



Standard Specification for Methyl Acrylate¹

This standard is issued under the fixed designation D4709; 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 methyl acrylate (99 % 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 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 *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.* For specific hazard information see Section 4.

1.5 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:²

D1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)

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

D3125 Test Method for Monomethyl Ether of Hydroquinone in Colorless Monomeric Acrylate Esters and Acrylic 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.

D3362 Test Method for Purity of Acrylate Esters by Gas Chromatography (Withdrawn 2011)³

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 of⁴

3. Properties

3.1 Methyl acrylate shall conform to the following requirements:

Purity, wt %, min, as methyl acrylate	99.5
Water, wt %, min	0.10
Color, Pt-Co units, max (Note 1)	
in bulk shipments	10
in drum shipments	20
Acidity, (free acid acrylic acid), wt %, max	0.01
Methyl ether of hydroquinone	as agreed upon by the purchaser and the manufacturer

NOTE 1—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 methyl acrylate was part of the sample set included in the interlaboratory study.

4. Hazards

4.1 Methyl acrylate is a flammable liquid. Its vapors can form explosive mixtures with air and are particularly irritating. Store samples in amber bottles or protect from light by other means to aid in preventing polymerization. Keep samples away from heat sources and chemicals that can cause free radical polymerization. Methyl acrylate can polymerize violently evolving considerable heat. The inhibitor, methyl ether of hydroquinone, requires oxygen to be active.

5. Sampling

5.1 The material shall be sampled in accordance with Practice E300 (see Section 4 on Hazards).

³ The last approved version of this historical standard is referenced on www.astm.org.

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

6. Test Methods

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

6.1.1 *Purity*—Test Method **D3362**.

6.1.2 *Water*—Test Method **D1364**.

6.1.3 *Color*—Test Method **D1209** (see **Note 1**).

6.1.4 *Acidity*—Determine the acidity in accordance with Test Method **D1613**, except multiply the results obtained “as acetic acid” by 76.06/60.05 or 1.2. This will convert the results obtained to “as acrylic acid.” The results obtained “as mg KOH per g of sample” are unaffected.

6.1.5 *Methyl Ether of Hydroquinone Content*—Test Method **D3125**.

7. Packaging and Package Marking

7.1 Package size shall be agreed upon between the purchaser and the supplier.

7.2 Packaging shall conform to applicable carrier rules and regulations or when specified shall conform to Fed. Spec. PPP-C-2020.

8. Keywords

8.1 acidity, alkalinity, or pH; color; methyl acrylate; purity

SUMMARY OF CHANGES

Committee D01.35 has identified the location of selected changes to this standard since the last issue (D4709 - 02) that may impact the use of this standard. (Approved June 1, 2007.)

(1) Added Test Method **D5386** to list of Referenced Documents.

(2) Added new **Note 1** in **6.1.3**.

(3) Referenced new **Note 1** in **6.1.3**.

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