



Designation: D3329 – 03 (Reapproved 2023)

Standard Test Method for Purity of Methyl Isobutyl Ketone by Gas Chromatography^{1,2}

This standard is issued under the fixed designation D3329; 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.

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

1. Scope

1.1 This test method covers the determination of the purity of methyl isobutyl ketone (MIBK) by gas chromatography and in addition provides a means for measuring certain impurities such as methyl isobutyl carbinol which are of interest. Impurities such as water and acidity are measured by other appropriate ASTM procedures and the results are used to normalize the chromatographic value.

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 round-off method of Practice E29.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 For specific hazard information and guidance, see the supplier’s Safety Data Sheet for the materials listed in this test method.

1.6 *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:²

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

D2593 Test Method for Butadiene Purity and Hydrocarbon Impurities by Gas Chromatography

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial and Specialty Chemicals (Withdrawn 2009)³

E260 Practice for Packed Column Gas Chromatography

3. Summary of Test Method

3.1 A representative specimen is introduced onto a gas-liquid partition column. Methyl isobutyl ketone is separated from impurities such as acetone, 2-propanol, pentanone, mesityl oxide, methyl isobutyl carbinol, and several unidentified compounds as the components are transported through the column by an inert carrier gas. The separated components are measured in the effluent by a detector and recorded as a chromatogram. The chromatogram is interpreted by applying component attenuation and detector response factors to the peak areas, and the relative concentrations are determined by relating the individual peak responses to the total peak response. Water and acidity are measured in accordance with Test Methods D1364 and D1613 and the results are used to normalize the values obtained by gas chromatography.

4. Significance and Use

4.1 This test method provides a measurement of commonly found impurities in commercially available methyl isobutyl ketone. The measurement of these impurities and the results thereof can individually or when totaled and subtracted from 100 (assay) be used for specification acceptance.

¹ This test method 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 The last approved version of this historical standard is referenced on www.astm.org.