



Designation: D6413/D6413M – 22

Standard Test Method for Flame Resistance of Textiles (Vertical Test)¹

This standard is issued under the fixed designation D6413/D6413M; 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 is used to measure the vertical flame resistance of textiles.

1.1.1 As a part of the measure of flame resistance, after-flame and afterglow characteristics are evaluated.

1.2 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 hazard or fire risk assessment of the materials, products, or assemblies under actual fire conditions.

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

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

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.*

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

D123 Terminology Relating to Textiles

D1776 Practice for Conditioning and Testing Textiles

D3776/D3776M Test Methods for Mass Per Unit Area (Weight) of Fabric

D4391 Terminology Relating to The Burning Behavior of Textiles

E176 Terminology of Fire Standards

2.2 *ISO Standard*³

ISO 13943 Fire safety

3. Terminology

3.1 *char length*—in measuring flame resistance of textiles, the distance from the fabric edge, which is directly exposed to the flame to the furthest point of visible fabric damage after a specified tearing force has been applied.

3.2 The following terms are relevant to this standard: afterflame, after-flame time, afterglow time, flame application time, melting.

3.3 For terms related to the burning behavior of textiles, see Terminology **D4391**.

3.4 For terminology related to fire issues other than burning behavior of textiles, see Terminology **E176** and ISO 13943. In case of conflict, the terminology in **E176** will prevail.

3.5 For other terms related to textiles, see Terminology **D123**.

4. Summary of Test Method

4.1 A specimen is positioned vertically above a controlled flame and exposed for a specified period of time. The flame then is removed, and afterflame time and afterglow time are measured.

4.2 Char length is measured under a specified force.

4.3 Any evidence of melting or dripping is noted.

5. Significance and Use

5.1 This test method determines the response of textiles to a standard ignition source, deriving measurement values for afterflame time, afterglow time, and char length.

¹ This test method is under the jurisdiction of ASTM Committee **D13** on Textiles and is the direct responsibility of Subcommittee **D13.52** on Flammability.

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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 Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.