



Standard Specification for *n*-Butyl Alcohol (Butanol)¹

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This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers *n*-butyl alcohol (butanol).

1.2 For hazard information and guidance, see the supplier's Material Safety Data Sheets.

2. Referenced Documents

2.1 *ASTM Standards*:

D 268 Guide for Sampling and Testing Volatile Solvents and Chemical Intermediates for Use in Paint and Related Coatings and Materials²

D 891 Test Methods for Specific Gravity, Apparent, of Liquid Industrial Chemicals³

D 1078 Test Method for Distillation Range of Volatile Organic Liquids²

D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)²

D 1353 Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products²

D 1364 Test Method for Water in Volatile Solvents (Karl Fischer Reagent Titration Method)²

D 1476 Test Method for Heptane Miscibility of Lacquer Solvents²

D 1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products²

D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter⁴

E 1 Specification for ASTM Thermometers⁵

E 300 Practice for Sampling Industrial Chemicals³

2.2 *U.S. Federal Specification*:

PPP-C-2020 Chemicals, Liquid, Dry, and Paste: Packaging of⁶

3. Properties

3.1 *n*-butyl alcohol (butanol) shall conform to the following requirements:

Apparent specific gravity:	
20/20°C	0.810 to 0.813
25/25°C	0.807 to 0.810
Color, Pt-Co scale, max	10 ^A
Distillation range, 760 mmHg	A
Nonvolatile matter, max, mg/100 mL	5
Water, max, weight %	0.1 ^B
Acidity, as acetic acid, max, weight %	0.005 ^C

^A Shall distill entirely within a 1.5°C range which shall include 117.7°C.

^B This quantitative water limit ensures that the material is miscible without turbidity with 19 volumes of 99 % heptane at 20°C.

^C Equivalent to 0.047 mg of KOH per gram of sample.

4. Sampling

4.1 The material shall be sampled in accordance with Practice E 300.

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 Methods D 268 or Test Methods D 891 or D 4052.

5.1.2 *Color*—Test Method D 1209.

5.1.3 *Distillation Range*—Test Method D 1078 using an ASTM Solvents Distillation Thermometer 40C having a range from 72 to 126°C and conforming to the requirements of Specification E 1.

5.1.4 *Nonvolatile Matter*—Test Method D 1353.

5.1.5 *Water*—Test Methods D 1364 and D 1476.

5.1.6 *Acidity*—Test Method D 1613.

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 *n*-butanol; *n*-butyl alcohol; 1-butanol; propyl carbinol

¹ This specification is under the jurisdiction of the ASTM Committee D-1 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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² *Annual Book of ASTM Standards*, Vol 06.04.

³ *Annual Book of ASTM Standards*, Vol 15.05.

⁴ *Annual Book of ASTM Standards*, Vol 05.02.

⁵ *Annual Book of ASTM Standards*, Vol 14.03.

⁶ Available from Standardization Documents Order Desk, Bldg 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

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