



Designation: D2942 – 02 (Reapproved 2023)

Standard Test Method for Total Acid Acceptance of Halogenated Organic Solvents (Nonreflux Methods)¹

This standard is issued under the fixed designation D2942; 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 the total acid acceptance including amine and neutral type (alpha epoxide) stabilizers in halogenated organic solvents.

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

D1193 Specification for Reagent Water

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

E200 Practice for Preparation, Standardization, and Storage of Standard and Reagent Solutions for Chemical Analysis

3. Summary of Test Method

3.1 *Test Method A*—The total acid acceptance is determined by the reaction of the sample with a known amount of

hydrochloric acid that has been dissolved in isopropyl alcohol. The excess acid remaining after the reaction with the acid acceptor is then back-titrated with a standardized solution of sodium hydroxide. The total acid acceptance of the stabilizers can be calculated and reported as weight % NaOH.

3.2 *Test Method B*—The acid acceptor content is determined by gas chromatography or another validated method such as density or refractive index and the acid acceptance is calculated from the weight % acid acceptor. Techniques like density and refractive index are generally suitable only for two-part systems. The method for the determination of the acid acceptor should be validated for the sample being analyzed to ensure there is no interference, particularly from such things as oils and reaction products when measuring acid acceptance of product that is in use such as vapor degreasers.

4. Significance and Use

4.1 Solvents that have been depleted in stabilizer content can become acidic. Acids can cause corrosion to process and storage equipment used for halogenated solvents.

4.2 Halogenated organic solvents may contain amine type (alkaline, aqueous extractable) acid accepting additives, neutral type (typically epoxide) acid accepting additives or both. This test method can determine the combined acid acceptance from both types of stabilizers. In addition, if the amine acid acceptance is determined by a separate procedure (see Test Methods D2106), the amount of neutral acid accepting stabilizers in a solvent can be calculated from the difference between combined and amine acid acceptance values.

4.3 This test method may be used by producers and users to verify that a product is complying with acid acceptance product specifications or by users to monitor the acid accepting ability of a solvent in use.

5. Test Method A

5.1 *Apparatus:*

5.1.1 *Iodine or Erlenmeyer Flasks*, 250 mL, with ground-glass stoppers.

5.1.2 *Burets*, 25 mL or 50 mL, graduated to 0.1 mL.

5.1.3 *Pipet*, 10 mL and 25 mL.

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.

Current edition approved Aug. 1, 2023. Published August 2023. Originally approved in 1971. Last previous edition approved in 2018 as D2942 – 02 (2018). DOI: 10.1520/D2942-02R23.

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.