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Standard Specification for Methyl Isobutyl Ketone^{1,2}

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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 Materials³
- D 1078 Test Method for Distillation Range of Volatile Organic Liquids³
- D 1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)³
- D 1296 Test Method for Odor of Volatile Solvents and Diluents³
- D 1353 Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products³
- D 1364 Test Method for Water in Volatile Solvents (Fischer Reagent Titration Method)³
- D 1476 Test Method for Heptane Miscibility of Lacquer Solvents³
- D 1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products³
- D 3329 Test Method for Purity of Methyl Isobutyl Ketone by Gas Chromatography³
- D 4052 Test Method for Density and Relative Density of Liquids by Digital Density Meter⁴
- E 1 Specification for ASTM Thermometers⁵
- E 300 Practice for Sampling Industrial Chemicals⁶

2.2 U.S. Federal Specification:

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 D 01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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² This compound is also known under the name of 2-methyl -4-pentanone.

³ Annual Book of ASTM Standards, Vol 06.04.

⁴ Annual Book of ASTM Standards, Vol 05.02.

⁵ Annual Book of ASTM Standards, Vol 14.03.

⁶ Annual Book of ASTM Standards, Vol 15.05.

PPP-C-2020 Chemicals, Liquid, Dry, and Paste: Packaging of⁷

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 ^A	nonresidual
Water, wt %, max ^B	0.1
Acidity (free acid as acetic acid), wt % , max	0.01
Methyl isobutyl carbinol, wt %, max	0.3

^A Optional: Test for odor only when agreed upon as necessary by the purchaser and the supplier.

^B 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 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.

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

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*—Method D 3329.

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

6. Packaging and Package Marking

6.1 Package site shall be agreed upon by the purchaser and the supplier.

7. Keywords

7.1 ketones; methyl isobutyl ketone (MIBK); solvents; 2-methyl-4-pentanone

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