Designation: D2627 – 08 (Reapproved 2012)

Standard Specification for Diacetone Alcohol[1]

This standard is issued under the fixed designation D2627; 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 E29.

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

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

1.5 *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:*[3]

D56 Test Method for Flash Point by Tag Closed Cup Tester
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 Solvents 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 [4]

3. Properties

3.1 Diacetone alcohol shall conform to the following requirements:

Apparent specific gravity	
20/20°C	0.938–0.941 or
25/25°C	0.935–0.938
Color, Pt-Co units, max (Note 3)	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
Flash point, °C, min	62.0

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

[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 Nov. 1, 2012. Published November 2012. Originally approved in 1967. Last previous edition approved in 2008 as D2627 – 08. DOI: 10.1520/D2627-08R12.

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

[3] 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.

[4] Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, http://www.dodssp.daps.mil.

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

NOTE 2—In some cases, Test Method D1476 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.

NOTE 3—Instrumental Pt-Co color determined by Test Method D5386 has been shown to have no statistically significant difference from Pt-Co color determined by Test Method D1209. However, it is not known whether diacetone alcohol was part of the sample set included in the interlaboratory study.

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 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 or 25°C. (See Guide D268 and Test Method D4052.)

5.1.2 *Color*—Test Method D1209.

NOTE 4—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 D1078, using a temperature measuring device having a range of 123 to 177°C and a resolution of 0.1°C.

NOTE 5—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 D1078 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 D1353.

5.1.5 *Odor*—Test Method D1296.

5.1.6 *Water*—Test Method D1364.

5.1.7 *Acidity*—Test Method D1613.

5.1.8 *Water Solubility*—Test Method D1722.

5.1.9 *Flash Point*—Test Method D56.

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 (D2627 - 07) that may impact the use of this standard. (Approved November 1, 2008.)

(1) Added Test Method D56 to list of Referenced Documents.
(2) Added flash point specification in 3.1.
(3) Added 5.1.9.

Committee D01.35 has identified the location of selected changes to this standard since the last issue (D2627 - 02) that may impact the use of this standard. (Approved June 1, 2007.)

(1) Added new Note 3 in 3.1.
(2) Added Test Method D5386 to the list of Referenced Documents.
(3) Revised 5.1.3.
(4) Removed Specification E1 from 2.1.