



Designation: D 2804 – 02

Standard Test Method for Purity of Methyl Ethyl Ketone By Gas Chromatography¹

This standard is issued under the fixed designation D 2804; 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 Department of Defense.

1. Scope *

1.1 This test method covers the determination of the purity of methyl ethyl ketone by gas chromatography. Impurities including water, acidity, and nonvolatile matter are measured by appropriate ASTM procedures and the results are used to normalize the chromatographic value.

1.2 For purposes of determining conformance of an observed value or a calculated value using this test method to relevant specifications, test result(s) 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 E 29.

1.3 For hazard information and guidance, see the supplier’s Material Safety Data Sheet.

2. Referenced Documents

2.1 ASTM Standards:

D 1353 Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products²

D 1364 Test Method for Water in Volatile Solvents (Karl Fischer Reagent Titration Method)²

D 1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer and Related Products²

D 2593 Test Method for Butadiene Purity and Hydrocarbon Impurities by Gas Chromatography³

D 4626 Practice for Calculation of Gas Chromatographic Response Factor⁴

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications⁵

E 180 Practice for Determining the Precision of ASTM

Methods for Analysis and Testing of Industrial and Specialty Chemicals⁶

3. Summary of Test Method

3.1 A representative specimen is introduced into a gas-chromatographic column. The methyl ethyl ketone is separated from other impurities such as hydrocarbons, alcohols, acetone, di-sec-butyl ether, and ethyl acetate 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 concentration is determined by relating individual peak response to the total peak response. Water, acidity, and nonvolatiles are measured by the procedures listed in 3.2, and the results are used to normalize the results obtained by gas chromatography.

3.2 The appropriate ASTM test methods are:

3.2.1 *Water*—Test Method D 1364.

3.2.2 *Acidity*—Test Method D 1613.

3.2.3 *Nonvolatile Matter*—Test Method D 1353.

4. Significance and Use

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

5. Apparatus

5.1 *Chromatograph*—Any gas chromatograph having either a thermal-conductivity or flame ionization detector provided the system has sufficient sensitivity and stability to obtain for 0.01 weight % of impurity a recorder deflection of at least 2 mm at a signal-to-noise ratio of at least 5 to 1. The specimen size to be used in judging the sensitivity must be such that the column is not overloaded.

5.2 *Column*—Any column capable of resolving methyl ethyl ketone from the impurities that may be present. Possible impurities are paraffins, acetone, methanol, ethanol, propanol, isopropanol, *tert*-butanol, *sec*-butanol, di-*sec*-butyl ether, and

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.

Current edition approved July 10, 2002. Published September 2002. Originally published as D 2804 – 69. Last previous edition D 2804 – 98.

² *Annual Book of ASTM Standards*, Vol 06.04.

³ *Annual Book of ASTM Standards*, Vol 05.01.

⁴ *Annual Book of ASTM Standards*, Vol 05.02.

⁵ *Annual Book of ASTM Standards*, Vol 14.02..

⁶ *Annual Book of ASTM Standards*, Vol 15.05.

*A Summary of Changes section appears at the end of this standard.