

NFPA 285

Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

2006 Edition



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This edition of NFPA 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*, was prepared by the Technical Committee on Fire Tests and acted on by NFPA at its June Association Technical Meeting held June 6–10, 2005, in Las Vegas, NV. It was issued by the Standards Council on July 29, 2005, with an effective date of August 18, 2005, and supersedes all previous editions.

This edition of NFPA 285 was approved as an American National Standard on August 18, 2005.

Origin and Development of NFPA 285

The 1998 edition was the first for this standard. It established a test method, developed through a consensus process, for determining the flammability characteristics of exterior non-load-bearing wall assemblies or panels. The Committee's intention was to establish a standard that could be adopted or referenced by other applicable documents, such as the model building codes. The standard was introduced to regulate and address the introduction of combustible materials into exterior walls of all construction types.

The 2006 edition includes a complete editorial rewrite for compliance with the *Manual of Style for NFPA Technical Committee Documents*. Further organizational and editorial changes were made to improve the application of the test method, and the scope and purpose of the document were revised to clarify the document's intent. Technical changes address details about the test specimen, documentation of the fire test, and testing instrumentation. Historical information describing the development of NFPA 285 also has been added as annex material.

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex B. Editorial changes to extracted material consist of revising references to an appropriate division in this document or the inclusion of the document number with the division number when the reference is to the original document. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex B.

Chapter 1 Administration

1.1* Scope.

1.1.1* This standard provides a test method for determining the fire propagation characteristics of exterior non-load-bearing wall assemblies and panels used as components of curtain wall assemblies, constructed using combustible materials or that incorporate combustible components, that are intended to be installed on buildings required to have exterior walls of noncombustible construction.

1.1.2* The fire propagation characteristics are determined for post-flashover fires of interior origin.

1.2 Purpose. The purpose of this standard is to provide a standardized fire test procedure for evaluating the suitability of exterior non-load-bearing wall assemblies and panels used as components of curtain wall assemblies, constructed using combustible materials or that incorporate combustible components, for installation on buildings where the exterior walls are required to be noncombustible.

1.3 Application.

1.3.1 This standard shall be used to evaluate the fire propagation characteristics of exterior non-load-bearing wall assemblies and panels used as components of curtain wall assemblies that are constructed using combustible materials or that incorporate combustible components within the wall assemblies as specified in the following:

- (1) The ability of the wall assembly to resist flame propagation over the exterior face of the wall assembly
- (2) The ability of the wall assembly to resist vertical flame propagation within the combustible core or within other combustible components from one story to the next
- (3) The ability of the wall assembly to resist vertical flame propagation over the interior surface of the wall assembly from one story to the next
- (4) The ability of the wall assembly to resist lateral flame propagation from the compartment of fire origin to adjacent compartments or spaces

1.3.2 The application of this standard to actual field installations of exterior non-load-bearing wall assemblies and panels used as components of curtain wall assemblies shall not limit the use of the methods and materials employed to seal the gap between the edge of the second floor slab and the interior surface of the test specimen during the test, provided approved sealing methods and materials are used in the field.

1.3.3 This standard requires both visual observations made by laboratory personnel conducting the test and temperature data recorded during the test.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. (Reserved)

2.3 Other Publications.

2.3.1 ASTM Publication. American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM C 36, *Standard Specification for Gypsum Wallboard*, 1995.

ASTM E 136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, 2004.

2.3.2 Other Publication. Merriam-Webster's *Collegiate Dictionary*, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 5000®, *Building Construction and Safety Code*®, 2006 edition.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements

of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

3.2.4 Shall. Indicates a mandatory requirement.

3.2.5 Should. Indicates a recommendation or that which is advised but not required.

3.2.6 Standard. A document, the main text of which contains only mandatory provisions using the word “shall” to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix or annex, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

3.3 General Definitions.

3.3.1 Combustible (Material). A material that, in the form in which it is used and under the conditions anticipated, will ignite and burn; a material that does not meet the definition of noncombustible or limited-combustible. [5000, 2006]

3.3.2 Noncombustible Material. A material that, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat. Materials that are reported as passing ASTM E 136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, shall be considered noncombustible materials. [5000, 2006]

3.3.3 Test Specimen. The exterior non-load-bearing wall assembly to be tested in accordance with this fire test method.

Chapter 4 Test Facility and Apparatus

4.1 Test Facility.

4.1.1 The test apparatus described in Section 4.2 shall be located inside a test facility.

4.1.2 The test facility shall have minimum dimensions of 30 ft wide $\times$ 30 ft deep $\times$ 23 ft high (9.1 m $\times$ 9.1 m $\times$ 7.0 m).

4.1.3 The test facility shall have provisions for supplying combustion makeup air taken from the outside during the test.

4.1.4 The test facility shall be constructed to allow for the exhaust of the combustion by-products during the test while not inducing an airflow on the exterior face of the test specimen.

4.1.5 The test facility shall protect the test apparatus and test specimen from exposure to wind and precipitation.

4.2 Test Apparatus.

4.2.1 The test apparatus shall consist of a two-story structure having a height of 15 ft 8 in. $\pm$ 1 in. (4.8 m $\pm$ 25 mm) with a test room on each story.

4.2.2 Each test room shall have unfinished inside dimensions of 10 ft $\pm$ 0.5 in. wide $\times$ 10 ft $\pm$ 0.5 in. deep (3.05 m $\pm$ 13 mm $\times$ 3.05 m $\pm$ 13 mm) with an unfinished floor-to-ceiling height of 7 ft $\pm$ 0.5 in. (2.13 m $\pm$ 13 mm).

4.2.3* The test apparatus shall be constructed in accordance with Figure 4.2.3.

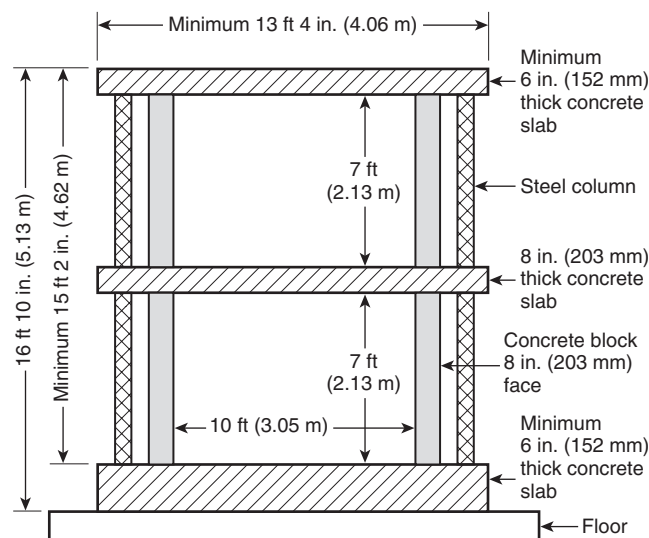


FIGURE 4.2.3 Front View of Test Apparatus Structure (not to scale).

4.2.4 The slabs shall be constructed of reinforced concrete.

4.2.5 The upper two slabs shall be supported by steel columns designed to support the loads, and the columns shall not be located inside the test rooms.

4.2.6 The thickness of the concrete slabs shall be as follows:

- (1) The first-story slab shall be not less than 6 in. (152 mm) thick.
- (2) The second-story slab shall be not less than 8 in. $\pm$ 0.5 in. (203 mm $\pm$ 13 mm) thick.
- (3) The top slab shall be not less than 6 in. $\pm$ 0.5 in. (152 mm $\pm$ 13 mm) thick.

4.2.7 The three permanent walls (one rear wall and two side walls) that form each test room shall be constructed of 8 in. $\pm$ 0.05 in. (203 mm $\pm$ 13 mm) concrete block or equivalent construction.

4.2.8 The interior surfaces of the first-story test room shall be protected as follows:

- (1) Walls and ceiling shall be covered with one layer of nominal $\frac{5}{8}$ in. (16 mm) thick Type X gypsum wallboard conforming to ASTM C 36, *Standard Specification for Gypsum Wallboard*, and one layer of nominal 1.5 in. (38 mm) thick nominal 8 lb/ft³ (128 kg/m³) density ceramic fiber insulation on the interior face.
- (2) The total thickness of the protection shall not exceed 2.5 in. (64 mm).
- (3) The slab shall be covered with two layers of nominal $\frac{5}{8}$ in. (16 mm) thick gypsum wallboard.

4.2.9 Insulation shall not be required in the second-story test room.