



Standard Test Method for Ignition of Materials by Hot Wire Sources¹

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1. Scope

1.1 This test method is intended to differentiate, in a preliminary fashion, among materials with respect to their resistance to ignition because of their proximity to electrically-heated wires and other heat sources.²

1.2 This test method applies to molded or sheet materials available in thicknesses ranging from 0.25 to 6.4 mm (0.010 to 0.25 in.).

1.3 This test method applies to materials that are rigid at normal room temperatures. That is, it applies to materials for which the specimen does not deform during preparation, especially during the wire-wrapping step described in 10.1. Examples of deformation that render this test method inapplicable include:

1.3.1 Bowing, in either a transverse or a longitudinal direction, or twisting of the specimen, during the wire-wrapping step, to a degree visible to the eye.

1.3.2 Visible indentation of the wrapped wire into the specimen.

1.4 The values stated in SI units are to be regarded as the standard. The inch-pound units given in parentheses are for information only. (See IEEE/ASTM SI-10 for further details.)

1.5 This test method measures and describes 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 hazard or fire risk assessment of the materials, products, or assemblies under actual fire conditions.

1.6 *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.*

1.7 Fire testing of products and materials is inherently hazardous, and adequate safeguards for personnel and property

shall be employed in conducting these tests. Fire testing involves hazardous materials, operations, and equipment.

NOTE 1—Although this test method and IEC 60695-2-20, differ in approach and in detail, data obtained using either are technically equivalent.

2. Referenced Documents

2.1 ASTM Standards:³

D 1711 Terminology Relating to Electrical Insulation

E 176 Terminology of Fire Standards

IEEE/ASTM SI-10 International System of Units (SI) The Modernized Metric System

2.2 IEC Standards:

IEC 60695-2-20 Fire Hazard Testing—Section 20: Glowing/Hot-wire Based Test Methods, Hot-wire Coil Ignitability Test on Materials⁴

IEC 60695-4 Fire Hazard Testing—Part 4: Terminology Concerning Fire Tests⁴

2.3 ISO Standards

ISO 13943 Fire Safety—Vocabulary⁵

3. Terminology

3.1 Definitions:

3.1.1 Use Terminology E 176 and ISO 13943 and IEC 60695-4 for definitions of terms used in this test method and associated with fire issues. Where differences exist in definitions, those contained in Terminology E 176 shall be used. Use Terminology D 1711 for definitions of terms used in this test method and associated with electrical insulation materials.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *ignition, n*—initiation of flaming produced by combustion in the gaseous phase that is accompanied by the emission of light.

¹ This test method is under the jurisdiction of ASTM Committee D09 on Electrical and Electronic Insulating Materials and is the direct responsibility of Subcommittee D09.12 on Electrical Tests.

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² K. N. Mathes, Chapter 4, “Surface Failure Measurements”, *Engineering Dielectrics, Vol. IIB, Electrical Properties of Solid Insulating Materials, Measurement Techniques*, R. Bartnikas, Editor, ASTM STP 926, ASTM, Philadelphia, 1987.

³ 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.

⁴ Available from International Electrotechnical Commission (IEC), 3 Rue de Varembe, Geneva, Switzerland.

⁵ Available from International Organization for Standardization (ISO), 1 rue de Varembe, Case postale 56, CH-1211, Geneva 20, Switzerland.