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: D1525 – 17ε1

Standard Test Method for Vicat Softening Temperature of Plastics[1]

This standard is issued under the fixed designation D1525; 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.

ε1 NOTE—Editorial changes were made throughout the standard in September 2017.

1. Scope*

1.1 This test method covers determination of the temperature at which a specified needle penetration occurs when specimens are subjected to specified controlled test conditions.

1.2 This test method is not recommended for ethyl cellulose, nonrigid poly(vinyl chloride), poly(vinylidene chloride), or other materials having a wide Vicat softening range.

1.3 The values stated in SI units are to be regarded as standard. No other units are included in this standard.

1.4 Due to the potential safety and environmental hazards associated with mercury-filled thermometers, the use of alternative temperature measuring devices (such as thermocouples and RTDs) is encouraged with liquid-in-glass thermometers containing mercury, the use of alternative measuring devices, such as digital thermometers using thermocouple of RTD sensors is encouraged.

1.5 *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 test method is equivalent to ISO 306 in all sections with the exceptions of the allowance for creep, prior to the beginning of the test and the allowance of the fluidized powder as a heat transfer medium.

1.6 *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]

D618 Practice for Conditioning Plastics for Testing
D883 Terminology Relating to Plastics
D1898 Practice for Sampling of Plastics (Withdrawn 1998)[3]
E1 Specification for ASTM Liquid-in-Glass Thermometers
E77 Test Method for Inspection and Verification of Thermometers
E608/E608M Specification for Mineral-Insulated, Metal-Sheathed Base Metal Thermocouples
E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
E879 Specification for Thermistor Sensors for General Purpose and Laboratory Temperature Measurements
E1137/E1137M Specification for Industrial Platinum Resistance Thermometers
E2251 Specification for Liquid-in-Glass ASTM Thermometers with Low-Hazard Precision Liquids
E2935 Practice for Conducting Equivalence Testing in Laboratory Applications

2.2 *ISO Standards:*[4]

ISO 306 Plastics—Thermoplastic Material—Determination of Vicat Softening Temperature

3. Terminology

3.1 *Definitions:*

3.1.1 Definitions of plastics used in this test method are in accordance with those defined in Terminology D883, unless otherwise specified.

3.1.2 *Vicat softening temperature*—the temperature at which a flat-ended needle of 1-mm^2 circular cross section will penetrate a thermoplastic specimen to a depth of 1 mm under

[1] This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.30 on Thermal Properties (Section D20.30.07).

Current edition approved Aug. 1, 2017. Published August 2017. Originally approved in 1958. Last previous edition approved in 2009 as D1525 - 09. DOI: 10.1520/D1525-17E01.

[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**

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States