



## Standard Test Method for Acidity in Vinyl Acetate and Acetaldehyde<sup>1</sup>

This standard is issued under the fixed designation D 2086; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This test method covers the determination of total acidity as acetic acid in refined vinyl acetate and acetaldehyde.

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.* For specific hazard statements, see Section 8.

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 Water<sup>2</sup>

E 200 Practice for Preparation, Standardization, and Storage of Standard and Reagent Solutions for Chemical Analysis<sup>3</sup>

### 3. Summary of Test Method

3.1 The specimen is mixed with either an equal volume of chilled water or an equal volume of ethyl alcohol and titrated at reduced temperature with aqueous sodium hydroxide solution to a phenolphthalein end point.

### 4. Significance and Use

4.1 This test method provides a measurement of total acidity in vinyl acetate and acetaldehyde. The results of these measurements can be used for specification acceptance.

### 5. Interferences

5.1 Any material or contaminant that will react with NaOH under the test conditions will affect the results.

5.2 Vinyl acetate will decompose on storage, typically by way of hydrolysis, to form acetic acid.

5.3 Acetaldehyde will react with oxygen, either dissolved or in a storage container, to form acetic acid.

5.4 Various acids or other acidic materials may be present. Common practice, including the method used here, calculates

these as acetic acid. The actual weight percent of acidic materials may be different.

### 6. Apparatus

6.1 *Buret*, 10-mL, graduated in 0.05-mL subdivisions.

6.2 *Erlenmeyer Flask*, 250-mL capacity.

6.3 *Graduated Cylinder*, 50 or 100-mL capacity.

6.4 *Cold Bath*, maintained at 0°C or below.

### 7. Reagents

7.1 *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.<sup>4</sup> 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 water as defined by Type IV of Specification D 1193.

7.3 *Ethyl Alcohol (Ethanol)*, 95 volume %, minimum.

NOTE 1—Denatured ethyl alcohol conforming to Formula No. 3A of the U.S. Treasury Department, Bureau of Industrial Alcohol, is suitable for use as a solvent.

7.4 *Phenolphthalein Indicator Solution* (10 g/L)—Dissolve 1 g of phenolphthalein in 100 mL of methanol, ethanol, or isopropanol.

7.5 *Sodium Hydroxide, Standard Solution* (0.05 N)—Prepare and standardize a 0.05 N sodium hydroxide (NaOH) solution (Note 2) in accordance with the Sodium Hydroxide Solution sections of Practice E 200.

NOTE 2—Alternatively, potassium hydroxide (KOH) solution may be used.

7.6 *Bromothymol Blue Indicator* (10g/L)—Dissolve 1 g of bromothymol blue in 100 mL of methanol, ethanol, or isopropanol.

7.7 *Sodium Hydroxide, Standard Solution* (0.02 N)—

<sup>1</sup> 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 D 01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 11.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 15.05.

<sup>4</sup> *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 Pharmacopoeia and National Formulary*, U.S. Pharmacopoeial Convention, Inc. (USPC), Rockville, MD.