



Standard Test Methods for Measuring Expansion of Intumescent Materials Used in Firestop and Joint Systems¹

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1. Scope

1.1 These test methods determine, by measurement, the expansion of intumescent materials used in firestop and joint systems under specified conditions.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 The text of these test methods references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the fire test response standard.

1.4 *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:*²

E176 Terminology of Fire Standards

E631 Terminology of Building Constructions

3. Terminology

3.1 *Definitions*—Definitions in the following standards will prevail for terms not defined in these test methods.

3.1.1 For definitions of general terms used in these test methods related to building construction, refer to Terminology E631.

3.1.2 For definitions of general terms used in these test methods related to fire standards, refer to Terminology E176.

¹ These test methods are under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.21 on Serviceability.

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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.

3.2 Definitions of Terms Specific to This Standard:

3.3 *expansion, n*—an increase in the dimensions as the result of heating.

3.4 *expansion factor, n*—the ratio of the material height before and after heating, under test conditions that allow expansion only in the vertical direction.

3.5 *intumescent, adj*—characterized by swelling when exposed to high surface temperatures or flames.

4. Summary of Test Method

4.1 These test methods place a material of a specified thickness or volume into a specific device that is capable of heating the material.

4.2 After the material is heated, its dimensional or volumetric change is measured.

4.3 Two test methods are provided, one using a test specimen holder (Test Method A) and the other using a water displacement method (Test Method B).

4.4 Test Method A may be used for measuring expansion of any material.

4.5 Test Method B may be used for measuring expansion of any material, except for those materials that are granular, that are susceptible to absorbing paraffin in conditioned pre-expanded state or post-expanded state, or that are susceptible to damage or deformation in a post-expanded state.

4.6 The test method used must be reported, as use of different test methods will result in different expansion factors.

5. Significance and Use

5.1 These test methods are intended to measure the material's expansion after heating.

5.2 The test methods also provide a means to determine the expansion factor.

6. Apparatus

6.1 *Heating Device*—An enclosed furnace or oven or similar equipment capable of maintaining the temperature specified herein and large enough to contain the test specimen holder.

6.2 Test Method A—Test Specimen Holder Method: