



Designation: D 3620 – 98

Standard Specification for Glacial Acetic Acid¹

This standard is issued under the fixed designation D 3620; 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 glacial (99.8 %) acetic acid for use in paint, varnish, lacquer, and related products.

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

2. Referenced Documents

2.1 ASTM Standards:

D 2191 Test Method for Acetaldehyde Content of Vinyl Acetate²

D 3546 Test Method for Formic Acid in Glacial Acetic Acid²

E 180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial Chemicals³

E 300 Practice for Sampling Industrial Chemicals³

E 302 Test Methods for Monobasic Organic Acids³

E 394 Test Method for Iron in Trace Quantities Using the

1,10-Phenanthroline Method³

2.2 U.S. Federal Specification:

PPP-C-2020 Chemicals, Liquid, Dry, and Paste: Packaging of⁴

3. Properties

3.1 Glacial acetic acid shall conform to the following requirements:

Acetic acid, weight %, min	99.8
Freezing point, °C, min	16.2
Color, Pt-Co scale, max	10
Water content, weight %, max	0.16
Iron, ppm (mg/kg), max	0.40
Acetaldehyde, weight %, max	0.05
Formic acid, weight %, max	0.09

4. Sampling

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

¹ This specification is under the jurisdiction of 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.

Current edition approved Dec. 10, 1998. Published February 1999. Originally published as D 3620 – 77. Last previous edition D 3620 – 90 (1994).

² Annual Book of ASTM Standards, Vol 06.04.

³ Annual Book of ASTM Standards, Vol 15.05.

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

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 *Purity*—Test Methods E 302 estimates the purity from the freezing point.

5.1.2 *Freezing Point*—Test Methods E 302.

5.1.3 *Color*—Test Methods E 302.

5.1.4 *Water*—Test Methods E 302.

5.1.5 *Iron*—Test Method E 394, using a 20-mL specimen diluted to 80 mL with water.

5.1.5.1 *Report*—Report the iron content to the nearest 0.01 ppm (mg/kg). Duplicates that agree within 0.07 ppm absolute are acceptable for averaging (95 % confidence level).

5.1.5.2 *Precision*⁵—The precision statements are based upon an interlaboratory study in which one operator in eight different laboratories analyzed two samples of acetic acid in duplicate on two different days. The results were treated in accordance with Practice E 180. The within-laboratory coefficient of variation was 3.05 % with 14 df and the between-laboratory coefficient of variation was 6.00 % with 6 df. Based upon these coefficients of variation, the following criteria should be used for judging the acceptability of results at the 95 % confidence level.

5.1.5.3 *Repeatability*—Two results, each the mean of duplicates, obtained by the same operator on different days should be considered suspect if they differ by more than 9.2 % relative.

5.1.5.4 *Reproducibility*—Two results, each the mean of duplicates, obtained by operators in different laboratories should be considered suspect if they differ by more than 20.6 % relative.

5.1.5.5 *Bias*—Bias cannot be determined for this specification because there is no available material having an accepted reference value.

5.1.6 *Acetaldehyde*—Test Method D 2191, using 100 mL of sodium bisulfite and a 25-mL specimen.

5.1.6.1 *Report*—Report the acetaldehyde content to the nearest 0.001 %. Duplicates that agree within 0.007 % absolute are acceptable for averaging (95 % confidence level).

⁵ Supporting data are available from ASTM Headquarters. Request RR-D01-1010.

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