



Designation: **D6979—18** **D6979 – 24**

Standard Test Method for Polyurethane Raw Materials: Determination of Basicity in Polyols, Expressed as Percent Nitrogen¹

This standard is issued under the fixed designation D6979; 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 (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This test method measures the basic constituents in polyols that are soluble in glacial acetic acid and reactive with perchloric acid. Samples containing ~~0.3–0.3 %~~ to 10 % nitrogen have been evaluated by this method. This test method is applicable to polyether polyols and polyether polyol blends that are used in urethane reactions. (See **Note 1**.)

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.*

NOTE 1—This standard is equivalent to ISO 25761:08.

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

[D883 Terminology Relating to Plastics](#)

[E180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial and Specialty Chemicals \(Withdrawn 2009\)](#)³

[E456 Terminology Relating to Quality and Statistics](#)

[E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method](#)

[E2935 Practice for Evaluating Equivalence of Two Testing Processes](#)

2.2 ISO Standards:⁴

[ISO 25761 Plastics—Polyols for use in the production of polyurethanes—Determination of basicity \(total amine value\), expressed as percent nitrogen](#)

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.22 on Cellular Materials - Plastics and Elastomers.

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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 The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

*A Summary of Changes section appears at the end of this standard

3. Terminology

3.1 *Definitions*—~~For definitions of terms~~ Terms used in this test method ~~see standard~~ are defined in accordance with Terminology D883, unless otherwise specified. For terms relating to precision and bias and associated issues, the terms used in this standard are defined in accordance with Terminology E456.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *percent nitrogen*—*nitrogen, n*—the quantity of perchloric acid-titratable base, expressed as a weight percentage of nitrogen in a sample.

4. Summary of Test Method

4.1 The sample is dissolved in glacial acetic acid. The resulting single-phase solution is titrated at room temperature to a potentiometric end point with a standardized solution of perchloric acid in acetic acid. Results are reported as percent nitrogen.

5. Significance and Use

5.1 This test method is suitable for quality control, as a specification test, and for research. The results are measures of batch-to-batch uniformity and are useful in estimating reactivity.

5.1.1 The percent nitrogen can be used to characterize a polyol or indicate amounts of certain components in a polyol blend.

5.1.2 It is permissible to also express the results in equivalents of base per gram of sample, if desired.

6. Apparatus

6.1 *Potentiometric Automatic Titrator*

6.2 *Autotitrator Buret with Dosing Device, 20-mL*

6.3 *pH Glass Electrode and Reference Electrode or a Combination Glass Electrode*

6.4 *Analytical Balances, capable of weighing to the nearest ± 0.01 g and 0.0001 g*

6.5 *Magnetic Stirrer/Hotplate*

7. Reagents and Materials

7.1 *Purity of Reagents*—Use reagent-grade chemicals in all tests. Unless otherwise indicated, it is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society where such specifications are available.⁵ It is permissible to use other grades 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 *Acetic Acid, Glacial*

7.3 *Acetic Anhydride*

7.4 *Perchloric Acid, (70 % nominal)*

⁵ *Reagent Chemicals, American Chemical Society Specifications, ACS Reagent Chemicals, Specifications and Procedures for Reagents and Standard-Grade Reference Materials*, 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.