



Designation: D7253 – 22

Standard Test Method for Polyurethane Raw Materials: Determination of Acidity as Acid Number for Polyether Polyols¹

This standard is issued under the fixed designation D7253; 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.

1. Scope*

1.1 This test method measures the acidic constituents in polyether polyols and reports the results as acid number. The typical acid number range is 0-0.1 mg KOH/g sample. (See [Note 1](#).)

1.2 The values stated in SI units are to be regarded as 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—There is no known ISO equivalent to this standard.

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](#)

[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](#)

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method see Terminology [D883](#), unless otherwise specified. For

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.

terms relating to precision and bias and associated issues, the term used in this standard are defined in accordance with Terminology [E456](#).

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *acid number*—the quantity of base, expressed in milligrams of potassium hydroxide, that is required to titrate acidic constituents in 1 g of sample.

4. Summary of Test Method

4.1 The sample is dissolved in 2-propanol. The resulting single-phase solution is titrated at room temperature with 0.02 N methanolic potassium hydroxide solution to an end point indicated by the color change (pink endpoint) of the added phenolphthalein.

NOTE 2—It is permissible to use automatic titrators using a potentiometric endpoint for the titration portion of this test provided the automatic titration method is tested to obtain at least equivalent results to the manual titration.

NOTE 3—Phenolphthalein is the indicator of choice based on published hydroxyl number methods that include an acid number correction. Other indicators are chosen if specific acids are of interest. Bromothymol blue (green endpoint) is used for stronger acids (pK_a 's $< \sim 4$) and thymolphthalein (blue endpoint) is used for weak acids (pK_a 's $> \sim 7$).

5. Significance and Use

5.1 This test method is suitable for quality control, as a specification test, and for research. Acid numbers indicate the extent of any neutralization reaction of the polyol with acids. The results of this method measure batch-to-batch uniformity and are used as correction factors in calculating true hydroxyl numbers.

6. Interferences

6.1 Samples or constituents that are highly-colored will interfere with or prevent the use of this test method. In this case, a potentiometric titration using an autotitrator is recommended, see [Note 2](#).

7. Apparatus

7.1 *Buret, 10 mL, manual or automatic.*

7.2 *Graduated cylinder, 10 mL, maximum.*

7.3 *Balance, analytical with sensitivity of at least ± 0.0001 g.*

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