



Standard Test Method for Monomethyl Ether of Hydroquinone in Colorless Monomeric Acrylate Esters and Acrylic Acid¹

This standard is issued under the fixed designation D 3125; 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 monomethyl ether of hydroquinone² (MEHQ) in colorless monomeric acrylate esters and acrylic acid. The test method is applicable to the determination of MEHQ in the concentration range from 0 to 1200 parts per million.

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

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 whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Specific precautionary statements are given in Section 8.

2. Referenced Documents

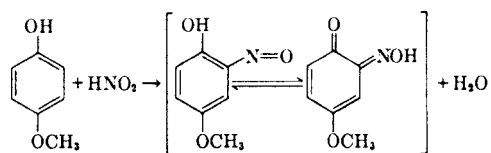
2.1 ASTM Standards:

D 1193 Specification for Reagent Water³

E 180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial Chemicals⁴

3. Summary of Test Method

3.1 As shown in the equation, MEHQ reacts with nitrous acid (sodium nitrite in acidic media) to form the nitroso derivative which equilibrates between two structures.



3.2 The yellow color of the nitroso compound is measured spectrophotometrically at a wavelength of 420 nm.

4. Significance and Use

4.1 Acrylic acid and its esters are normally inhibited with

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.

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² IUPAC-approved name is 4-methoxyphenol.

³ *Annual Book of ASTM Standards*, Vol 11.01.

⁴ *Annual Book of ASTM Standards*, Vol 15.05.

MEHQ only. This procedure presents a rapid and accurate method of determining the MEHQ content of fresh acrylic acid and acrylate esters in the absence of other inhibitors.

4.2 MEHQ effectiveness may decline with age and this decline in effectiveness may not be indicated by this test method.

5. Interferences

5.1 Hydroquinone (HQ), thiodiphenylamine, diphenylphenylene-diamine and *p*-hydroxydiphenylamine interfere if present.

6. Apparatus

6.1 *Spectrophotometer*, with borosilicate-glass cells for determining absorbance at 420 nm.

6.2 *Volumetric Flasks*, 50 and 100-mL capacity.

6.3 *Measuring Pipets*, 5 and 10-mL capacity.

7. Reagents

7.1 *Purity of Reagents*—Reagent grade chemicals shall be used. 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.⁵ 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.

7.2 *Purity of Water*—Unless otherwise indicated, references to water shall be understood to mean reagent grade water conforming to Type IV of Specification D 1193.

7.3 *Acetic Acid*, glacial.

7.4 *Monomethyl Ether of Hydroquinone (MEHQ)* (4-methoxyphenol).

7.5 *Sodium Nitrite Solution (2 %)*—Dissolve 2 g of sodium nitrite (NaNO_2) in water and dilute to 100 mL.

8. Hazards

8.1 Store samples of acrylic monomers in amber bottles or

⁵ *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.