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AMERICAN SOCIETY FOR TESTING AND MATERIALS
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Standard Test Method for pH of Fatty Quaternary Ammonium Chlorides[1]

This standard is issued under the fixed designation D 2081; 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 method was prepared jointly by the American Society for Testing and Materials and the American Oil Chemists' Society.

1. [1]Scope

1.1 This test method covers the preparation of 5 % solutions of fatty quaternary ammonium chlorides and the determination of their pH.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1193 Specification for Reagent Water[2]

D 2079 Test Method for Nonvolatile Matter (Solids) in Fatty Quaternary Ammonium Chlorides[3]

E 70 Test Method for pH of Aqueous Solutions With the Glass Electrod[4]

3. Apparatus

3.1 *Glass Electrode pH Meter*, conforming to the requirements of Test Method E 70[4].

3.2 *Magnetic Stirrer*, with inert plastic-coated stirring bar.

4. Reagents

4.1 *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.[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.

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

4.3 *Isopropyl Alcohol Solution (1 + 1)*—Mix equal volumes of isopropyl alcohol (99 %) and water.

5. Standardization of pH Meter

5.1 Carefully follow the manufacturer's instructions for the particular meter used and standardize at a pH of 7.0.

6. Procedure

6.1 Determine the percent of nonvolatile matter (solids) as directed in Method D 2079.

6.2 Determine the specimen weight based on the percent of nonvolatile matter needed to make 200 g of a 5 % solution as follows:

$$\text{Grams of sample} = (200 \times 5)\ \%\ \text{of nonvolatile matter} \qquad (1)$$

6.3 Melt the sample if it is not already liquid, in a water bath. Mix thoroughly, and weigh the proper amount into a 250-mL low-form beaker. Add 100 g of isopropyl alcohol solution and warm, if necessary, to dissolve the specimen. Cool to room temperature and add enough isopropyl alcohol solution into the beaker to make a total of 200 g of isopropyl alcohol solution and specimen.

6.4 Adjust the beaker so that the lower half of each electrode of the pH meter is immersed in the solution. Start the stirrer and adjust the speed so that there is vigorous stirring with no spattering. Read the pH as soon as the instrument shows a steady reading.

NOTE 1—Most commercial fatty quaternary ammonium chloride products contain small amounts of dissolved methyl chloride that hydrolyzes to hydrochloric acid which gradually decreases the pH of a given material on storage. Differences in pH values determined at different times or in different laboratories may be due in part to this factor.

7. Report

7.1 Report the results to the nearest 0.1 pH unit.

8. Precision and Bias

8.1 Precision and bias were not established at the time this test method was written. An effort is being made to obtain the precision and, if obtainable, it will be published in future

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[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 D01.32 on Drying Oils.

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

[3] *Annual Book of ASTM Standards*, Vol 06.03.

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

[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.

revisons. This test method has been in use for many years, and its usefulness has been well established.

9. Keywords

9.1 pH; quaternary ammonium chlorides