Designation: D1612 – 05

Standard Test Method for Acetone in Methanol[1]

This standard is issued under the fixed designation D1612; 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 a procedure for detecting the presence of acetone in methanol in amounts greater than 0.003 weight %.

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

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

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

2. Referenced Documents

2.1 *ASTM Standards:* [2]

D1193 Specification for Reagent Water

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

3. Summary of Test Method

3.1 The specimen is reacted with Nessler's reagent and the turbidity that is produced is compared to a standard containing the equivalent of 0.003 weight % of acetone.

4. Significance and Use

4.1 This test method can be used to detect residual amounts of carbonyl compounds in synthetic and natural methanol. The carbonyl compounds are quantified by comparison to a known standard of acetone solution.

4.2 Carbonyl compounds may be present as a result of contamination during storage, distribution, or manufacture. This test method may be used in assessing compliance with a specification.

5. Apparatus

5.1 *Volumetric Pipets*, 1, 4, and 5-mL capacity.

5.2 *Test Tubes*, matched for color, 1.5 by 15 cm.

6. Reagents

6.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.[3] Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

6.2 Unless otherwise indicated, references to water shall be understood to mean reagent water conforming to Type IV of Specification D1193. It is essential that the reagent water be free of ammonia.

6.3 *Acetone Standard*—Pipet 6.0 mL of acetone into a 1-L volumetric flask and dilute with water to the 1-L mark. Take 1.0 mL of the resulting solution and make up to 1 L with water in a volumetric flask. Five millilitres of this solution contain 0.024 mg of acetone. Under conditions outlined for this test method, the standard made up for comparison is equivalent to a methanol specimen containing 0.003 weight % of acetone.

6.4 *Nessler's Reagent*:

6.4.1 *Solution A*—Dissolve 270 g of sodium hydroxide (NaOH) pellets in water and dilute to 1 L.

6.4.2 *Solution B*—Dissolve 36 g of potassium iodide (KI) crystals and 13.6 g of mercuric chloride ($HgCl_2$) powder in water and dilute to 500 mL. To prepare the Nessler's reagent,

[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] *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.

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