Designation: D 2340 – 96

Standard Test Method for Peroxides in Styrene Monomer[1]

This standard is issued under the fixed designation D 2340; 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 peroxide content of styrene monomer.

1.2 The following applies to all specified limits in this test method: for purposes of determining conformance with this test method, an observed value or a calculated value 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 *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.* For specific hazard statements, see Section 7.

2. Referenced Documents

2.1 *ASTM Standards:*

D 1193 Specification for Reagent Water[2]

D 3437 Practice for Sampling and Handling Liquid Cyclic Products[3]

E 29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications[4]

2.2 *Other Documents:*

OSHA Regulations, 29 CFR, paragraphs 1910.1000 and 1910.1200[5]

3. Summary of Test Method

3.1 A specimen of styrene monomer is added to a solution of isopropanol and acetic acid. A saturated solution of sodium iodide in isopropanol is added and the solution refluxed. The peroxides present liberate iodine from sodium iodide quantitatively. The liberated iodine is then titrated with sodium thiosulfate to a colorless end point.

4. Significance and Use

4.1 This test method is suitable for determining the quantity of peroxides in styrene monomer both for quality control and quality assurance of the product.

5. Apparatus

5.1 *Erlenmeyer Flasks*, glass-stoppered, 500-mL, equipped with 300-mm Liebig condensers having inner and outer standard taper joints.

5.2 *Electric Hot Plate* with totally enclosed heating unit.

5.3 *Boiling Chips.*

6. Reagents

6.1 *Purity of Reagents*—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.[6] 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 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent water as defined by Type III of Specification D 1193.

6.3 *Glacial Acetic Acid.*

6.4 *Isopropyl Alcohol.*

6.5 *Sodium Iodide Isopropyl Alcohol Solution*—Prepare a saturated solution of sodium iodide in isopropanol (approximately 200 g NaI/L).

6.6 *Sodium Thiosulfate, Standard Solution* (0.01 *N*)—Dissolve 2.5 g of sodium thiosulfate ($Na_2S_2O_3 \cdot 5H_2O$) and 0.1 g of sodium carbonate (Na_2CO_3) in water and dilute to 1 L. Standardize against primary standard potassium dichromate ($K_2Cr_2O_7$).

[1] This test method is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.07 on Styrene, Ethylbenzene, and C_9 and C_{10} Aromatic Hydrocarbons.

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

[3] *Annual Book of ASTM Standards*, Vol 06.04.

[4] *Annual Book of ASTM Standards*, Vol 14.02.

[5] Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

[6] *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.