General

Propanol-2 à usage industriel — Méthodes d'essai — Partie 1 : Généralités

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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 756/1 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in October 1980.

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

Australia	Egypt, Arab Rep. of	Korea, Rep. of
Austria	France	Netherlands
Belgium	Germany, F. R.	Poland
Brazil	Hungary	Romania
Bulgaria	India	Switzerland
China	Ireland	United Kingdom
Czechoslovakia	Italy	USSR

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

South Africa, Rep. of

International Standards ISO 756/1, ISO 756/2 and ISO 756/3 cancel and replace ISO Recommendation R 756-1968 of which they constitute a technical revision.

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Propan-2-ol for industrial use — Methods of test — Part 1 : General

1 Scope and field of application

This part of ISO 756 gives general instructions relating to methods of test for propan-2-ol (*iso*propyl alcohol) for industrial use.

It also specifies the methods to be used for the determination of density at 20 °C, for the determination of boiling range, for the determination of dry residue after evaporation on a water bath, for the measurement of colour, for the determination of water content, and for the determination of aldehydes and ketones content.

The present list of parts of ISO 756 is given in the annex.

2 References

ISO 758, *Liquid chemical products for industrial use — Determination of density at* 20 °C.

ISO 759, *Volatile organic liquids for industrial use — Determination of dry residue after evaporation on a water bath — General method.*

ISO 760, Determination of water — Karl Fischer method (General method).

ISO 918, *Volatile organic liquids for industrial use — Determination of distillation characteristics — General method.*[1)]

ISO 1843/3, *Higher alcohols for industrial use — Methods of test — Part 3 : Determination of carbonyl compounds content — Potentiometric method.*

ISO 2211, *Liquid chemical products — Measurement of colour in Hazen units (platinum-cobalt scale).*

3 Sampling[2)]

Store the laboratory sample in a clean, dry, air-tight glass bottle fitted with a ground glass stopper, or a screw-capped bottle fitted with a polyethylene cone insert, of such capacity that it is almost entirely filled by the sample. If it is necessary to seal the bottle, take care to avoid any risk of contamination of the contents.

NOTE — A sample of not less than 750 ml is necessary for performing all the tests specified for the product.

4 Determination of density at 20 °C

Use the method specified in ISO 758.

5 Determination of boiling range

Use the method specified in ISO 918, subject to the following modifications appropriate to propan-2-ol.

5.1 Thermometer, complying with the requirements of ISO 918, sub-clause 5.1.2, and of table 1.

Table 1 — Requirements for the thermometer

Temperature range	Graduations	Maximum error	Maximum error in an interval of 10 °C
°C	°C	°C	°C
48 to 102	0,2	0,2	0,2

5.2 Temperature correction

If the corrected barometric pressure deviates from 1 013 mbar[3)], apply a correction to the observed temperature by subtracting 0,025 °C for every millibar above, or adding 0,025 °C for every millibar below, 1 013 mbar (see ISO 918, clause 9).

5.3 Distillation

Regulate the rate of heating so that the first drop of distillate falls from the end of the condenser after 7 to 12 min (see ISO 918, sub-clause 7.2).

1) At present at the stage of draft. (Revision of ISO/R 918.)

2) The sampling of liquid chemical products for industrial use will form the subject of a future International Standard.

3) 1 bar = 10^5 Pa

6 Determination of dry residue after evaporation on a water bath

Use the method specified in ISO 759.

7 Measurement of colour

Use the method specified in ISO 2211.

8 Determination of water content

Use one of the methods specified in ISO 760.

9 Determination of aldehydes and ketones content

Use the method specified in ISO 1843/3, subject to the following modifications.

9.1 Ethanol, carbonyl-free, prepared as follows.

Boil under reflux 500 ml of the ethanol (see ISO 1843/3, sub-clause 3.1) with 5 g of 2,4-dinitrophenylhydrazine and 5 drops of hydrochloric acid solution, ϱ 1,19 g/ml, for 2 to 3 h. Distil off the ethanol slowly using a Widmer distillation column about 300 mm long and about 25 mm in diameter, or any other suitable column. Reject the first 50 ml of distillate and collect the next 400 ml, rejecting the remainder. If the distillate is coloured, redistil it.

9.2 Determination (see ISO 1843/3, sub-clause 5.3)

Use a 400 ml beaker for the titration.

9.3 Expression of results (see ISO 1843/3, clause 6)

The carbonyl compounds content is given by the formulae shown in table 2.

Table 2 — Carbonyl compounds content

	Potassium hydroxide solution concentration	
	c(KOH) = 0,1 mol/l	c(KOH) = 0,01 mol/l
Method of expression	**Calculation formulae**	
milligrams per kilogram (mg/kg)	$\frac{100\,M\,(V_1 - V_0)}{m}$	$\frac{10\,M\,(V_1 - V_0)}{m}$
percentage by mass [% (m/m)]	$\frac{M\,(V_1 - V_0)}{m \times 10^2}$	$\frac{M\,(V_1 - V_0)}{m \times 10^3}$

In the formulae in table 2 :

V_0 is the volume, in millilitres, of the standard volumetric potassium hydroxide solution (see ISO 1843/3, sub-clause 3.3 or 3.4) used for the blank test;

V_1 is the volume, in millilitres, of the standard volumetric potassium hydroxide solution (see ISO 1843/3, sub-clause 3.3 or 3.4) used for the determination;

M is the molar mass, in grams per mole, of the carbonyl compound in terms of which the results are to be expressed;

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

10 Test report

The test report, for each determination, shall contain the following information :

a) an identification of the sample;

b) the reference of the method used;

c) the results and the method of expression used;

d) any unusual features noted during the determination;

e) any operation not included in the appropriate part of ISO 756 or in the International Standards to which reference is made, or regarded as optional.

Annex

ISO publications relating to propan-2-ol for industrial use

ISO 756/1 — General.

ISO 756/2 — Determination of acidity — Titrimetric method.

ISO 756/3 — Test for miscibility with water.