



Designation: D6194 – 23

Standard Test Method for Glow-Wire Ignition of Materials¹

This standard is issued under the fixed designation D6194; 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 minimum temperature required to ignite insulating materials using a glowing heat source. In a preliminary fashion, this test method differentiates between the susceptibilities of different materials with respect to their resistance to ignition due to an electrically-heated source.

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

1.3 This test method is not valid for determining the ignition behavior of complete electrotechnical equipment, since the design of the electrotechnical product influences the heat transfer between adjacent parts.

1.4 This test method measures and describes the response or 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.

1.5 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard. (See [IEEE/ASTM SI-10](#) for further details.) For specific precautionary statements, see Section 9.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements, see Section 9.

1.7 *Fire testing is inherently hazardous. Adequate safeguards for personnel and property shall be employed in conducting these tests.*

NOTE 1—Although this test method and IEC 60695-2-12 differ in approach and in detail, data obtained to determine the glow-wire flammability index (GWFI) using either test method are technically similar. Although this test method and IEC 60695-2-13 differ in approach and in detail, data obtained to determine the glow-wire ignition temperature

(GWIT) using either test method are technically similar.

1.8 *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

[D1711 Terminology Relating to Electrical Insulation](#)

[E176 Terminology of Fire Standards](#)

[E220 Test Method for Calibration of Thermocouples By Comparison Techniques](#)

[E230/E230M Specification for Temperature-Electromotive Force \(emf\) Tables for Standardized Thermocouples](#)

[IEEE/ASTM SI-10 International System of Units \(SI\), The Modernized Metric System](#)

2.2 IEC Standard:

[IEC 60695-4 Fire Hazard Testing—Part 4: Terminology Concerning Fire Tests for Electrotechnical Products](#)³

[IEC 60695-2-12 Fire Hazard Testing—Part 2-12: Glowing/Hot-Wire Based Test Methods—Glow-Wire Flammability \(GWFI\) Test Method for Materials](#)³

[IEC 60695-2-13 Fire Hazard Testing—Section 20: Glowing/Hot-Wire Based Test Methods—Glow-Wire Ignition Temperature \(GWIT\) Test Method for Materials](#)³

2.3 ISO Standard:⁴

[ISO 13943 Fire Safety—Vocabulary](#)

3. Terminology

3.1 Definitions:

3.1.1 Use Terminology [E176](#), 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

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 D09.17 on Fire and Thermal Properties.

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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 International Electrotechnical Commission (IEC), 3 Rue de Varembe, Case postale 131, CH-1211, Geneva 20, Switzerland, <http://www.iec.ch>.

⁴ Use undyed, soft, strong, lightweight tissue paper weighing between 12 g/m² and 30 g/m².

*A Summary of Changes section appears at the end of this standard