



Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position¹

This standard is issued under the fixed designation D 635; 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. Scope²

1.1 This fire-test-response test method covers a small-scale laboratory screening procedure for comparing the relative linear rate of burning or extent and time of burning, or both, of plastics in the form of bars, molded or cut from sheets, plates, or panels, and tested in the horizontal position.

Note 1—This test method, and test method A of IEC 60695-11-10 are technically equivalent.

Note 2—For additional information on materials which do not burn to the first reference mark by this test, see Test Method D 3801.

1.2 This test method was developed for polymeric materials used for parts in devices and appliances. The results are intended to serve as a preliminary indication of their acceptability with respect to flammability for a particular application. The final acceptance of the material is dependent upon its use in complete equipment that conforms with the standard applicable to such equipment.

1.3 The classification system described in Appendix X1 is intended for quality assurance and the preselection of component materials for products.

1.4 *This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire hazards or fire risk assessment of materials, products, or assemblies under actual fire conditions.*

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 and health practices and determine the applicability of regulatory limitations prior to use. For specific hazards statements, see 9.2.*

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 D20.30.03).

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2. Referenced Documents

2.1 ASTM Standards:²

- D 648 Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
 - D 883 Terminology Relating to Plastics
 - D 1929 Test Method for Determining Ignition Temperature of Plastics
 - D 2843 Test Method for Density of Smoke from the Burning or Decomposition of Plastics
 - D 3801 Test Method for Measuring the Comparative Burning Characteristics of Solid Plastics in a Vertical Position
 - D 5025 Specification for Laboratory Burner Used for Small-Scale Burning Tests on Plastic Materials
 - D 5207 Practice for Confirmation of 20-mm (50-W) and 125-mm (500-W) Test Flames for Small-Scale Burning Tests on Plastic Materials
 - E 84 Test Method for Surface Burning Characteristics of Building Materials
 - E 176 Terminology of Fire Standards
 - E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
- ### 2.2 IEC Standards:
- IEC 60695-11-10 Fire Hazard Testing - Part 11-10 Test Flames - 50W Horizontal and Vertical Flame Test Methods³

3. Terminology

3.1 Definitions:

3.1.1 Definitions used in this test method are in accordance with Terminology D 883, unless otherwise specified. For terms

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 Publications of the International Electrotechnical Commission (IEC) and International Organization for Standardization (ISO) are available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁴A Summary of Changes section appears at the end of this standard.

X2. IBC REFERENCE TO TEST METHOD D 635

INTRODUCTION

In the *International Building Code* (2003 Edition), this test method is referenced in section 2606.4 for LIGHT-TRANSMITTING PLASTICS. Classifications are established based on the extent of burning using this test method. The IBC states as follows:

X2.1 2606.4 Specifications Light-transmitting plastics, including thermoplastic, thermosetting or reinforced thermosetting plastic material, shall have a self-ignition temperature of 650°F [343°C] or greater where tested in accordance with Test Method D 1929; a smoke-developed index not greater than 450 where tested in the manner intended for use in accordance with Test Method E 84, or not greater than 75 where tested in the thickness intended for use in accordance with Test Method D 2843 and shall conform to one of the following combustibility classifications:

X2.1.1 *Class CCI*: Plastic materials that have a burning extent of 1 in. [25 mm] or less where tested at a nominal thickness of 0.060 in. [1.5 mm], or in the thickness intended for use, in accordance with this test method.

X2.1.2 *Class CC2*: Plastic materials that have a burning rate of 2.5 inches per minute [1.06 mm/s] or less where tested at a

nominal thickness of 0.060 in. [1.5 mm], or in the thickness intended for use, in accordance with this test method.

X2.2 The classification scheme shown above is limited within the *International Building Code* to light-transmitting plastics only. It is not applicable to plastics used in other construction applications. In addition, the flammability requirements given here are not the only requirements for light-transmitting plastics.

X2.3 Test Method D 2843 reports values as a Smoke Density Rating.

X2.4 These classifications are not part of this test method and are not under the jurisdiction of ASTM committee D20. However, they are in common usage and are presented here for information only.

SUMMARY OF CHANGES

Committee D20 has identified the location of selected changes to this standard since the last issue, D 635 - 03, that may impact the use of this standard. (May 1, 2006)

(1) Added Appendix X2.

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