Designation: D4614 – 11

Standard Specification for Ethyl Acetate (All Grades)[1]

This standard is issued under the fixed designation D4614; 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 the various grades of ethyl acetate suitable for use as solvents in paint and related coatings.

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, and 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 For specific hazard information and guidance, see the supplier's Material Safety Data Sheet for material listed in this specification.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D268 Guide for Sampling and Testing Volatile Solvents and Chemical Intermediates for Use in Paint and Related Coatings and Material

D891 Test Methods for Specific Gravity, Apparent, of Liquid Industrial Chemicals

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)

D1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products

D3545 Test Method for Alcohol Content and Purity of Acetate Esters by Gas Chromatography

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 [3]

3. Properties

3.1 Ethyl acetate shall conform to the requirements of one of the grades in Table 1.

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 *Purity and Alcohol Content*—Test Method D3545.

5.1.2 *Apparent Specific Gravity*—Determine the apparent specific gravity by any convenient method that is accurate to the third decimal place, the temperature of both sample and water being 20 or 25°C (see Guide D268, or Test Methods D891 or D4052).

5.1.3 *Distillation Range*—Test Method D1078 using a temperature measuring device having a range of 48 to 102°C and a resolution of 0.1°C.

5.1.4 *Acidity*—Test Method D1613.

5.1.5 *Water*—Test Method D1364.

[1] 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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[2] 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] 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**

TABLE 1 Requirements for Ethyl Acetate

Property	Grades			
	85–88	99	99.5	99.5U[A]
Purity, wt %, min	85.0–88.0	99.0	99.5	99.5
Alcohol, wt %, max	...	0.5	0.2	0.2
Color, Pt-Co units, max[B]	10	10	10	10
Distillation range,° C	71.0–79.0	75.0–78.0	75.5–78.0	75.5–78.0
Nonvolatile matter, mg/100 mL, max	5	5	5	5
Odor[C]	Non-residual	Non-residual	Non-residual	Non-residual
Water, wt %, max	0.2	0.1	0.1	0.05[D]
Acidity, wt %, max	0.01	0.01	0.01	0.01
Apparent Specific Gravity:[E]				
20/20°C	0.882–0.887	0.900–0.903	0.900–0.903	0.900–0.903
or				
25/25°C	0.877–0.882	0.895–0.898	0.895–0.898	0.895–9.898

[A] Urethane grade material.
[B] 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 ethyl acetate was part of the sample set included in the interlaboratory study.
[C] Test for odor is optional and should be agreed upon between the buyer and the seller.
[D] Test method used to determine this value should be agreed on between the buyer and the seller.
[E] Apparent specific gravity should be determined either at 20°C or 25°C, and not both. Results obtained at one temperature are valid. Test result at another temperature is redundant.

5.1.6 *Color*—Test Method D1209.
5.1.7 *Nonvolatile Matter*—Test Method D1353.
5.1.8 *Odor*—Test Method D1296.

6. Packaging and Package Marking

6.1 Package size to 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 ester; ethyl acetate; solvent

SUMMARY OF CHANGES

Committee D01 has identified the location of selected changes to this standard since the last issue (D4614 - 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.