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: D789 – 19

Standard Test Method for Determination of Relative Viscosity of Concentrated Polyamide (PA) Solutions[1]

This standard is issued under the fixed designation D789; 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 covers the determination of relative viscosity as it applies to concentrated solutions of polyamide (PA).

1.2 This test method does not address measures of viscosity derived from measurements with dilute solutions.

1.3 The values stated in SI units are to be regarded as standard. The values given in brackets are for information only.

1.4 *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 and ISO 307 address the same subject, buy the technical content is different.

1.5 *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]

D446 Specifications and Operating Instructions for Glass Capillary Kinematic Viscometers

D883 Terminology Relating to Plastics

D2162 Practice for Basic Calibration of Master Viscometers and Viscosity Oil Standards

D6779 Classification System for and Basis of Specification for Polyamide Molding and Extrusion Materials (PA)

E1953 Practice for Description of Thermal Analysis and Rheology Apparatus

E2975 Test Method for Calibration or Calibration Verification of Concentric Cylinder Rotational Viscometers

2.2 *ISO Standards:*[3]

ISO 307 Determination of Viscosity Number of Polyamides in Dilute Solutions

ISO 16396-1 Plastics—Polyamide (PA) moulding and extrusion materials—Part 1: Designation system, marking of products and basis for specifications

ISO 17025 General Requirements for the Competence of Testing and Calibration Laboratories

3. Terminology

3.1 *Definitions*—The definitions used in these test methods are in accordance with Terminology D883.

4. Significance and Use

4.1 These test methods are intended for use as control and acceptance tests. They are also applicable in the partial evaluation of materials for specific end uses and as a means for detecting changes in materials due to specific deteriorating causes.

4.2 The steps involved in running this method are:

4.2.1 Calibration of the viscometers,

4.2.2 Preparation of solutions,

4.2.3 Determination of efflux time,

4.2.4 Calculation of relative viscosity (which requires the following),

4.2.4.1 Determining the density of the polymer/formic acid solution, and

4.2.4.2 Determining the absolute viscosity of the formic acid used.

4.3 Solvents used to prepare concentrated solutions for use in this test method are formic acid (9.2.6.1) and m-cresol (9.2.6.2).

4.4 Solvents used to prepare dilute solutions of various polyamides are designated in ASTM D6779, ISO 16396, and ISO 307. These include:

[1] This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.15 on Thermoplastic Materials (Section D20.15.09).

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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] 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

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