



Designation: D8496 – 23

Standard Test Method for Determination of Hydroquinone (HQ) Content in Vinyl Acetate Monomer (VAM) Using Ultraviolet-Visible (UV-Vis) Spectrophotometer^{1,2}

This standard is issued under the fixed designation D8496; 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 hydroquinone (HQ) in colorless vinyl acetate monomer (VAM). This test method is applicable to the determination of HQ in the concentration range from 1 to 25 ppm.

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 Practice E29.

1.3 For ensuring safety, hazard information and guidance, follow the manufacturer’s material safety data sheet.

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

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

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:³

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 Provided by the Berger Paints Bangladesh Limited, Berger House, Rd No 2, Uttara, Dhaka 1230, Bangladesh.

³ 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.

D1152 Specification for Methanol (Methyl Alcohol) (Withdrawn 2021)⁴

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

3. Summary of Test Method

3.1 This test method is quick, and it is easier to measure the amount/quantity of hydroquinone (HQ) in vinyl acetate monomer (VAM) quantitatively by using an ultraviolet-visible (UV-Vis) spectrophotometer following the Beer-Lambert Law⁵ principle at absorbance of 293 nm and methanol as a blank.

3.2 In this process, neither color development/reaction nor special reagent/processing is required, and the VAM sample can be analyzed directly without further processing.

4. Significance and Use

4.1 VAM is an organic vinyl ester compound. This colorless liquid is the precursor to polyvinyl acetate, an important industrial polymer. VAM may be subject to rapid spontaneous polymerization if the inhibitor is not present or becomes depleted during prolonged storage.

4.2 VAM is typically shipped with a HQ inhibitor as free radical scavenger. VAM should be evaluated to ensure that appropriate systems (for example, temperature and inhibitor quantity) are assured during storage, transportation, and getting prolonged shelf life.

4.3 Most VAM shipped from the manufacturer will contain an inhibitor, typically 3 to 5 ppm HQ for regional shipments and up to 25 ppm HQ for long-range shipments.

5. Interferences

5.1 Methanol and VAM have no interference at 293 nm in a UV-Vis spectrophotometer.

6. Apparatus

6.1 *UV-Vis Spectrophotometer*, absorbance at 293 nm.

6.2 *Volumetric Flask*, 50 mL and 100 mL capacity.

⁴ The last approved version of this historical standard is referenced on www.astm.org.

⁵ Clark, Jim. “The Beer-Lambert: Law Chemistry,” *LibreTexts*.