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.

Designation: D2989 – 01 (Reapproved 2022)

Standard Test Method for Acidity-Alkalinity of Halogenated Organic Solvents and Their Admixtures[1]

This standard is issued under the fixed designation D2989; 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 standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers the determination of acidity in halogenated organic solvents and admixtures thereof. The alkalinity may be determined utilizing Test Methods D2106, by substituting the end point measured at pH 7 by bromothymol blue or pH meter.

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

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* Specific precautionary statements are given in Section 7.

1.4 *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:*[2]

D2106 Test Methods for Determination of Amine Acid Acceptance (Alkalinity) of Halogenated Organic Solvents

D2110 Test Method for pH of Water Extractions of Halogenated Organic Solvents and Their Admixtures

3. Summary of Test Method

3.1 A sample of halogenated solvent or admixture is measured for pH using Test Method D2110. If the pH of the sample is above 7.0, the alkalinity is determined using Test Methods D2106 (to an end point of pH 7). If the pH is below 7.0, the free acid content of the halogenated organic solvent or admixture is determined after water extraction using Procedure A, or can be determined directly using Procedure B.

3.1.1 *Procedure A,* using glass electrode pH meter, or

3.1.2 *Procedure B,* anhydrous methanolic sodium hydroxide titration.

4. Significance and Use

4.1 This test method can be used to establish manufacturing and purchasing specifications. It can also be used to determine the condition of solvents in use.

5. Apparatus

5.1 *Separatory Funnel,* 250 mL.

5.2 *Graduated Cylinder,* 100 mL.

5.3 *Volumetric Pipets,* 1 mL, 10 mL, 25 mL, 50 mL.

5.4 *Beaker,* 100 mL.

5.5 *Borosilicate or Stainless Steel Beaker,* 2 L.

5.6 *Erlenmeyer Flask,* 100 mL.

5.7 *pH Meter with pH Electrodes.*

5.8 *Buret,* 10 mL.

5.9 *Volumetric Flask,* 100 mL, 1 L.

5.10 *Micro Buret,* 5 mL, Class A or *Syringe*, 100 µL.

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.[3] Other grades may be

[1] This test method is under the jurisdiction of ASTM Committee D26 on Halogenated Organic Solvents and Fire Extinguishing Agents and is the direct responsibility of Subcommittee D26.04 on Test Methods.

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[2] 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.

[3] *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. (USP), Rockville, MD.

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