



## Standard Specification for Methyl Isobutyl Ketone<sup>1,2</sup>

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*This standard has been approved for use by agencies of the Department of Defense.*

### 1. Scope

1.1 This specification covers methyl isobutyl ketone (99.0 % grade).

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 268 Guide for Sampling and Testing Volatile Solvents and Chemical Intermediates for Use in Paint Related Coatings and Material<sup>3</sup>

D 1078 Test Method for Distillation Range of Volatile Organic Liquids<sup>3</sup>

D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)<sup>3</sup>

D 1296 Test Method for Odor of Volatile Solvents and Diluents<sup>3</sup>

D 1353 Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products<sup>3</sup>

D 1364 Test Method for Water in Volatile Solvents (Fischer Reagent Titration Method)<sup>3</sup>

D 1476 Test Method for Heptane Miscibility of Lacquer Solvents<sup>3</sup>

D 1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products<sup>3</sup>

D 3329 Test Method for Purity of Methyl Isobutyl Ketone by Gas Chromatography<sup>3</sup>

D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter<sup>4</sup>

E 1 Specification for ASTM Thermometers<sup>5</sup>

E 300 Practice for Sampling Industrial Chemicals<sup>6</sup>

2.2 U.S. Federal Specification:

PPP-C-2020 Chemicals, Liquid, Dry, and Paste: Packaging of<sup>7</sup>

### 3. Properties

3.1 Methyl isobutyl ketone (99.0 % grade) shall conform to the following requirements:

Methyl isobutyl ketone wt %, min	99.0
Apparent specific gravity:	
20/20°C	0.800 to 0.803
25/25°C	0.796 to 0.799
Color, Pt-Co units, max	15
Distillation, °C	
Initial boiling point, min	114.0
Dry point, max	117.0
Nonvolatile matter, mg/100 mL, max	5
Odor <sup>A</sup>	nonresidual
Water, wt %, max <sup>B</sup>	0.1
Acidity (free acid as acetic acid), wt %, max	0.01
Methyl isobutyl carbinol, wt %, max	0.3

<sup>A</sup> Optional: Test for odor only when agreed upon as necessary by the purchaser and the supplier.

<sup>B</sup> This quantitative water limit ensures that the material is miscible without turbidity with 19 volumes of 99 % heptane at 20°C.

### 4. Sampling

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

### 5. Test Methods

5.1 The properties enumerated in this application shall be determined in accordance with the following ASTM test Methods:

5.1.1 *Apparent Specific Gravity*—Determine the apparent specific gravity by any convenient method that is accurate to the third decimal place, the temperature of both specimen and water being 20 or 25°C. See Guide D 268 or Test Method D 4052.

5.1.2 *Color*—Test Method D 1209.

5.1.3 *Distillation Range*—Test Method D 1078 using an ASTM Solvents Distillation Thermometer having a range from

<sup>6</sup> Discontinued; see 2001 Annual Book of ASTM Standards, Vol 15.05.

<sup>7</sup> Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094.

<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 D 01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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<sup>2</sup> This compound is also known under the name of 2-methyl -4-pentanone.

<sup>3</sup> Annual Book of ASTM Standards, Vol 06.04.

<sup>4</sup> Annual Book of ASTM Standards, Vol 05.02.

<sup>5</sup> Annual Book of ASTM Standards, Vol 14.03.

98 to 152°C and conforming to the requirements for Thermometer 41C as prescribed in Specification E 1.

5.1.4 *Nonvolatile Matter*—Test Method D 1353.

5.1.5 *Odor*—Test Method D 1296.

5.1.6 *Water*—Test Method D 1364 or D 1476.

5.1.7 *Acidity*—Test Method D 1613.

5.1.8 *Alcohol and Purity*—Test Method D 3329.

## 6. Packaging and Package Marking

6.1 Package site shall be agreed upon by 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 ketones; methyl isobutyl ketone (MIBK); solvents; 2-methyl-4-pentanone

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