

NFPA®

265

**Standard Methods of
Fire Tests for Evaluating Room Fire
Growth Contribution of Textile or
Expanded Vinyl Wall Coverings on
Full Height Panels and Walls**

2019



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NFPA® 265

Standard Methods of

Fire Tests for Evaluating Room Fire Growth Contribution of Textile or Expanded Vinyl Wall Coverings on Full Height Panels and Walls

2019 Edition

This edition of NFPA 265, *Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile or Expanded Vinyl Wall Coverings on Full Height Panels and Walls*, was prepared by the Technical Committee on Fire Tests. It was issued by the Standards Council on November 5, 2018, with an effective date of November 25, 2018, and supersedes all previous editions.

This edition of NFPA 265 was approved as an American National Standard on November 25, 2018.

Origin and Development of NFPA 265

The danger of using carpet-like textile coverings on walls and ceilings is well known, and these coverings have been recognized as a major contributing factor in many fires. Research conducted by the Fire Research Laboratory of the University of California at Berkeley and the American Textile Manufacturers Institute produced a report, "Room Fire Experience of Textile Wall Coverings," that indicated that consideration of only the flame spread rating as measured by NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials*, might not reliably predict the fire behavior of textile wall coverings.

The proposed standard was intended to fill a void and complement the series of interior finish fire tests that were being referenced in NFPA 101, *Life Safety Code*, and other codes. The standard created a testing method that addressed the recognized hazards of using textile materials for wall coverings by supplying a means to evaluate the performance characteristics under specified fire exposure conditions and providing a valid repeatable and reproducible fire test method.

The 1998 edition was revised to include current practices used in testing laboratories. Requirements for the measurement of smoke obscuration were also added. These changes were directly associated with the revisions to the 1997 edition of NFPA 101, *Life Safety Code*, on interior finishes.

The 2002 edition was revised to comply with the *Manual of Style for NFPA Technical Committee Documents* regarding standardization of format.

The 2007 edition was revised to include new requirements for visual documentation. Specific protocols and other related requirements were added for video and photographic equipment. Revisions were also made to the test procedure, and what was known as the Method A Test Protocol in previous editions was moved to Annex C. Method A is a screening protocol and was deemed not to be equivalent to Method B, which tests three fully lined walls.

The 2011 edition was revised to include expanded vinyl wall coverings. New requirements were added to Section 5.1 to provide more guidance on specimen mounting.

The 2015 edition was updated to include new requirements for specimen descriptions and to address adhesives used in panels constructed at the test facility.

The 2019 edition has been updated to address modern fiber-cement board used for mounting wall coverings.

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2019 Edition

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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 D. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. 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 D.

Chapter 1 Administration

1.1 Scope.

1.1.1 This standard describes a test method for determining the contribution of textile or expanded vinyl wall coverings to room fire growth during specified fire exposure conditions.

1.1.2* This test method shall be used to evaluate the flammability characteristics of textile or expanded vinyl wall coverings where such materials constitute the exposed interior surfaces of buildings and demountable, relocatable, full height partitions used in open building interiors.

1.1.3 This test method shall not be used to evaluate the fire resistance of assemblies, nor shall it be used to evaluate the effect of fires originating within a wall assembly.

1.1.4* This test method shall not be used for the evaluation of floor or ceiling finishes.

1.1.5* This test method shall not apply to fabric-covered, lower-than-ceiling-height, freestanding, prefabricated panel furniture systems.

1.2 Purpose.

1.2.1 This test method shall measure certain fire performance characteristics of textile or expanded vinyl wall covering materials in an enclosure under specified fire exposure conditions.

1.2.2 This test method shall determine the potential extent to which the textile or expanded vinyl wall covering materials contribute to fire growth in a room and the potential for fire spread beyond the room under the particular conditions simulated.

1.3 Application.

1.3.1 This test method shall provide all of the following:

- (1) Extent of fire growth in the test room
- (2) Rate of heat release by the specimen
- (3) Total heat released by the specimen
- (4) Time to flashover in the test room, if it occurs
- (5) Time to flame extension beyond the doorway of the test room, if it occurs
- (6) Total heat flux incident to the floor of the test room
- (7) Upper level gas temperature in the test room
- (8) Smoke obscuration, as determined in the exhaust duct
- (9) Production of carbon monoxide, as determined in the exhaust duct
- (10) Emissions of other combustion gases, as determined in the exhaust duct

1.3.2 This test method shall not provide data that can be generalized to apply to rooms or spaces of different shapes, sizes, and ventilation. However, this test method shall provide a general ranking of wall covering materials for use in making judgments, provided it is understood that the conditions observed in the test might or might not be repeated in actual exposures of the tested wall coverings to fire.

1.3.3 This test method shall not provide either of the following:

- (1) The full information concerning toxicity of combustion gases
- (2) Fire resistance of wall-ceiling systems

1.4* Summary of Method.

1.4.1 The sample shall be tested by using a corner test exposure with the specimens mounted on three fully lined walls of the test compartment (Method B).

1.4.1.1 These test methods shall use a gas burner to produce a diffusion flame to expose the walls in the corner of a room 2.44 m × 3.66 m × 2.44 m (8 ft × 12 ft × 8 ft).

1.4.1.2 The burner shall produce a prescribed rate of heat output of 40 kW for 5 minutes followed by 150 kW for 10 minutes, for a total exposure period of 15 minutes.

1.4.1.3 The contribution of the textile or expanded vinyl wall covering to fire growth shall be measured by constant monitoring of the incident heat flux on the center of the floor, the temperature of the gases in the upper part of the room, the rate of heat release, the smoke release, and the time to flash-over.

1.4.1.4 The test shall be conducted while providing natural ventilation to the room, through a single doorway of 0.8 m × 2.0 m (30 in. × 80 in.).

1.4.1.5 The combustion products shall be collected in a hood feeding into a chamber that is connected to an exhaust duct in which measurements of the gas velocity, temperature, and concentrations of selected gases are made.

1.4.2 Flashover shall be considered to have occurred when any two of the conditions identified in Chapter 9 have been attained.

Chapter 2 Referenced Publications

Δ 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 Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM C1186, *Standard Specification for Flat Fiber-Cement Sheets*, 2008 (2016).

ASTM C1288, *Standard Specification for Fiber-Cement Interior Substrate Sheets*, 2017.

ASTM C1396/C1396M, *Standard Specification for Gypsum Board*, 2017.

ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, 2016a.

2.3.2 CSA Group Publications. CSA Group, 178 Rexdale Blvd., Toronto, ON M9W 1R3, Canada.

CSA Standard O121, *Douglas Fir Plywood*, 2008 (R 2013).

2.3.3 NIST Publications. National Institute of Standards and Technology, 100 Bureau Drive, Stop 1070, Gaithersburg, MD 20899-1070.

NIST Voluntary Product Standard PS 1, *Structural Plywood*, 2009.

2.3.4 Other Publications.

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

2.4 References for Extracts in Mandatory Sections.

NFPA 286, *Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*, 2019 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 Shall. Indicates a mandatory requirement.

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

3.2.3 Standard. An NFPA Standard, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and that is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix, annex, footnote, informational note, or other means as permitted in the NFPA Manuals of Style. When used in a generic sense, such as in the phrase "standards development process" or "standards development activities," the term "standards" includes all NFPA Standards, including Codes, Standards, Recommended Practices, and Guides.

3.3 General Definitions.

3.3.1 Average Upper Gas Layer Temperature. Temperature based on the average of the four ceiling quadrant thermocouples and the center of the room ceiling thermocouple. [286, 2019]

3.3.2* Expanded Vinyl Wall Covering. Wall covering consisting of a woven textile backing, an expanded vinyl base coat layer, and a nonexpanded vinyl skin coat.

3.3.3* Textile. A fabric made of natural or man-made fibers. [286, 2019]

Chapter 4 Test Equipment

4.1 Ignition Source.

4.1.1 The ignition source for the test shall be a gas burner with a nominal 305 mm × 305 mm (12 in. × 12 in.) porous top surface as shown in Figure 4.1.1.

4.1.2 The material through which the gas is supplied shall be a layer of white Ottawa silica sand not less than 102 mm (4 in.) deep for providing the horizontal surface through which the gas is supplied.

4.1.3 The top surface of the burner, through which the gas is applied, shall be located horizontally 305 mm (12 in.) above the floor.

4.1.4 The burner enclosure shall be located such that the outer edge of the sand surface is located 50 mm (2 in.) from both walls, in a corner of the room, opposite the door.

4.1.5 The gas supply to the burner shall be of C.P. grade propane (99 percent purity or better).

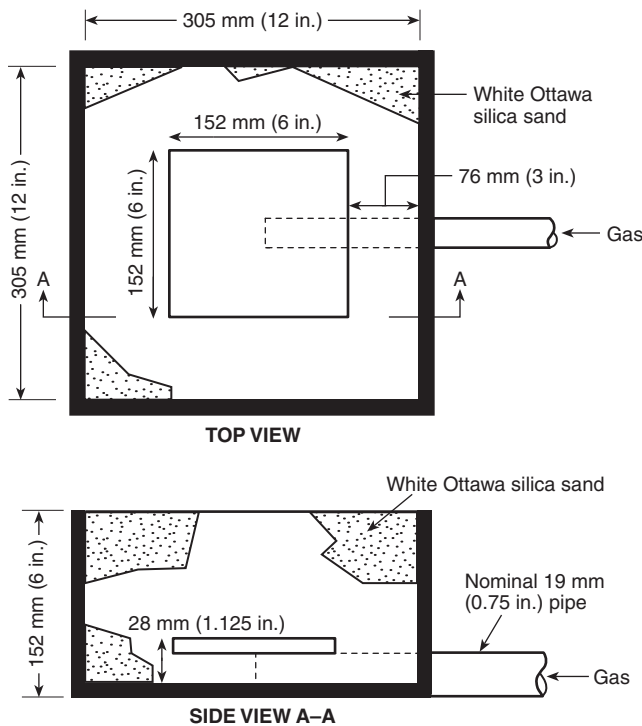


FIGURE 4.1.1 Gas Burner.

4.1.5.1 The burner shall be capable of producing a net heat output of $40 \text{ kW} \pm 1 \text{ kW}$ for 5 minutes followed by a net heat output of $150 \text{ kW} \pm 5 \text{ kW}$ for 10 minutes.

4.1.5.2* Flow rates shall be calculated using the net heat of combustion of propane or 85 MJ/m^3 (2280 Btu/ft^3) at standard conditions of 20°C (68°F) temperature and 101 kPa (14.7 psi) absolute pressure.

4.1.5.3 The gas flow rate shall be metered throughout the test with an accuracy of ± 3 percent.

4.1.6* The heat output from the burner shall be controlled to ± 5 percent.

4.1.7 The burner design shall allow switching from 40 kW to 150 kW within 10 seconds.

4.1.8 The burner shall be ignited by a pilot burner or a remotely controlled spark igniter.

4.1.9 Burner controls shall be provided for automatic gas supply shutoff if flameout occurs.

4.2 Compartment Geometry and Construction. Compartment geometry and construction shall be as shown in Figure 4.2.

4.2.1* The interior dimensions of the fire room floor when the specimens are in place shall measure $2.44 \text{ m} \pm 0.1 \text{ m}$ $\times$ $3.66 \text{ m} \pm 0.1 \text{ m}$ ($8 \text{ ft} \pm 3.9 \text{ in.} \times 12 \text{ ft} \pm 3.9 \text{ in.}$).

4.2.2 The finished ceiling shall be $2.44 \text{ m} \pm 0.1 \text{ m}$ ($8 \text{ ft} \pm 3.9 \text{ in.}$) above the floor.

4.2.3 There shall be four walls at right angles defining the compartment, as shown in Figure 4.2.

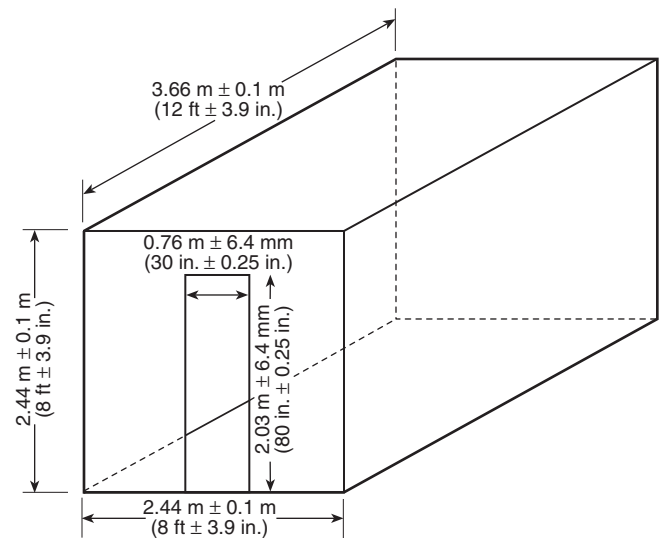


FIGURE 4.2 Interior Room Dimensions and Interior Doorway Dimensions.

4.2.4* The room shall be placed indoors in an essentially draft-free, heated space large enough to ensure that there is no influence of the surroundings on the test fire.

4.2.5 There shall be a doorway measuring $0.76 \text{ m} \pm 6.4 \text{ mm}$ $\times$ $2.03 \text{ m} \pm 6.4 \text{ mm}$ ($30 \text{ in.} \pm 0.25 \text{ in.} \times 80 \text{ in.} \pm 0.25 \text{ in.}$) in the center of one of the $2.44 \text{ m} \times 2.44 \text{ m}$ ($8 \text{ ft} \times 8 \text{ ft}$) walls, and no other wall, floor, or ceiling openings that allow ventilation.

4.2.6* The test compartment shall be a framed (with wood or metal studs) or concrete block structure.

4.2.6.1 The inside surface of the walls, ceiling, and floor shall be of Type X gypsum wallboard or of calcium silicate board of 736 kg/m^3 (46 lb/ft^3) density.

4.2.6.2 The nominal thickness of the inside surface shall be at least 12 mm (0.5 in.).

4.2.6.3 For each test, when the test is for wall systems only, a new section of uncoated and unpainted nominal 16 mm ($\frac{5}{8} \text{ in.}$) gypsum wallboard, nominal $610 \text{ mm} \times 610 \text{ mm}$ ($2 \text{ ft} \times 2 \text{ ft}$), shall be installed in the ceiling at the wall corner intersection directly above the burner.

4.2.7 The **doorframe** shall be constructed to remain unchanged during the test period to a tolerance of ± 1 percent in height and width.

Chapter 5 Specimen Mounting and Installation

5.1 Specimen Mounting.

5.1.1 Where wall coverings are intended to be applied to a substrate in actual end use, the test specimens shall consist of the wall coverings mounted on a substrate that is appropriate for the intended application as described in 5.1.3 through 5.1.9.

5.1.2 Where wall coverings are used as part of prefabricated panels or demountable, relocatable, full-height partitions, the specimens shall consist of the prefabricated panel or the demountable, relocatable, full-height partitions with the wall