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.

Designation: D3893 – 03 (Reapproved 2023)

Standard Test Method for Purity of Methyl Amyl Ketone and Methyl Isoamyl Ketone by Gas Chromatography[1]

This standard is issued under the fixed designation D3893; 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.

1. Scope

1.1 This test method covers the determination of the purity of methyl amyl ketone and methyl isoamyl ketone. In addition, the method determines total ketones and various impurities which may include acetone, isopropyl alcohol, methyl propyl ketone, methyl isobutyl ketone, methyl butyl ketone, methyl isobutyl carbinol, mesityl oxide, methyl isoamyl ketone, methyl butyl carbinol, methyl amyl ketone, and diisobutyl ketone.

1.2 Water and acid cannot be determined by this test method. They must be determined by other appropriate ASTM procedures, and the results used to normalize the chromatographic data.

1.3 For purposes of determining conformance of an observed 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 E29.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 For hazard information and guidance, see the supplier's Safety Data Sheet.

1.6 *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.*

1.7 *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

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]

3. Summary of Method

3.1 A representative specimen is introduced onto a gas-liquid partition column. 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 relative concentrations are determined by relating the individual peak responses to the total peak response. Water and acidity are measured by Test Methods D1364 and D1613, respectively, and the results are used to normalize the values obtained by gas chromatography.

4. Significance and Use

4.1 This procedure is designed to determine the purity of the two ketones, methyl isoamyl ketone and methyl amyl ketone, and to obtain the concentration of their various impurities, several of which are critical in the application of these solvents.

5. Apparatus

5.1 *Chromatograph*—Any gas-liquid chromatographic instrument having either a thermal conductivity or flame ionization detector and sufficient sensitivity and stability to obtain for 0.01 % impurity in the specimen a recorder deflection of at

[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 1, 2023. Published August 2023. Originally approved in 1980. Last previous edition approved in 2017 as D3893 – 03 (2017). DOI: 10.1520/D3893-03R23.

[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.

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