



Standard Specification for Diacetone Alcohol¹

This standard is issued under the fixed designation D 2627; 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 diacetone alcohol.²

1.2 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 E 29.

1.3 For specific hazard information and guidance, consult the supplier’s Material Safety Data Sheet.

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.*

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 Material³

D 1078 Test Method for Distillation Range of Volatile Organic Liquids³

D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)³

D 1296 Test Method for Odor of Volatile Solvents and Diluents³

D 1353 Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products³

D 1364 Test Method for Water in Volatile Solvents (Karl Fischer Reagent Titration Method)³

D 1476 Test Method for Heptane Miscibility of Lacquer Solvents³

D 1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products³

D 1722 Test Method for Water Miscibility of Water-Soluble Solvents³

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

E 1 Specification for ASTM Thermometers⁵

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁶

E 300 Practice for Sampling Industrial Chemicals⁷

2.2 U.S. Federal Specification:

PPP-C-2020 Chemicals, Liquid, Dry, and Paste: Packaging of⁸

3. Properties

3.1 Diacetone alcohol shall conform to the following requirements:

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|---|--|
| Apparent specific gravity | |
| 20/20°C | 0.938–0.941 or |
| 25/25°C | 0.935–0.938 |
| Color, Pt-Co units, max | 25 |
| Distillation, 760 mm Hg | |
| Initial boiling point, °C, min | 135 |
| Dry point, °C, max | 172 |
| Nonvolatile matter, g/100 mL, max | 0.01 |
| Odor (see Note 1) | nonresidual |
| Water, wt %, max (see Note 2) | 0.1 |
| Acidity (free acid as acetic acid), wt %, max | 0.01 |
| Water solubility | miscible with distilled water in all proportions |

NOTE 1—Optional: Test for odor only when agreed upon as necessary between the purchaser and the supplier.

NOTE 2—In some cases, Test Method D 1476 may serve as a useful alternative method to determine the presence of water. Because it is a qualitative test, its use would require agreement between user and supplier.

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

¹ This specification is under the jurisdiction of the 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.

Current edition approved Aug. 10, 2002. Published October 2002. Originally published as D 2627 – 67 T. Last previous edition D 2627 – 97.

² This compound is also known as 4-hydroxy-4-methyl-pentanone-2.

³ *Annual Book of ASTM Standards*, Vol 06.04.

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

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

⁶ *Annual Book of ASTM Standards*, Vol 14.02.

⁷ *Annual Book of ASTM Standards*, Vol 15.05.

⁸ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098.

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

determined in accordance with the following ASTM test methods:

5.1.1 *Apparent Specific Gravity*—Determine the apparent specific gravity by any convenient method that is accurate to the third decimal place, the temperature of both specimen and water being 20°C or 25°C. (See Guide D 268 and Test Method D 4052.)

5.1.2 *Color*—Test Method D 1209.

NOTE 3—Diacetone alcohol has a tendency to develop yellow color that is hastened by contact with iron or rust during storage. Protection from iron is obtained with a zinc silicate liner.

5.1.3 *Distillation Range*—Test Method D 1078, using an ASTM Solvents Distillation Thermometer 102C having a range from 123 to 177°C and conforming to the requirements of Specification E 1.

NOTE 4—In order to avoid an erratic value for the initial boiling point the distillation flask should be clean and free of any residual carbon deposit. This exception to the suggestion in Note 3 of Test Method D 1078

is specifically applicable to diacetone alcohol. Particular care should also be given to the heating rate so that the initial boiling point is obtained within the specified time of 5 to 10 min.

5.1.4 *Nonvolatile Matter*—Test Method D 1353.

5.1.5 *Odor*—Test Method D 1296.

5.1.6 *Water*—Test Method D 1364.

5.1.7 *Acidity*—Test Method D 1613.

5.1.8 *Water Solubility*—Test Method D 1722.

6. Packaging and Package Marking

6.1 Package size shall be agreed upon by 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 diacetone alcohol

SUMMARY OF CHANGES

Committee D01.35 has identified the location of selected changes to this standard since the last issue (D 2627 - 97) that may impact the use of this standard.

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| (1) Added reference to Practice E 29 in Scope section. | (4) Changed specs limits for apparent specific gravity in Section 3.1. |
| (2) Added Practice E 29 to list of Referenced Documents. | (5) Reworded Note 2. |
| (3) Added Test Method D 1476 to list of Referenced Documents. | |

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