



Standard Test Method for Acetone in Methanol¹

This standard is issued under the fixed designation D 1612; 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 *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.*

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

2. Referenced Documents

2.1 *ASTM Standards:*

D 1193 Specification for Reagent Water²

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 D 1193. 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 (HgCl₂) powder in water and dilute to 500 mL. To prepare the Nessler's reagent, mix three parts of Solution A with 5 parts of Solution B and allow to stand until clear before using.

7. Procedure

7.1 Carefully pipet 1 mL of the sample and 4 mL of water into one of the matched test tubes and mix thoroughly. Carefully pipet 5 mL of the acetone standard into a second matched test tube. Pipet 5 mL of the Nessler's reagent into each of the tubes containing the specimen and the acetone standard. Quickly mix the contents of each tube and allow both to stand for 5 min. At the end of the 5-min standing period, compare the turbidity of the specimen to the turbidity of the acetone standard.

8. Report

8.1 If the turbidity of the specimen is less than that of the acetone standard, report the acetone content is "less than 0.003

¹ This test method is under the jurisdiction of ASTM Committee D-1 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 Feb. 15, 1995. Published April 1995. Originally published as D 1612 – 58 T. Last previous edition D 1612 – 90.

² *Annual Book of ASTM Standards*, Vol 11.01.

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.