



Designation: D2378 – 22

# Standard Specification for Formaldehyde 50 % Grade Uninhibited and 37 % Grade Inhibited and Uninhibited <sup>1</sup>

This standard is issued under the fixed designation D2378; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers 50 % uninhibited formaldehyde and 37 % uninhibited and inhibited formaldehyde.

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, see the supplier’s Material Safety Data Sheet for materials listed in this specification.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

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

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

<sup>1</sup> 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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<sup>2</sup> 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.

D2087 Test Method for Iron in Formaldehyde Solutions (Withdrawn 2021)<sup>3</sup>

D2194 Test Method for Concentration of Formaldehyde Solutions (Withdrawn 2021)<sup>3</sup>

D2379 Test Method for Acidity of Formaldehyde Solutions  
D2380 Test Method for Methanol Content of Formaldehyde Solutions

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 Standard:*<sup>4</sup>

PPP-C-2020 Federal Specification For Packaging of Chemicals, Liquid, Dry, and Paste

## 3. Properties

3.1 The physical and chemical properties of formaldehyde, 50 % uninhibited and 37 % uninhibited and inhibited, shall conform to the requirements specified in Table 1.

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 formaldehyde 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. Hazards

5.1 Formaldehyde and formaldehyde solutions are toxic and exposure to them should be minimized to avoid acute effects and possible sensitizing. Consult the supplier’s Material Safety Data Sheet for specific hazard information.

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

<sup>4</sup> Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.access.gpo.gov.

**TABLE 1 Physical and Chemical Properties of Formaldehyde**

	Formaldehyde 50 % Grade	Formaldehyde 37 % Grade
Apparent specific gravity at 25/25 °C	1.1470 – 1.1520	1.0749 – 1.1139
Formaldehyde content, weight %	49.75 – 50.5	37.0 – 37.4
Acidity, as formic acid, max, weight %	0.05	0.02
Color, max, Pt-Co scale ( <b>Note 1</b> )	10	10
Iron, max, ppm (weight)	1.0	1.0
Methanol content, max, weight %	1.5	as agreed upon between the purchaser and seller
Appearance	clear and free of suspended matter	clear and free of suspended matter

## 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 *Apparent Specific Gravity*—Test Methods **D891**.
- 6.1.2 *Formaldehyde Content*—Test Method **D2194**.
- 6.1.3 *Acidity*—Test Method **D2379**.
- 6.1.4 *Color*—Test Method **D1209** (see **Note 1**).
- 6.1.5 *Iron*—Test Method **D2087**.
- 6.1.6 *Methanol Content*—Test Method **D2380**.

## 7. Packaging and Package Marking

7.1 Package size to be agreed upon between the purchaser and 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; color; formaldehyde; methanol

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