



Standard Test Method for Permanganate Time of Acetone and Methanol¹

This standard is issued under the fixed designation D1363; 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 detection in acetone and methanol of the presence of impurities that reduce potassium permanganate.

1.2 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.

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

1.4 For specific hazard information and guidance, consult the supplier’s Material Safety Data Sheet.

1.5 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D329 Specification for Acetone

D1152 Specification for Methanol (Methyl Alcohol)

D1193 Specification for Reagent Water

D1209 Test Method for Color of Clear Liquids (Platinum-Cobalt Scale)

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

E180 Practice for Determining the Precision of ASTM

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.

[Methods for Analysis and Testing of Industrial and Specialty Chemicals \(Withdrawn 2009\)](#)³
[E346 Test Methods for Analysis of Methanol](#)

3. Summary of Test Method

3.1 Substances reacting with potassium permanganate in neutral solutions reduce it to manganese dioxide which colors the solution yellow. In the permanganate test the time required for the color of the test solution to change to that of a standard solution is measured. The color of the test solution changes from pink-orange to yellow-orange.

4. Significance and Use

4.1 The permanganate time can be used to judge the presence of oxidizable materials that may be associated with manufacture or contamination during distribution and to assess compliance with a specification.

4.2 Many chemical processes that use acetone or methanol, or both, involve catalyst, metals, or ligand complexes that are sensitive to oxidation. Since oxidizable contaminants may affect the efficiency of these processes, this test method provides a comparative test for manufacturing control and assessing compliance with a specification.

5. Apparatus

5.1 *Color Comparison Tubes*—Matched 50-mL, tall form Nessler tubes, provided with ground on, optically clear, glass caps.

5.2 *Constant-Temperature Bath*, capable of maintaining a temperature of $15.0 \pm 0.5^\circ\text{C}$ or of $25.0 \pm 0.5^\circ\text{C}$. It is important that the constant-temperature bath be protected from direct light. If a glass constant-temperature bath is employed, it should be wrapped or coated with an opaque material.

5.3 *Pipet*, capable of delivering 2.0 mL of solution.

5.4 *Interval Timer and Clock*, capable of measuring a time interval of 120 min or more. An alarm arrangement may be desirable.

³ The last approved version of this historical standard is referenced on www.astm.org.

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