



# Standard Specification for Isopropyl Alcohol<sup>1,2</sup>

This standard is issued under the fixed designation D770; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

## 1. Scope\*

1.1 This specification covers isopropyl alcohol (99 % grade).

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 The following applies to all specified limits in this standard; for purposes of determining conformance with this standard, an observed value or a calculated value shall be rounded off “to the nearest unit” in the last right-hand digit used in expressing the specification limit, in accordance with the rounding-off method of Practice E29.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.5 For hazard information and guidance, see the supplier’s Material Safety Data Sheet.

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>3</sup>

- D268 Guide for Sampling and Testing Volatile Solvents and Chemical Intermediates for Use in Paint and Related Coatings and Material
- D1078 Test Method for Distillation Range of Volatile Organic Liquids
- D1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)
- D1296 Test Method for Odor of Volatile Solvents and Diluents
- D1353 Test Method for Nonvolatile Matter in Volatile Sol-

- vents for Use in Paint, Varnish, Lacquer, and Related Products
  - D1364 Test Method for Water in Volatile Solvents (Karl Fischer Reagent Titration Method)
  - D1476 Test Method for Heptane Miscibility of Lacquer Solvents
  - D1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products
  - D1722 Test Method for Water Miscibility of Water-Soluble Solvents
  - D4052 Test Method for Density, Relative Density, and API Gravity of Liquids by Digital Density Meter
  - D5386 Test Method for Color of Liquids Using Tristimulus Colorimetry
  - E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
  - E300 Practice for Sampling Industrial Chemicals
- 2.2 U.S. Federal Specification:  
 PPP-C-2020 Chemicals, Liquid, Dry, and Paste: Packaging of <sup>4</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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<sup>2</sup> This compound is also known under the name propanol-2 and isopropanol.

<sup>3</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

## 3. Properties

3.1 Isopropyl alcohol shall conform to the following requirements:

Apparent specific gravity, 20/20°C	0.785 to 0.787
or	
25/25°C	0.782 to 0.784
Color, Pt-Co scale, max <sup>A</sup>	10
	<sup>B</sup>
Distillation range, 760 mmHg	
Nonvolatile matter, max, mg/100 mL	5
Odor	nonresidual <sup>C</sup>
Water, max, weight %	0.2 <sup>D</sup>
Acidity, acetic acid, max, weight %	0.002 <sup>E</sup>
Water miscibility	passes test

<sup>A</sup> Instrumental Pt-Co color determined by Test Method D5386 have been shown to have no statistically significant difference from Pt-Co color determined by Test Method D1209. However, it is not known whether isopropyl alcohol was part of the sample set included in the interlaboratory study.

<sup>B</sup> Distill entirely within a 1.5°C range which shall include 82.3°C.

<sup>C</sup> Optional, when required, as agreed upon between the supplier and the consumer.

<sup>4</sup> Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, http://dodssp.daps.dla.mil.

\*A Summary of Changes section appears at the end of this standard

<sup>D</sup> This quantitative water limit ensures that the material is miscible without turbidity with 19 volumes of 99 % heptane at 20°C.

<sup>E</sup> Equivalent to 0.019 mg KOH per gram of sample.

#### 4. Sampling

4.1 The material shall be sampled in accordance with Practice **E300**.

#### 5. Test Methods

5.1 The properties enumerated in this specification shall be determined in accordance with the following ASTM methods:

5.1.1 *Apparent Specific Gravity*—Determine the apparent specific gravity at 20 or 25°C by a convenient method that is accurate to the third decimal place. See Guide **D268** or Test Method **D4052**.

5.1.2 *Color*—Test Method **D1209** (see Note A in 3.1).

5.1.3 *Distillation Range*—Test Method **D1078** using a temperature measuring device having a range of 72 to 126°C and a resolution of 0.1°C.

5.1.4 *Nonvolatile Matter*—Test Method **D1353**.

5.1.5 *Odor*—Test Method **D1296**.

5.1.6 *Water*—Test Methods **D1364** and **D1476**.

5.1.7 *Acidity*—Test Method **D1613**.

5.1.8 *Water Miscibility*—Test Method **D1722**.

#### 6. Packaging and Package Marking

6.1 Package size shall be agreed upon between the purchaser and the supplier.

6.2 Packaging shall conform to applicable carrier rules and regulations, or when specified, shall conform to Fed. Spec. PPP-C-2020.

#### 7. Keywords

7.1 isopropanol; isopropyl alcohol; petrohol; secondary propyl alcohol; 2-propanol

### SUMMARY OF CHANGES

Committee D01 has identified the location of selected changes to this standard since the last issue (D770 - 05) that may impact the use of this standard. (Approved November 1, 2011.)

(1) Revised 5.1.3.

(2) Removed Specification E1 from 2.1.

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