



Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position¹

This standard is issued under the fixed designation D 648; 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 This test method covers the determination of the temperature at which an arbitrary deformation occurs when specimens are subjected to an arbitrary set of testing conditions.

1.2 This test method applies to molded and sheet materials available in thicknesses of 3 mm (1/8 in.) or greater and which are rigid or semirigid at normal temperature.

NOTE 1—Sheet stock less than 3 mm (0.125 in.) but more than 1 mm (0.040 in.) in thickness may be tested by use of a composite sample having a minimum thickness of 3 mm. The laminae must be of uniform stress distribution. One type of composite specimen has been prepared by cementing the ends of the laminae together and then smoothing the edges with sandpaper. The direction of loading shall be perpendicular to the edges of the individual laminae.

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses 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 and health practices and determine the applicability of regulatory limitations prior to use.*

NOTE 2—The test method described as a Method B of this test method, and test methods Ae and Be of ISO 75-1 and ISO 75-2, 1993, are technically equivalent.

2. Referenced Documents

2.1 ASTM Standards:

- D 618 Practice for Conditioning Plastics for Testing²
- D 883 Terminology Relating to Plastics²
- D 1898 Practice for Sampling of Plastics³
- D 1999 Guide for Selection of Specimens and Test Param-

eters from ISO/IEC Standards³

D 5947 Test Methods for Physical Dimensions of Solid Plastics Specimens⁴

E 1 Specification for ASTM Thermometers⁵

E 77 Test Method for Inspection and Verification of Thermometers⁵

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods⁶

E 220 Test Method for Calibration of Thermocouples by Comparison Techniques⁵

E 608 Specification for Metal-Sheathed Base-Metal Thermocouples⁵

E 644 Test Methods for Testing Industrial Resistance Thermometers⁵

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁶

E 879 Specification for Thermistor Sensors for Clinical Laboratory Temperature Measurement⁵

E 1137 Specification for Industrial Platinum Resistance Thermometers⁵

2.2 ISO Standards:⁷

ISO 75-1 Plastics—Determination of Temperature of Deflection Under Load—Part 1: General Test Method

ISO 75-2 Plastics—Determination of Temperature of Deflection Under Load—Part 2: Plastics and Ebonite

2.3 NIST Document:⁸

NBS Special Publication 250-22

3. Terminology

3.1 *General*—The definitions of plastics used in this test method are in accordance with Terminology D 883 unless otherwise indicated.

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).

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² Annual Book of ASTM Standards, Vol 08.01.

³ Discontinued; see 1997 Annual Book of ASTM Standards, Vol 08.01.

⁴ Annual Book of ASTM Standards, Vol 08.03.

⁵ Annual Book of ASTM Standards, Vol 14.03.

⁶ Annual Book of ASTM Standards, Vol 14.02.

⁷ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

⁸ Mangum, B. W., "Platinum Resistance Thermometer Calibration," NBS Special Publication 250-22, 1987. Available from National Institute of Standards and Technology, Gaithersburg, MD.