



Designation: D1726 – 03

Standard Test Methods for Hydrolyzable Chloride Content of Liquid Epoxy Resins¹

This standard is issued under the fixed designation D1726; 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 Department of Defense.

1. Scope

1.1 These test methods cover the determination of the easily hydrolyzable chloride content of liquid epoxy resins which are defined as the reaction product of a chlorohydrin and a di- or polyfunctional phenolic compound.

1.1.1 In Test Method A, the easily hydrolyzable chloride is saponified with potassium hydroxide and directly titrated with hydrochloric acid. This test method can be used for concentrations of 1 weight % and below.

1.1.2 In Test Method B, the easily hydrolyzable chloride is again saponified with potassium hydroxide, then titrated potentiometrically with silver nitrate. This test method can be used for concentrations of 5 to 2500 ppm hydrolyzable chloride.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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 and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements see Sections 9 and 15.

2. Referenced Documents

2.1 ASTM Standards:²

D329 Specification for Acetone

D841 Specification for Nitration Grade Toluene

D1193 Specification for Reagent Water

D3620 Specification for Glacial Acetic Acid

D6440 Terminology Relating to Hydrocarbon Resins

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 Other Documents:

OSHA Regulations, 29 CFR, paragraphs 1910.1000 and 1910.1200³

3. Terminology

3.1 For definitions relating to hydrocarbon resins see Terminology D6440.

4. Summary of Test Method

4.1 The sample is refluxed in the presence of a known amount of 0.1 N alcoholic potassium hydroxide. The amount of potassium hydroxide consumed in the hydrolysis is a measure of the hydrolyzable chloride content of the resin.

5. Significance and Use

5.1 The hydrolyzable chloride content of liquid epoxy resins is an important variable in determining their reactivity and the properties of coatings made from them. These test methods may be used to determine the hydrolyzable chloride content of manufactured epoxy resins and confirm the stated hydrolyzable chloride content of purchased epoxy resins.

6. Apparatus

6.1 *Reflux Apparatus*, consisting of a 250-mL Erlenmeyer flask attached to a reflux condenser and a hot plate with variable heat control.

7. Purity of 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,⁴ where such specifications are available. 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.

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 D01.33 on Polymers and Resins.

Current edition approved Dec. 1, 2003. Published January 2004. Originally approved in 1960. Last previous edition approved in 1990 as D1726 – 90 (1996). DOI: 10.1520/D1726-03.

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 Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

⁴ *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.