



Standard Test Method for Surface Burning Characteristics of Building Materials¹

This standard is issued under the fixed designation E 84; 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 fire-test-response standard for the comparative surface burning behavior of building materials is applicable to exposed surfaces such as walls and ceilings. The test is conducted with the specimen in the ceiling position with the surface to be evaluated exposed face down to the ignition source. The material, product, or assembly shall be capable of being mounted in the test position during the test. Thus, the specimen shall either be self-supporting by its own structural quality, held in place by added supports along the test surface, or secured from the back side.

1.2 The purpose of this test method is to determine the relative burning behavior of the material by observing the flame spread along the specimen. Flame spread and smoke developed index are reported. However, there is not necessarily a relationship between these two measurements.

1.3 The use of supporting materials on the underside of the test specimen has the ability to lower the flame spread index from those which might be obtained if the specimen could be tested without such support. These test results do not necessarily relate to indices obtained by testing materials without such support.

1.4 Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by testing materials that remain in place.

1.5 The values stated in inch-pound units are to be regarded as the standard.

1.6 The text of this standard references notes and footnotes that provide explanatory information. These notes and footnotes, excluding those in tables and figures, shall not be considered as requirements of the standard.

1.7 *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..

1.8 *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.*

2. Referenced Documents

2.1 ASTM Standards:

A 390 Specification for Zinc-Coated (Galvanized) Steel Poultry Fence Fabric (Hexagonal and Straight Line)²

C 36 Specification for Gypsum Wallboard³

D 4442 Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials⁴

D 4444 Test Methods for Use and Calibration of Hand-Held Moisture Meters⁴

E 69 Test Method for Combustible Properties of Treated Wood by the Fire-Tube Apparatus⁴

E 160 Test Method for Combustible Properties of Treated Wood by the Crib Test⁵

E 162 Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source⁶

E 176 Terminology of Fire Standards⁶

E 286 Test Method for Surface Flammability of Building Materials Using an 8-ft (2.44-m) Tunnel Furnace⁷

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method refer to Terminology E 176. The term flame spread index from Terminology E 176 is of particular interest to this standard and is defined in 3.1.1.

3.1.1 *flame spread index, n*—a number or classification indicating a comparative measure derived from observations made during the progress of the boundary of a zone of flame under defined test conditions.

¹ This test method is under the jurisdiction of ASTM Committee E5 on Fire Standards and is the direct responsibility of Subcommittee E05.22 on Surface Burning.

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² Annual Book of ASTM Standards, Vol 01.06.

³ Annual Book of ASTM Standards, Vol 04.01.

⁴ Annual Book of ASTM Standards, Vol 04.10.

⁵ Discontinued; see 1993 Annual Book of ASTM Standards, Vol 04.09.

⁶ Annual Book of ASTM Standards, Vol 04.07.

⁷ Discontinued; see 1991 Annual Book of ASTM Standards, Vol 04.07.