Designation: D 3845 – 05

# Standard Specification for Glacial Methacrylic Acid[1]

This standard is issued under the fixed designation D 3845; 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 methacrylic acid (98.5 % grade) for use in paint, varnish, lacquer, and related products.

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 *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.*

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

## 2. Referenced Documents

2.1 *ASTM Standards:* [2]

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

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

D 3125 Test Method for Monomethyl Ether of Hydroquinone in Colorless Monomeric Acrylate Esters and Acrylic Acid

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

D 5386 Test Method for Color of Liquids Using Tristimulus Colorimetry

E 300 Practice for Sampling Industrial Chemicals

E 301 Test Method for Total Acidity of Organic Acids[3]

2.2 *U.S. Federal Specification:*

PPP-C-2020 Chemicals, Liquid, Dry, and Paste: Packaging of[4]

## 3. Properties

3.1 Glacial methacrylic acid shall conform to the following requirements.

| | |
|---|---|
| Assay, from total acidity by titration, weight %, min | 99.0 |
| Water, weight %, max | 0.30 |
| Color, Pt-Co scale, max[A] | 25 |
| Inhibitor, methyl ether of hydroquinone | [B] |

[A] Instrumental Pt-Co color determined by Test Method D 5386 have been shown to have no statistically significant difference from Pt-Co color determined by Test Method D 1209. However, it is not known whether glacial methacrlyic acid was part of the sample set included in the interlaboratory study.

[B] As agreed upon between the purchaser and the manufacturer.

## 4. Sampling

4.1 Sample the material in accordance with Practice E 300. Use brown glass sample bottles and protect samples from light and heat at all times.

## 5. Test Methods

5.1 The properties enumerated in this specification shall be determined in accordance with the following ASTM methods:

5.1.1 *Assay, from Total Acidity by Titration*—Test Method E 301. The molecular weight of methacrylic acid is 86.09 and it has one reacting group.

5.1.2 *Water*—Test Method D 1364.

5.1.3 *Color*—Test Method D 1209 (see Note A in 3.1).

5.1.4 *Inhibitor*—Test Method D 3125.

## 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 glacial methacrylic acid

[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] Withdrawn.

[4] 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.**

## SUMMARY OF CHANGES

Committee D01.35 has identified the location of selected changes to this standard since the last issue (D 3845 – 96 (2000)) that may impact the use of this standard.

*(1)* Added reference to Practice E 29 in Scope section.
*(2)* Added Practice E 29 and Test Method D 5386 to list of Referenced Documents.
*(3)* Added new Note A to 3.1.
*(4)* Referenced new Note A in 5.1.3.
*(5)* Changed specification limit for assay from 98.5 to 99.0 % min.