# First Revision No. 4502-NFPA 101-2015 [ Section No. 3.3.92.4 ]

**3.3.95.4*** Interior Wall Finish.

The interior finish of columns, fixed or movable walls, and fixed or movable partitions. (SAF-INT)

## Supplemental Information

| File Name | Description |
|---|---|
| 101_A.3.3.92.4.docx | Annex note to 3.3.92.4 |

## Submitter Information Verification

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## Committee Statement

**Committee Statement:** This annex note is currently associated with A.10.2.1.5 but it belongs here to provide additional clarification on the application of interior wall finish.

**Response Message:**

Public Input No. 185-NFPA 101-2015 [Section No. 3.3.92.4]

Public Input No. 187-NFPA 101-2015 [New Section after A.3.3.92.3]

FR-4502, Annex material [moved from A.10.2.1.5]

**A.3.3.92.4 Interior Wall Finish.**
Such partitions are intended to include washroom water closet partitions.

## First Revision No. 4505-NFPA 101-2015 [ Section No. 10.2 ]

**10.2*** Interior Finish.

**10.2.1*** General.

**10.2.1.1**

Classification of interior finish materials shall be in accordance with tests made under conditions simulating actual installations, provided that the authority having jurisdiction is permitted to establish the classification of any material for which classification by a standard test is not available~~, unless otherwise provided in~~ 10.2.1.2 ~~or~~ 10.2.1.4 .

**10.2.1.2**

Fixed or movable walls and partitions, paneling, wall pads, and crash pads applied structurally or for decoration, acoustical correction, surface insulation, or other purposes shall be considered interior finish and shall not be considered decorations or furnishings.

**10.2.1.3**

Lockers ~~constructed of combustible materials~~ shall be considered interior finish.

**10.2.1.4**

Washroom water closet partitions shall be considered interior finish.

**10.2.1.5**

Fire-retardant coatings shall be in accordance with 10.2.6 .

**10.2.2*** Use of Interior Finishes.

**10.2.2.1**

Requirements for interior wall and ceiling finish shall apply as follows:

(1) Where specified elsewhere in this *Code* for specific occupancies *(see Chapter 7 and Chapters 11 through 43)*

(2) As specified in 10.2.3 through 10.2.6.

**10.2.2.2***

Interior floor finish shall comply with 10.2.7 under any of the following conditions:

(1) Where floor finish requirements are specified elsewhere in the *Code*

(2) Where the fire performance of the floor finish cannot be demonstrated to be equivalent to floor finishes with a critical radiant flux of at least 0.1 W/cm$^2$

**10.2.3*** Interior Wall or Ceiling Finish Testing and Classification.

~~Interior~~ Where interior wall or ceiling finish ~~that~~ is required elsewhere in this *Code* to be classified for fire performance and smoke development, it shall be classified in accordance with 10.2.3.1 or 10.2.3.3 , except as indicated in sections 10.2.4 . ~~Class A, Class B, or Class C shall be classified based on test results from ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials* , except as indicated in 10.2.4.2 or 10.2.3.9 .~~

**10.2.3.1** Interior Wall and Ceiling Finish Materials Tested in Accordance with NFPA 286.

**10.2.3.1.1**

Interior wall and ceiling finish materials shall be classified in accordance with NFPA 286 and comply with 10.2.3.2 .

**10.2.3.1.2**

Materials tested in accordance with 10.2.3.1.1 and complying with 10.2.3.2 shall be considered also to comply with the requirements of a Class A, Class B, or Class C in accordance with 10.2.3.3 .

**10.2.3.2** Acceptance Criteria for NFPA 286.

The interior finish shall comply with the following:

(1) During the 40 kW exposure, flames shall not spread to the ceiling.

(2) The flame shall not spread to the outer extremity of the sample on any wall or ceiling.

(3) Flashover, as defined in NFPA 286 , shall not occur.

(4) The peak heat release rate throughout the test shall not exceed 800 kW.

(5) For new installations, the total smoke released throughout the test shall not exceed 1000 $m^2$ .

**10.2.3.3*** Interior Wall and Ceiling Finish Materials Tested in Accordance with ASTM E84 or ANSI/UL 723.

Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials* , except as indicated in 10.2.3.4 and 10.2.3.5 , and shall be grouped in the following classes in accordance with their flame spread and smoke developed indexes.

Class A: Flame spread index 0–25; smoke developed index 0–450.

Class B: Flame spread index 26–75 ; smoke developed index 0–450 .

Class C: Flame spread index 76–200 ; smoke developed index 0–450 .

**10.2.3.3.1**

Existing interior finish shall be exempt from the smoke developed index criteria of 10.2.3.3 ~~through 10.2.3.4.3~~ .

**10.2.3.3.2**

The classification of interior finish specified in 10.2.3.3 shall be that of the basic material used by itself or in combination with other materials.

**10.2.3.3.3**

Wherever the use of Class C interior wall and ceiling finish is required, Class A or Class B shall be permitted~~. Where~~ , and where Class B interior wall and ceiling finish is required, Class A shall be permitted.

~~**10.2.3.3.4**~~

~~Products required to be tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials* , shall be grouped in the classes described in 10.2.3.3.4.1 through 10.2.3.3.4.3 in accordance with their flame spread index and smoke developed index, except as indicated in 10.2.3.3.1 .~~

**10.2.3.3.4.1** Class A Interior Wall and Ceiling Finish.

Class A interior wall and ceiling finishes shall be those finishes with a flame spread index of 0–25 and a smoke developed index of 0–450 and shall include any material classified at 25 or less on the flame spread index test scale and 450 or less on the smoke developed index test scale.

**10.2.3.3.4.2** Class B Interior Wall and Ceiling Finish.

Class B interior wall and ceiling finishes shall be those finishes with a flame spread index of 26–75 and a smoke developed index of 0–450 and shall include any material classified at more than 25 but not more than 75 on the flame spread index test scale and 450 or less on the smoke developed index test scale.

**10.2.3.3.4.3** Class C Interior Wall and Ceiling Finish.

Class C interior wall and ceiling finishes shall be those finishes with a flame spread index of 76–200 and a smoke developed index of 0–450 and shall include any material classified at more than 75 but not more than 200 on the flame spread index test scale and 450 or less on the smoke developed index test scale.

**10.2.3.4**

Materials complying with the requirements of 10.2.3.1 shall not be required to be tested in accordance with 10.2.3.3 .

**10.2.3.5**

Materials described in 10.2.4 shall be tested as indicated as described in the corresponding sections.

**10.2.3.6**

If a material having a total thickness of less than 1/28 in. (0.9 mm) is applied to a surface that is not noncombustible or not limited-combustible, the provisions of 10.2.1.1 shall apply.

**10.2.3.7**

Approved existing installations of materials applied directly to the surface of walls and ceilings in a total thickness of less than 1/28 in. (0.9 mm) shall be permitted to remain in use, and the provisions of 10.2.2 through 10.2.3.10.2 shall not apply.

**10.2.3.8**

Interior wall and ceiling finish tested in accordance with NFPA 286 , *Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth* , and meeting the conditions of 10.2.3.10.2 shall be permitted to be used where interior wall and ceiling finish is required to be Class A in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials* .

**10.2.3.9**

For fire-retardant coatings, see 10.2.6 .

**10.2.3.10**

Products tested in accordance with NFPA 265 shall comply with the criteria of 10.2.3.10.1 . Products tested in accordance with NFPA 286 , *Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth* , shall comply with the criteria of 10.2.3.10.2 .

~~**10.2.3.10.1***~~

~~The interior finish shall comply with all of the following when tested using method B of the test protocol 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* :~~

~~During the 40 kW exposure, flames shall not spread to the ceiling.~~

~~The flame shall not spread to the outer extremities of the samples on the 8 ft × 12 ft (2440 mm × 3660 mm) walls.~~

~~Flashover, as described in NFPA 265 , shall not occur.~~

~~For new installations, the total smoke released throughout the test shall not exceed 1000 m 2 .~~

~~**10.2.3.10.2**~~

~~The interior finish shall comply with all of the following when tested using the test protocol of NFPA 286 , *Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth* :~~

~~During the 40 kW exposure, flames shall not spread to the ceiling.~~

~~The flame shall not spread to the outer extremity of the sample on any wall or ceiling.~~

~~Flashover, as described in NFPA 286 , shall not occur.~~

~~The peak heat release rate throughout the test shall not exceed 800 kW.~~

~~For new installations, the total smoke released throughout the test shall not exceed 1000 m 2 .~~

**10.2.4*** Interior Wall and Ceiling Finish Materials with Special Requirements.

The materials indicated in 10.2.4.1 through 10.2.4.16 shall be tested as indicated in the corresponding sections.

**10.2.4.1** Thickness Exemption.

The provisions of 10.2.3 shall not apply to materials having a total thickness of less than 1/28 in. (0.9 mm) that are applied directly to the surface of walls and ceilings where both of the following conditions are met:

(1) The wall or ceiling surface is a noncombustible or limited combustible material.

(2) The materials applied meet the requirements of Class A interior wall or ceiling finish when tested in accordance with 10.2.3, using fiber cement board as the substrate material .

**10.2.4.1.1**

If a material having a total thickness of less than 1/28 in. (0.9 mm) is applied to a surface that is not noncombustible or not limited-combustible, the provisions of 10.2.3 shall apply.

**10.2.4.1.2**

Approved existing installations of materials applied directly to the surface of walls and ceilings in a total thickness of less than 1/28 in. (0.9 mm) shall be permitted to remain in use, and the provisions of 10.2.3 shall not apply.

**10.2.4.2*** Exposed Portions of Structural Members.

In other than new interior exit stairways, new interior exit ramps, and new exit passageways, exposed portions of structural members complying with the requirements for Type IV (2HH) construction in accordance with NFPA 220or with the building code shall be exempt from testing and classification in accordance with 10.2.3 .

**10.2.4.3** Cellular or Foamed Plastic.

**10.2.4.3.1**

Cellular or foamed plastic materials shall not be used as interior wall and ceiling finish unless specifically permitted by 10.2.4.3.2 or 10.2.4.3.4 .

**10.2.4.3.2**

The requirements of 10.2.4.3 ~~through~~ ~~10.2.4.3.2~~ shall apply both to exposed foamed plastics and to foamed plastics used in conjunction with a textile or vinyl facing or cover.

**10.2.4.3.3***

Cellular or foamed plastic materials shall be permitted where subjected to large-scale fire tests that substantiate their combustibility and smoke release characteristics for the use intended under actual fire conditions.

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**10.2.4.3.3.1**

One of the following fire tests shall be used for assessing the combustibility of cellular or foamed plastic materials as interior finish:

(1) NFPA 286 , *Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth* , with the acceptance criteria of 10.2.3.10.2

(2) ANSI/UL 1715, *Standard for Fire Test of Interior Finish Material* (including smoke measurements, with total smoke release not to exceed 1000 $m^2$ )

(3) ANSI/UL 1040, *Standard for Fire Test of Insulated Wall Construction*

(4) ANSI/FM Approval 4880, ~~*American National Standard for Evaluating Insulated Wall or Wall and Roof/Ceiling Assemblies, Plastic Interior Finish Materials, Plastic Exterior Building Panels, Wall/Ceiling Coating Systems, Interior or Exterior Finish Systems*~~ *Approval Standard for Class 1 Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings, and Exterior Wall Systems*

**10.2.4.3.3.2***

The tests shall be performed on a finished foamed plastic assembly related to the actual end-use configuration, including any cover or facing, and at the maximum thickness intended for use.

**10.2.4.3.4**

Cellular or foamed plastic shall be permitted for trim not in excess of 10 percent of the specific wall or ceiling area to which it is applied, provided that it is not less than 20 $lb/ft^3$ (320 $kg/m^3$) in density, is limited to ½ in. (13 mm) in thickness and 4 in. (100 mm) in width, and complies with the requirements for Class A or Class B interior wall and ceiling finish as described in 10.2.3.3; however, the smoke developed index shall not be limited.

**10.2.4.4*** Textile Wall Coverings.

Where used as interior wall finish materials, textile materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of either, 10.2.3.1 , 10.2.4.4.1 , or 10.2.4.4.3 .

**10.2.4.4.1***

Products tested in accordance with NFPA 265 shall comply with the criteria of 10.2.4.4.2 .

**10.2.4.4.2***

The interior finish shall comply with all of the following when tested using method B of the test protocol of NFPA 265 :

(1) During the 40 kW exposure, flames shall not spread to the ceiling.

(2) The flame shall not spread to the outer extremities of the samples on the 8 ft × 12 ft (2440 mm × 3660 mm) walls.

(3) Flashover, as described in NFPA 265 , shall not occur.

(4) For new installations, the total smoke released throughout the test shall not exceed 1000 $m^2$ .

**10.2.4.4.3**

Textile materials meeting the requirements of Class A when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials* , using the specimen preparation and mounting method of ASTM E2404, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics* , shall be permitted as follows:

(1) On the walls of rooms or areas protected by an approved automatic sprinkler system.

(2) On partitions that do not exceed three-quarters of the floor-to-ceiling height or do not exceed 8 ft (2440 mm) in height, whichever is less.

(3) On the lower 48 in. (1220 mm) above the finished floor on ceiling-height walls and ceiling-height partitions.

(4) Previously approved existing installations of textile material meeting the requirements of Class A when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* or ANSI/UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials* , shall be permitted to be continued to be used.

**10.2.4.5*** Expanded Vinyl Wall Coverings.

Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of either 10.2.3.1 , 10.2.4.4.1 , or 10.2.4.4.3 .

**10.2.4.6** Textile Ceiling Coverings.

Where used as interior ceiling finish materials, textile materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall meet one of the following:

(1) Comply with the requirements of 10.2.3.1

(2) Meet the requirements of Class A when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* or ANSI/UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials* using the specimen preparation and mounting method of ASTM E2404, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics* , and used on the ceilings of rooms or areas protected by an approved automatic sprinkler system

**10.2.4.7** Expanded Vinyl Ceiling Coverings.

Where used as interior ceiling finish materials, expanded vinyl materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall meet one of the following:

(1) Comply with the requirements of 10.2.3.1

(2) Meet the requirements of Class A when tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* or ANSI/UL 723, *Standard Test Method for Surface Burning Characteristics of Building Materials* , using the specimen preparation and mounting method of ASTM E2404, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics* , and used on the ceilings of rooms or areas protected by an approved automatic sprinkler system

**10.2.4.8** Lockers.

**10.2.4.8.1** Combustible Lockers.

Where lockers constructed of combustible materials other than wood are used, the lockers shall be considered interior finish and shall comply with 10.2.3 , except as permitted by 10.2.4.8.2 .

**10.2.4.8.2** Wood Lockers.

Lockers constructed entirely of wood and of noncombustible materials shall be permitted to be used in any location where interior finish materials are required to meet a Class C classification in accordance with 10.2.3 .

**10.2.4.9** Polypropylene (PP) and High-Density Polyethylene (HDPE).

**10.2.4.9.1**

Polypropylene and high-density polyethylene materials shall not be permitted as interior wall or ceiling finish unless the material complies with the requirements of 10.2.3.1.

**10.2.4.9.2**

The tests shall be performed on a finished assembly and on the maximum thickness intended for use.

**10.2.4.10** Site-Fabricated Stretch Systems.

**10.2.4.10.1**

For new installations, site-fabricated stretch systems containing all three components described in the definition in Chapter 3 shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.3.8.

**10.2.4.10.2**

If the materials are tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, specimen preparation and mounting shall be in accordance with ASTM E2573, *Standard Practice for Specimen Preparation and Mounting of Site-Fabricated Stretch Systems to Assess Surface Burning Characteristics*.

**10.2.4.11** Reflective Insulation Materials.

**10.2.4.11.1**

Reflective insulation materials shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3 or 10.2.3.3 .

**10.2.4.11.2**

If the materials are tested in accordance with ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2599, *Standard Practice for Specimen Preparation and Mounting of Reflective Insulation, Radiant Barrier, and Vinyl Stretch Ceiling Materials for Building Applications to Assess Surface Burning Characteristics*.

**10.2.4.12** Metal Ceiling and Wall Panels.

**10.2.4.12.1**

Listed factory finished metal ceiling and wall panels meeting the requirements of Class A ~~when tested~~ in accordance with 10.2.3~~ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials (see 10.2.3.3.4 )*~~ , shall be permitted to be finished with one additional application of paint.

**10.2.4.12.2**

Such painted panels shall be permitted for use in areas where Class A interior finishes are required. The total paint thickness shall not exceed 1⁄28 in. (0.9 mm).

**10.2.4.13** Laminated Products Factory Produced with a Wood Substrate.

**10.2.4.13.1**

Laminated products factory produced with a wood substrate shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3 .

**10.2.4.13.2**

If the materials are tested in accordance with ASTM E84, *Standard Test method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials* , specimen preparation and mounting shall be in accordance with ASTM E2404, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics* .

**10.2.4.14** Facings or Wood Veneers Intended to be Applied on Site over a Wood Substrate.

**10.2.4.14.1**

Facings or veneers intended to be applied on site over a wood substrate shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3 .

**10.2.4.14.2**

If the materials are tested in accordance with NFPA 286 they shall use the product-mounting system, including adhesive, described in Section 5.8.9 of NFPA 286 .

**10.2.4.14.3**

If the materials are tested in accordance with ASTM E84, *Standard Test method for Surface Burning Characteristics of Building Materials* , or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials* , specimen preparation and mounting shall be in accordance with ASTM E2404, *Standard Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics* .

**10.2.4.15*** Light-Transmitting Plastics.

Light-transmitting plastics shall be permitted to be used as interior wall and ceiling finish if approved by the authority having jurisdiction.

**10.2.4.16** Decorations and Furnishings.

Decorations and furnishings that do not meet the definition of interior finish, as defined in 3.3.95.2, shall be regulated by the provisions of Section 10.3.

**10.2.5** Trim and Incidental Finish.

**10.2.5.1** General.

Interior wall and ceiling trim and incidental finish, other than wall base in accordance with 10.2.5.2 and bulletin boards, posters, and paper in accordance with 10.2.5.3, not in excess of 10 percent of the specific wall and ceiling areas of any room or space to which it is applied shall be permitted to be Class C materials in occupancies where interior wall and ceiling finish of Class A or Class B is required.

**10.2.5.2** Wall Base.

Interior floor trim material used at the junction of the wall and the floor to provide a functional or decorative border, and not exceeding 6 in. (150 mm) in height, shall meet the requirements for interior wall finish for its location or the requirements for Class II interior floor finish as described in 10.2.7.4 using the test described in 10.2.7.3. If a Class I floor finish is required, the interior floor trim shall be Class I.

**10.2.5.3** Bulletin Boards, Posters, and Paper.

**10.2.5.3.1**

Bulletin boards, posters, and paper attached directly to the wall shall not exceed 20 percent of the aggregate wall area to which they are applied.

**10.2.5.3.2**

The provision of 10.2.5.3.1 shall not apply to artwork and teaching materials in sprinklered educational or day-care occupancies in accordance with 14.7.4.3(2), 15.7.4.3(2), 16.7.4.3(2), or 17.7.4.3(2).

**10.2.6*** Fire-Retardant Coatings.

**10.2.6.1***

The required flame spread index or smoke developed index of existing surfaces of walls, partitions, columns, and ceilings shall be permitted to be secured by applying approved fire-retardant coatings to surfaces having higher flame spread index values than permitted.

**10.2.6.1.1**

Such treatments shall be tested, or shall be listed and labeled for application to the material to which they are applied, and shall comply with the requirements of NFPA 703~~, *Standard for Fire Retardant–Treated Wood and Fire-Retardant Coatings for Building Materials*~~ .

**10.2.6.2***

Surfaces of walls, partitions, columns, and ceilings shall be permitted to be finished with factory-applied fire-retardant-coated products that have been listed and labeled to demonstrate compliance with the requirements of ASTM E2768, *Standard Test Method for Extended Duration Surface Burning Characteristics of Building Materials,* on the coated surface.

**10.2.6.3**

Fire-retardant coatings or factory-applied fire-retardant-coated assemblies shall possess the desired degree of permanency and shall be maintained so as to retain the effectiveness of the treatment under the service conditions encountered in actual use.

**10.2.7*** Interior Floor Finish Testing and Classification.

**10.2.7.1***

Carpet and carpet-like interior floor finishes shall comply with ASTM D2859, *Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.*.

**10.2.7.2***

Floor coverings, other than carpet for which 10.2.2.2 establishes requirements for fire performance, shall have a minimum critical radiant flux of 0.1 W/cm$^2$.

**10.2.7.3***

Interior floor finishes shall be classified in accordance with 10.2.7.4, based on test results from NFPA 253~~, *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source,*~~ or ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.*.

**10.2.7.4**

Interior floor finishes shall be grouped in the classes specified in 10.2.7.4.1 and 10.2.7.4.2 in accordance with the critical radiant flux requirements.

**10.2.7.4.1** Class I Interior Floor Finish.

Class I interior floor finish shall have a critical radiant flux of not less than 0.45 W/cm$^2$, as determined by the test described in 10.2.7.3.

**10.2.7.4.2** Class II Interior Floor Finish.

Class II interior floor finish shall have a critical radiant flux of not less than 0.22 W/cm$^2$, but less than 0.45 W/cm$^2$, as determined by the test described in 10.2.7.3.

**10.2.7.5**

Wherever the use of Class II interior floor finish is required, Class I interior floor finish shall be permitted.

**10.2.8** Automatic Sprinklers.

**10.2.8.1**

Other than as required in 10.3.10, where an approved automatic sprinkler system is installed in accordance with Section 9.7, Class C interior wall and ceiling finish materials shall be permitted in any location where Class B is required, and Class B interior wall and ceiling finish materials shall be permitted in any location where Class A is required.

**10.2.8.2**

Where an approved automatic sprinkler system is installed in accordance with Section 9.7, throughout the fire compartment or smoke compartment containing the interior floor finish, Class II interior floor finish shall be permitted in any location where Class I interior floor finish is required, and where Class II is required, the provisions of 10.2.7.2 shall apply.

## Supplemental Information

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## Committee Statement

**Committee Statement:** 10.2 (all): This reorganizes section 10.2 for a more logical organization but it does not change any of the requirements. The key issue is to recognize that the default test for assessing interior finish fire safety requirements is NFPA 286 (room-corner test) because any interior finish material is allowed to be tested to NFPA 286, while not all materials are allowed to be tested to ASTM E84 or to NFPA 265. In fact, foam plastics, HDPE and PP are not allowed to be tested to ASTM E84. Moreover, both textile wall and ceiling coverings and expanded vinyl wall coverings and ceiling coverings are only allowed to be tested to ASTM E84 under certain conditions. Also,while textile and expanded vinyl wall coverings are allowed to be tested to NFPA 265, neither textile nor expanded vinyl ceiling coverings are permitted to be tested to NFPA 265. Also, several materials are required to use special mounting methods in order to be tested to ASTM E84. Finally, this reorganization does incorporate both the very thin linings (< 1/28 of an inch) and the exposed portions of structural members in the same sections as all other products, while not changing the requirements.

10.2.4.13 (NEW) and 10.2.4.14 (NEW): ASTM has developed mounting methods for both "facings or wood veneer intended to be applied on site over a wood substrate" and laminated products that are factory produced and have a wood substrate. The concept is that facings that are produced as part of a commercial (factory-produced) panel are finished products and the manufacturer should be responsible to ensure that the product itself (the full panel) is safe and there is no need to discuss a substrate. It has been shown that, when veneers are applied over a wood substrate the resulting flame spread is much higher than when applied over gypsum board or over a noncombustible substrate. Therefore the requirement in ASTM E2579 is that the testing be done with the full product and, thus, there will no need to retest for different substrates. Similarly, NFPA 286 contains a section that addresses testing of wall covering materials, including facings applied on site and laminated products produced in the factory. Facings applied on site over wood substrates are tested using ASTM E2404.

10.2.1.3 (revision): The text "constructed of combustible material" was deleted as lockers, regardless of material, are to be considered interior finish.

10.2.1.4 (NEW): The new language moves the current annex note from existing 10.2.1.5 into the body of the code to further clarify the application of interior finish requirements.

10.2.4.2 (revision) and A.10.2.4.2 (NEW): Taller wood buildings and new technology, primarily new “mass timber” make taller buildings of Type IV possible. To that end, the requirements for Type IV have been changed to require the testing for components in the egress system such that they too need to be tested and meet the appropriate classification required in this section. This means that Type IV is “presumed” to comply with the finish requirements in this section for the purpose of meeting the requirements of this section for any wall or ceiling finish of elements other than those listed in this section.

A.10.2: The reorganization to Section 10.2 in the Code have increased the the ease of application of the interior finish provisions and created a more user friendly and comprehensive set of provisions. Table A.10.2, which was developed to summarize the interior finish provisions is no longer needed. New language summarizing the organization of 10.2 has been added. The annex sections are also being moved to addressed the reorganization of Section 10.2.

A.10.2.1.5: This section has been deleted and relocated to the annex for the definition of 'interior wall finish'. It has also been repeated in Section 10.2.1 to reinforce that interior wall finish provisions are applicable to washroom water closet partitions.

A.10.2.3.7: The last sentence of current A.10.2.3.7 has been deleted as the sentence is obsolete as it refers to older editions of NFPA 265 and of the code.

**Response Message:**

Public Input No. 123-NFPA 101-2015 [New Section after 10.2.4]

Public Input No. 180-NFPA 101-2015 [Section No. 10.2]

Public Input No. 124-NFPA 101-2015 [New Section after 10.2.4]

Public Input No. 188-NFPA 101-2015 [Section No. A.10.2]

Public Input No. 186-NFPA 101-2015 [Section No. A.10.2.1.5]

Public Input No. 184-NFPA 101-2015 [Section No. A.10.2.3.7]

## 10.2* Interior Finish.

### A.10.2
The requirements pertaining to interior finish are intended to restrict the spread of fire over the continuous surface forming the interior portions of a building.

The requirements are based on fire testing to NFPA 286 (with the criteria of 10.2.3.2), which apply to all interior finish materials. Many interior finish materials are permitted to be tested based on other fire tests, such as ASTM E84, UL 723, or NFPA 265 as provided in the relevant section of 10.2.

### 10.2.1* General

### A.10.2.1
The requirements pertaining to interior finish are intended to restrict the spread of fire over the continuous surface forming the interior portions of a building. The presence of multiple paint layers has the potential for paint delamination and bubbling or blistering of paint. Testing (NFPA *Fire Technology*, August 1974, "Fire Tests of Building Interior Covering Systems," David Waksman and John Ferguson, Institute for Applied Technology, National Bureau of Standards) has shown that adding up to two layers of paint with a dry film thickness of about 0.007 in. (0.18 mm) will not change the fire properties of surface-covering systems. Testing has shown that the fire properties of the surface-covering systems are highly substrate dependent and that thin coatings generally take on the characteristics of the substrate. When exposed to fire, the delamination, bubbling, and blistering of paint can result in an accelerated rate of flame spread.

#### 10.2.1.1
Classification of interior finish materials shall be in accordance with tests made under conditions simulating actual installations, provided that the authority having jurisdiction is permitted to establish the classification of any material for which classification by a standard test is not available.

#### 10.2.1.2
Fixed or movable walls and partitions, paneling, wall pads, and crash pads applied structurally or for decoration, acoustical correction, surface insulation, or other purposes shall be considered interior finish and shall not be considered decorations or furnishings.

#### 10.2.1.3
Lockers shall be considered interior finish.

#### 10.2.1.4
Washroom water closet partitions shall be considered interior finish.

#### 10.2.1.5
Fire-retardant coatings shall be in accordance with 10.2.6.

### 10.2.2* Use of Interior Finishes.

A.10.2.2

Table A.10.2.2 provides a compilation of the interior finish requirements of 7.1.4 and the occupancy chapters (Chapters 12 through 42) of this *Code*.

**Table A.10.2.2 Interior Finish Classification Limitations**

| Occupancy | Exits | Exit Access Corridors | Other Spaces | |
|---|---|---|---|---|
| Assembly — New | | | | |
| >300 occupant load | A<br>I or II | A or B<br>I or II | A or B<br>NA | |
| ≤300 occupant load | A<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |
| Assembly — Existing | | | | |
| >300 occupant load | A | A or B | A or B | |
| ≤300 occupant load | A | A or B | A, B, or C | |
| Educational — New | A<br>I or II | A or B<br>I or II | A or B; C on low partitions[†]<br>NA | |
| Educational — Existing | A | A or B | A, B, or C | |
| Day-Care Centers — New | A<br>I or II | A<br>I or II | A or B<br>NA | |
| Day-Care Centers — Existing | A or B | A or B | A or B | |
| Day-Care Homes — New | A or B<br>I or II | A or B | A, B, or C<br>NA | |
| Day-Care Homes — Existing | A or B | A, B, or C | A, B, or C | |
| Health Care — New | A | A | A | |
| | | NA | B on lower portion of corridor wall[†] | B in small individual rooms[†] |
| | | I or II | I or II | NA |
| Health Care — Existing | A or B | A or B | A or B | |
| Detention and Correctional — New (sprinklers mandatory) | A or B<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |
| Detention and Correctional — Existing | A or B<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |
| One- and Two-Family Dwellings and Lodging or Rooming Houses | A, B, or C | A, B, or C | A, B, or C | |
| Hotels and Dormitories — New | A<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |
| Hotels and Dormitories — Existing | A or B<br>I or II[†] | A or B<br>I or II[†] | A, B, or C<br>NA | |
| Apartment Buildings — New | A<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |

| Occupancy | Exits | Exit Access Corridors | Other Spaces |
|---|---|---|---|
| Apartment Buildings — Existing | A or B<br>I or II† | A or B<br>I or II† | A, B, or C<br>NA |
| Residential Board and Care — *(See Chapters 32 and 33.)* | | | |
| Mercantile — New | A or B<br>I or II | A or B | A or B<br>NA |
| Mercantile — Existing | | | |
| Class A or Class B stores | A or B | A or B | Ceilings — A or B; walls — A, B, or C |
| Class C stores | A, B, or C | A, B, or C | A, B, or C |
| Business and Ambulatory Health Care — New | A or B<br>I or II | A or B | A, B, or C<br>NA |
| Business and Ambulatory Health Care — Existing | A or B | A or B | A, B, or C |
| Industrial | A or B<br>I or II | A, B, or C<br>I or II | A, B, or C<br>NA |
| Storage | A or B<br>I or II | A, B, or C | A, B, or C<br>NA |

NA: Not applicable.Notes:
(1) Class A interior wall and ceiling finish — flame spread index, 0–25 (new applications); smoke developed index, 0–450.
(2) Class B interior wall and ceiling finish — flame spread index, 26–75 (new applications); smoke developed index, 0–450.
(3) Class C interior wall and ceiling finish — flame spread index, 76–200 (new applications); smoke developed index, 0–450.
(4) Class I interior floor finish — critical radiant flux, not less than 0.45 W/cm$^2$.
(5) Class II interior floor finish — critical radiant flux, not more than 0.22 W/cm$^2$, but less than 0.45 W/cm$^2$.
(6) Automatic sprinklers — where a complete standard system of automatic sprinklers is installed, interior wall and ceiling finish with a flame spread rating not exceeding Class C is permitted to be used in any location where Class B is required, and Class B interior wall and ceiling finish is permitted to be used in any location where Class A is required; similarly, Class II interior floor finish is permitted to be used in any location where Class I is required, and no interior floor finish classification is required where Class II is required. These provisions do not apply to new detention and correctional occupancies.
(7) Exposed portions of structural members complying with the requirements for heavy timber construction are permitted.
†See corresponding chapters for details.

10.2.2.1
Requirements for interior wall and ceiling finish shall apply as follows:

(1) Where specified elsewhere in this *Code* for specific occupancies *(see Chapter 7 and Chapters 11 through 43)*
(2) As specified in 10.2.3 through 10.2.6.

**10.2.2.2***
Interior floor finish shall comply with 10.2.7 under any of the following conditions:
(1) Where floor finish requirements are specified elsewhere in the *Code*
(2) Where the fire performance of the floor finish cannot be demonstrated to be equivalent to floor finishes with a critical radiant flux of at least 0.1 W/cm$^2$

**A.10.2.2.2**
This paragraph recognizes that traditional finish floors and floor coverings, such as wood flooring and resilient floor coverings, have not proved to present an unusual hazard.

**10.2.3* Interior Wall or Ceiling Finish Testing and Classification.**
When interior wall or ceiling finish is required elsewhere in this *Code* to be classified for fire performance and smoke development it shall be classified in accordance with 10.2.3.1 or 10.2.3.3, except as indicated in sections 10.2.4.

**A.10.2.3**
ASTM E84, *Standard Test Method of Surface Burning Characteristics of Building Materials*, and UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, are considered nationally recognized consensus standard test methods for determining the flame spread index and smoke developed index of building materials and are likely to yield equivalent test results. *(See also A.10.2.4.1.)*

**10.2.3.1 Interior wall and ceiling finish materials tested in accordance with NFPA 286.**

**10.2.3.1.1**
Interior wall and ceiling finish materials shall be classified in accordance with NFPA 286 and comply with 10.2.3.2.

**10.2.3.1.2**
Materials tested in accordance with 10.2.3.1.1 and complying with 10.2.3.2 shall be considered also to comply with the requirements of a Class A, Class B or Class C in accordance with 10.2.3.3.

**10.2.3.2 Acceptance criteria for NFPA 286.**
The interior finish shall comply with the following:
1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. The flame shall not spread to the outer extremity of the sample on any wall or ceiling.
3. Flashover, as defined in NFPA 286, shall not occur.
4. The peak heat release rate throughout the test shall not exceed 800 kW.
5. For new installations, the total smoke released throughout the test shall not exceed 1,000 m$^2$.

**10.2.3.3* Interior wall and ceiling finish materials tested in accordance with ASTM E84 or ANSI/UL 723.**

Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or ANSI/UL 723, except as indicated in 10.2.3.4 and 10.2.3.5, and shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.
Class A: Flame spread index 0-25; smoke developed index 0-450.
Class B: Flame spread index 26-75; smoke developed index 0-450.
Class C: Flame spread index 76-200; smoke developed index 0-450.

A.10.2.3.3
It has been shown that the method of mounting interior finish materials usually affects actual performance. The use of standard mounting methods will be helpful in determining appropriate fire test results. Where materials are tested in intimate contact with a substrate to determine a classification, such materials should be installed in intimate contact with a similar substrate. Such details are especially important for "thermally thin" materials. For further information, see ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*.

Some interior wall and ceiling finish materials, such as fabrics not applied to a solid backing, do not lend themselves to a test made in accordance with ASTM E84. In such cases, the large-scale test outlined in NFPA 701 is permitted to be used. In 1989 the NFPA Technical Committee on Fire Tests eliminated the so-called "small-scale test" from NFPA 701 because the results had been shown not to represent a fire performance that corresponded to what happened in real scale. Since then, NFPA 701 no longer contains a "small-scale test" but it now contains two tests (Test 1 and Test 2), which apply to materials as a function of their areal density. Thus NFPA 701 Test 1 applies to fabrics (other than vinyl-coated fabric blackout linings) having an areal density less than or equal to 21 oz/yd$^2$ (700 g/m$^2$), while NFPA 701 Test 2 applies to fabrics with an areal density greater than 21 oz/yd$^2$ (700 g/m$^2$), vinyl-coated fabric blackout linings, decorative objects, and films. Representations that materials or products have been tested to the small-scale test in NFPA 701 normally refer to the pre-1989 small-scale test, which no longer exists and which does not represent acceptable fire performance.

Prior to 1978, the test report described by ASTM E84 included an evaluation of the fuel contribution as well as the flame spread index and the smoke developed index. However, it is now recognized that the measurement on which the fuel contribution is based does not provide a valid measure. Therefore, although the data are recorded during the test, the information is no longer normally reported. Classification of interior wall and ceiling finish thus relies only on the flame spread index and smoke developed index.

The 450 smoke developed index limit is based solely on obscuration. (*See A.10.2.4.1.)*

10.2.3.3.1
Existing interior finish shall be exempt from the smoke developed index criteria of 10.2.3.3.

10.2.3.3.2
The classification of interior finish specified in 10.2.3.3 shall be that of the basic material used by itself or in combination with other materials.

10.2.3.3.3
Wherever the use of Class C interior wall and ceiling finish is required, Class A or Class B shall be permitted. Where Class B interior wall and ceiling finish is required, Class A shall be permitted.

10.2.3.4
Materials complying with the requirements of 10.2.3.1 shall not be required to be tested in accordance with 10.2.3.3.

10.2.3.5
Materials described in 10.2.4 shall be tested as described in the corresponding sections.

10.2.4* Interior Wall and Ceiling Finish Materials with Special Requirements.
The materials indicated in 10.2.4.1 through 10.2.4.16 shall be tested as indicated in the corresponding sections.

A.10.2.4
Surface nonmetallic raceway products, as permitted by *NFPA 70,* are not interior finishes and are not subject to the provisions of Chapter 10.

10.2.4.1 Thickness Exemption.
The provisions of 10.2.3 shall not apply to materials having a total thickness of less than 1⁄28 in. (0.9 mm) that are applied directly to the surface of walls and ceilings where both of the following conditions are met:
(1) The wall or ceiling surface is a noncombustible or limited combustible material.
(2) The materials applied meet the requirements of Class A interior wall or ceiling finish when tested in accordance with 10.2.3, using fiber cement board as the substrate material.

10.2.4.1.1
If a material having a total thickness of less than 1⁄28 in. (0.9 mm) is applied to a surface that is not noncombustible or not limited-combustible, the provisions of 10.2.3 shall apply.

10.2.4.1.2
Approved existing installations of materials applied directly to the surface of walls and ceilings in a total thickness of less than 1⁄28 in. (0.9 mm) shall be permitted to remain in use, and the provisions of 10.2.3 shall not apply.

**10.2.4.2* Exposed Portions of Structural Members.**
In other than new interior exit stairways, new interior exit ramps, and new exit passageways, exposed portions of structural members complying with the requirements for Type IV (2HH) construction in accordance with NFPA 220 or with the building code shall be exempt from testing and classification in accordance with 10.2.3.

**A.10.2.4.2**
Paragraph 10.2.4.2 does not require Type IV (2HH), heavy timber, other than that used in interior exit stairs, interior exit ramps and exit passageways be tested by either ASTM E84 or UL 723 to determine a flame spread rating. Taller wood buildings and new

technology, primarily new "mass timber" make taller buildings of Type IV possible. To that end, the requirements for Type IV have been changed to require the testing for components in the egress system such that they too need to be tested and meet the appropriate classification required in this section. This means that Type IV is "presumed" to comply with the finish requirements in this section for the purpose of meeting the requirements of this section for any wall or ceiling finish of elements other than interior exit stairways, interior exit ramps, and exit passageways.

**10.2.4.3 Cellular or Foamed Plastic.**

Cellular or foamed plastic materials shall not be used as interior wall and ceiling finish unless specifically permitted by 10.2.4.3.1 or 10.2.4.3.2. The requirements of 10.2.4.3 shall apply both to exposed foamed plastics and to foamed plastics used in conjunction with a textile or vinyl facing or cover.

**10.2.4.3.1***

Cellular or foamed plastic materials shall be permitted where subjected to large-scale fire tests that substantiate their combustibility and smoke release characteristics for the use intended under actual fire conditions.

**A.10.2.4.3.1**

See A.10.2.4.3.1.2.

**10.2.4.3.1.1**

One of the following fire tests shall be used for assessing the combustibility of cellular or foamed plastic materials as interior finish:

(1) NFPA 286 with the acceptance criteria of 10.2.3.2

(2) ANSI/UL 1715 (including smoke measurements, with total smoke release not to exceed 1000 $m^2$)

(3) ANSI/UL 1040

(4) ANSI/FM 4880

**10.2.4.3.1.2***

The tests shall be performed on a finished foamed plastic assembly related to the actual end-use configuration, including any cover or facing, and at the maximum thickness intended for use.

**A.10.2.4.3.1.2**

Both NFPA 286 and ANSI/UL 1715, *Standard for Fire Test of Interior Finish Material*, contain smoke obscuration criteria. ANSI/UL 1040, *Standard for Fire Test of Insulated Wall Construction*, and FM 4880, *Approval Standard for Class I Insulated Wall or Wall and Roof/Ceiling Panels; Plastic Interior Finish Materials; Plastic Exterior Building Panels; Wall/Ceiling Coating Systems; Interior or Exterior Finish Systems*, do not. Smoke obscuration is an important component of the fire performance of cellular or foamed plastic materials.

**10.2.4.3.2**

Cellular or foamed plastic shall be permitted for trim not in excess of 10 percent of the specific wall or ceiling area to which it is applied, provided that it is not less than 20 lb/ft$^3$ (320 kg/m$^3$) in density, is limited to 1⁄2 in. (13 mm) in thickness and 4 in. (100 mm) in width, and complies with the requirements for Class A or Class B interior wall and ceiling finish as described in 10.2.3.3; however, the smoke developed index shall not be limited.

**10.2.4.4* Textile Wall Coverings.**

Where used as interior wall finish materials, textile materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of one of the following: section 10.2.3.1, 10.2.4.4.1 or 10.2.4.4.3.

**A.10.2.4.4**

Previous editions of the *Code* have regulated textile materials on walls and ceilings using ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials,* or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*. Full-scale room/corner fire test research has shown that flame spread indices produced by ASTM E84 or ANSI/UL 723 might not reliably predict all aspects of the fire behavior of textile wall and ceiling coverings.

NFPA 265 and NFPA 286 both known as room/corner tests, were developed for assessing the fire and smoke obscuration performance of textile wall coverings and interior wall and ceiling finish materials, respectively. As long as an interior wall or ceiling finish material is tested by NFPA 265 or NFPA 286, as appropriate, using a mounting system, substrate, and adhesive (if appropriate) that are representative of actual use, the room/corner test provides an adequate evaluation of a product's flammability and smoke obscuration behavior. Manufacturers, installers, and specifiers should be encouraged to use NFPA 265 or NFPA 286, as appropriate — but not both — because each of these standard fire tests has the ability to characterize actual product behavior, as opposed to data generated by tests using ASTM E84 or ANSI/UL 723, which only allow comparisons of one product's performance with another. If a manufacturer or installer chooses to test a wall finish in accordance with NFPA 286, additional testing in accordance with ASTM E84 or ANSI/UL 723 is not necessary.

The test results from ASTM E84 or ANSI/UL 723 are suitable for classification purposes but should not be used as input into fire models, because they are not generated in units suitable for engineering calculations. Actual test results for heat, smoke, and combustion product release from NFPA 265, and from NFPA 286, are suitable for use as input into fire models for performance-based design.

**10.2.4.4.1***

Products tested in accordance with NFPA 265 shall comply with the criteria of 10.2.4.4.2.

**A.10.2.4.4.1**

The methodology specified in NFPA 265 includes provisions for measuring smoke obscuration.

**10.2.4.4.2***

The interior finish shall comply with all of the following when tested using method B of the test protocol of NFPA 265.
(1) During the 40 kW exposure, flames shall not spread to the ceiling.
(2) The flame shall not spread to the outer extremities of the samples on the 8 ft. × 12 ft. (2440 mm × 3660 mm) walls.
(3) Flashover, as described in NFPA 265, shall not occur.
(4) For new installations, the total smoke released throughout the test shall not exceed 1000 $m^2$.

A.10.2.4.4.2
See A.10.2.4.4.1 and A.10.2.4.4.

10.2.4.4.3
Textile materials meeting the requirements of Class A when tested in accordance with ASTM E84 or ANSI/UL 723 using the specimen preparation and mounting method of ASTM E2404 shall be permitted as follows:
(1) On the walls of rooms or areas protected by an approved automatic sprinkler system.
(2) On partitions that do not exceed three-quarters of the floor-to-ceiling height or do not exceed 8 ft. (2440 mm) in height, whichever is less.
(3) On the lower 48 in. (1220 mm) above the finished floor on ceiling-height walls and ceiling-height partitions.
(4) Previously approved existing installations of textile material meeting the requirements of Class A when tested in accordance with ASTM E84 or ANSI/UL 723 shall be permitted to be continued to be used.

10.2.4.5* Expanded Vinyl Wall Coverings.
Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of one of the following sections: 10.2.3.1, 10.2.4.4.1 or 10.2.4.4.3.

A.10.2.4.5
Expanded vinyl wall covering consists of a woven textile backing, an expanded vinyl base coat layer, and a nonexpanded vinyl skin coat. The expanded base coat layer is a homogeneous vinyl layer that contains a blowing agent. During processing, the blowing agent decomposes, which causes this layer to expand by forming closed cells. The total thickness of the wall covering is approximately 0.055 in. to 0.070 in. (1.4 mm to 1.8 mm).

10.2.4.6 Textile Ceiling Coverings.
Where used as interior ceiling finish materials, textile materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall either:
(1) comply with the requirements of the requirements of 10.2.3.1 or
(2) meet the requirements of Class A when tested in accordance with ASTM E84 or ANSI/UL 723 using the specimen preparation and mounting method of ASTM E2404 and shall be permitted on the ceilings of rooms or areas protected by an approved automatic sprinkler system.

### 10.2.4.7 Expanded Vinyl Ceiling Coverings.

Where used as interior ceiling finish materials, expanded vinyl materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall either:
(1) comply with the requirements of the requirements of 10.2.3.1 or
(2) meet the requirements of Class A when tested in accordance with ASTM E84 or ANSI/UL 723 using the specimen preparation and mounting method of ASTM E2404 and shall be permitted on the ceilings of rooms or areas protected by an approved automatic sprinkler system.

### 10.2.4.8 Lockers.

### 10.2.4.8.1 Combustible Lockers.

Where lockers constructed of combustible materials other than wood are used, the lockers shall be considered interior finish and shall comply with 10.2.3, except as permitted by 10.4.8.2.

### 10.2.4.8.2 Wood Lockers.

Lockers constructed entirely of wood and of noncombustible materials shall be permitted to be used in any location where interior finish materials are required to meet a Class C classification in accordance with 10.2.3.

### 10.2.4.9 Polypropylene (PP) and High-Density Polyethylene (HDPE).

Polypropylene and high-density polyethylene materials shall not be permitted as interior wall or ceiling finish unless the material complies with the requirements of 10.2.3.1. The tests shall be performed on a finished assembly and on the maximum thickness intended for use.

### 10.2.4.10 Site-Fabricated Stretch Systems.

For new installations, site-fabricated stretch systems containing all three components described in the definition in Chapter 3 shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3. If the materials are tested in accordance with ASTM E84 or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2573.

### 10.2.4.11 Reflective Insulation Materials.

Reflective insulation materials shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3. If the materials are tested in accordance with ASTM E84 or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2599.

### 10.2.4.12 Metal Ceiling and Wall Panels.

Listed factory finished metal ceiling and wall panels meeting the requirements of Class A in accordance with 10.2.3, shall be permitted to be finished with one additional application of paint. Such painted panels shall be permitted for use in areas where Class A interior finishes are required. The total paint thickness shall not exceed 1⁄28 in. (0.9 mm).

### 10.2.4.13 Laminated Products Factory-produced with a Wood Substrate.

Laminated products factory-produced with a wood substrate shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3. If the materials are tested in accordance with ASTM E84 or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2579 using the product-mounting system (including adhesive) of actual use.

**10.2.4.14 Facings or Wood Veneers Intended to be Applied On Site Over a Wood Substrate.**
Facings or veneers intended to be applied on site over a wood substrate shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3. If the materials are tested in accordance with NFPA 286 they shall use the product-mounting system, including adhesive, described in Section 5.8.9 of NFPA 286. If the materials are tested in accordance with ASTM E84 or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2404.

**10.2.4.15* Light-Transmitting Plastics.**
Light-transmitting plastics shall be permitted to be used as interior wall and ceiling finish if approved by the authority having jurisdiction.

A.10.2.4.15
Light-transmitting plastics are used for a variety of purposes, including light diffusers, exterior wall panels, skylights, canopies, glazing, and the like. Previous editions of the *Code* have not addressed the use of light-transmitting plastics. Light-transmitting plastics will not normally be used in applications representative of interior finishes. Accordingly, ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials,* can produce test results that might or might not apply.

Light-transmitting plastics are regulated by model building codes such as *NFPA 5000*. Model building codes provide adequate regulation for most applications of light-transmitting plastics. Where an authority having jurisdiction determines that a use is contemplated that differs from uses regulated by model building codes, light-transmitting plastics in such applications can be substantiated by fire tests that demonstrate the combustibility characteristics of the light-transmitting plastics for the use intended under actual fire conditions.

For additional information on light transmitting plastics, see Section 48.7 of *NFPA 5000*.

**10.2.4.16 Decorations and Furnishings.**
Decorations and furnishings that do not meet the definition of interior finish, as defined in 3.3.92.2, shall be regulated by the provisions of Section 10.3.

**10.2.5 Trim and Incidental Finish.**

**10.2.5.1 General.**
Interior wall and ceiling trim and incidental finish, other than wall base in accordance with 10.2.5.2 and bulletin boards, posters, and paper in accordance with 10.2.5.3, not in excess of 10 percent of the specific wall and ceiling areas of any room or space to which it is applied

shall be permitted to be Class C materials in occupancies where interior wall and ceiling finish of Class A or Class B is required.

10.2.5.2 Wall Base.
Interior floor trim material used at the junction of the wall and the floor to provide a functional or decorative border, and not exceeding 6 in. (150 mm) in height, shall meet the requirements for interior wall finish for its location or the requirements for Class II interior floor finish as described in 10.2.7.4 using the test described in 10.2.7.3. If a Class I floor finish is required, the interior floor trim shall be Class I.

10.2.5.3 Bulletin Boards, Posters, and Paper.

10.2.5.3.1
Bulletin boards, posters, and paper attached directly to the wall shall not exceed 20 percent of the aggregate wall area to which they are applied.

10.2.5.3.2
The provision of 10.2.5.3.1 shall not apply to artwork and teaching materials in sprinklered educational or day-care occupancies in accordance with 14.7.4.3(2), 15.7.4.3(2), 16.7.4.3(2), or 17.7.4.3(2).

10.2.6* Fire-Retardant Coatings.

A.10.2.6
Fire-retardant coatings need to be applied to surfaces properly prepared for the material, and application needs to be consistent with the product listing. Deterioration of coatings applied to interior finishes can occur due to repeated cleaning of the surface or painting over applied coatings.

10.2.6.1*
The required flame spread index or smoke developed index of existing surfaces of walls, partitions, columns, and ceilings shall be permitted to be secured by applying approved fire-retardant coatings to surfaces having higher flame spread index values than permitted. Such treatments shall be tested, or shall be listed and labeled for application to the material to which they are applied, and shall comply with the requirements of NFPA 703.

A.10.2.6.1
It is the intent of the *Code* to mandate interior wall and ceiling finish materials that obtain their fire performance and smoke developed characteristics in their original form. However, in renovations, particularly those involving historic buildings, and in changes of occupancy, the required fire performance or smoke developed characteristics of existing surfaces of walls, partitions, columns, and ceilings might have to be secured by applying approved fire-retardant coatings to surfaces having higher flame spread ratings than permitted. Such treatments should comply with the requirements of NFPA 703. When fire-retardant coatings are used, they need to be applied to surfaces properly prepared for the material, and application needs to be consistent with the product listing. Deterioration of coatings applied to interior finishes can occur due to repeated cleaning of the surface or painting over applied coatings, but permanency must be assured in some appropriate

fashion. Fire-retardant coatings must possess the desired degree of permanency and be maintained so as to retain the effectiveness of the treatment under the service conditions encountered in actual use.

10.2.6.2*
Surfaces of walls, partitions, columns, and ceilings shall be permitted to be finished with factory-applied fire-retardant coated products that have been listed and labeled to demonstrate compliance with the requirements of ASTM E2768 on the coated surface.

A.10.2.6.2
The intent of this section is that factory-applied fire-retardant-coated products, such as panels or tiles applied to walls or ceilings, replace the existing finish and are not applied on top of the existing finish.

10.2.6.3 Fire-retardant coatings or factory-applied fire retardant coated assemblies shall possess the desired degree of permanency and shall be maintained so as to retain the effectiveness of the treatment under the service conditions encountered in actual use.

10.2.7* Interior Floor Finish Testing and Classification.

A.10.2.7
The flooring radiant panel provides a measure of a floor covering's tendency to spread flames where located in a corridor and exposed to the flame and hot gases from a room fire. The flooring radiant panel test method is to be used as a basis for estimating the fire performance of a floor covering installed in the building corridor. Floor coverings in open building spaces and in rooms within buildings merit no further regulation, provided that it can be shown that the floor covering is at least as resistant to spread of flame as a material that meets the U.S. federal flammability standard 16 CFR 1630, "Standard for the Surface Flammability of Carpets and Rugs" (FF 1-70). All carpeting sold in the United States since 1971 is required to meet this standard and, therefore, is not likely to become involved in a fire until a room reaches or approaches flashover. Therefore, no further regulations are necessary for carpet, other than carpet in exitways and corridors.

It has not been found necessary or practical to regulate interior floor finishes on the basis of smoke development.

Full-scale fire tests and fire experience have shown that floor coverings in open building spaces merit no regulation beyond the U.S. federally mandated DOC FF 1-70 "pill test." This is because floor coverings meeting the pill test will not spread flame significantly until a room fire approaches flashover. At flashover, the spread of flame across a floor covering will have minimal impact on the already existing hazard. The minimum critical radiant flux of a floor covering that will pass the FF 1-70 test has been determined to be approximately 0.04 W/cm$^2$ (Tu, King-Mon and Davis, Sanford, "Flame Spread of Carpet Systems Involved in Room Fires," NFSIR 76-1013, Center for Fire Research, National Bureau of Standards, June 1976). The flooring radiant panel is only able to determine critical radiant flux values to 0.1 W/cm$^2$. This provision will prevent use of a noncomplying material, which can create a problem, especially when the *Code* is used

outside the United States where U.S. federal regulation FF 1-70 (16 CFR 1630) is not mandated.

**10.2.7.1***
Carpet and carpet like interior floor finishes shall comply with ASTM D2859.

A.10.2.7.1
Compliance with 16 CFR 1630, "Standard for the Surface Flammability of Carpets and Rugs" (FFI-70), is considered equivalent to compliance with ASTM D2859, *Standard Test Method for Ignition Characteristic of Finished Textile Floor Covering Materials.*

**10.2.7.2***
Floor coverings, other than carpet for which 10.2.2.2 establishes requirements for fire performance, shall have a minimum critical radiant flux of 0.1 W/cm$^2$.

A.10.2.7.2
The fire performance of some floor finishes has been tested, and traditional finish floors and floor coverings, such as wood flooring and resilient floor coverings, have not proved to present an unusual hazard.

**10.2.7.3***
Interior floor finishes shall be classified in accordance with 10.2.7.4, based on test results from NFPA 253 or ASTM E648.

A.10.2.7.3
ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*, and NFPA 253 are considered nationally recognized consensus standard test methods for determining the critical radiant flux from floor covering systems and are likely to yield equivalent test results.

**10.2.7.4**
Interior floor finishes shall be grouped in the classes specified in 10.2.7.4.1 and 10.2.7.4.2 in accordance with the critical radiant flux requirements.

**10.2.7.4.1 Class I Interior Floor Finish.**
Class I interior floor finish shall have a critical radiant flux of not less than 0.45 W/cm$^2$, as determined by the test described in 10.2.7.3.

**10.2.7.4.2 Class II Interior Floor Finish.**
Class II interior floor finish shall have a critical radiant flux of not less than 0.22 W/cm$^2$, but less than 0.45 W/cm$^2$, as determined by the test described in 10.2.7.3.

**10.2.7.5**
Wherever the use of Class II interior floor finish is required, Class I interior floor finish shall be permitted.

**10.2.8 Automatic Sprinklers.**

10.2.8.1
Other than as required in 10.2.4, where an approved automatic sprinkler system is installed in accordance with Section 9.7, Class C interior wall and ceiling finish materials shall be permitted in any location where Class B is required, and Class B interior wall and ceiling finish materials shall be permitted in any location where Class A is required.

10.2.8.2
Where an approved automatic sprinkler system is installed in accordance with Section 9.7, throughout the fire compartment or smoke compartment containing the interior floor finish, Class II interior floor finish shall be permitted in any location where Class I interior floor finish is required, and where Class II is required, the provisions of 10.2.7.2 shall apply.

## First Revision No. 4504-NFPA 101-2015 [ Section No. 10.3.4 ]

**10.3.4***

Where required by the applicable provisions of this *Code*, mattresses shall comply with 10.3.4.1 or 10.3.4.2 , unless the mattress is located in a building protected throughout by an approved automatic sprinkler system.

**10.3.4.1**

The mattress shall have limited rates of heat release when tested in accordance with ASTM E1590, *Standard Test Method for Fire Testing of Mattresses*, as follows:

(1) The peak rate ~~for~~ of heat release for the mattress shall not exceed 100 kW.

(2) The total heat released by the mattress during the first 10 minutes of the test shall not exceed 25 MJ.

**10.3.4.2**

The mattress shall have a mass loss not exceeding 15 percent when tested in accordance with the fire test in Appendix A3 of ASTM F1085, *Standard Specification for Mattress and Box Springs for Use in Berths and Marine Vessels* .

## Supplemental Information

| File Name | Description |
|---|---|
| 101_10.3.4_STAFF_USE_ONLY.docx | |

## Submitter Information Verification

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## Committee Statement

**Committee Statement:** The proposed revision does not require a change in the current testing provisions of ASTM E1590 but simply provides an alternative. As an option, the fire test in Annex A3 of ASTM F1085 is being recommended as an optional alternative to the test in ASTM E1590. The existing test in ASTM E1590 (and its pass/fail criteria) are not being modified.

The test method in Annex A3 of ASTM F1085 was developed originally for use in detention and correctional occupancies and it is a very severe test that is a reasonable (and less expensive) alternative to ASTM E1590.

This test is very simple and can be conducted at any facility and does not require the use of an instrumented fire test lab. The test can be described in a few words: it involves rolling up a mattress, placing it at an angle (for example by holding it with a brick), introducing newspaper into the volume surrounding the rolled up mattress and igniting the newspaper with a match.

One of the advantages of using the ASTM F1085 Annex A3 test is that if the mattress materials melt away from the flame with flaming drips they may “pass” the ASTM E1590 test but melting will not allow a mattress to pass this test. In this test the material that flames on the floor will keep burning the mattress itself.

**Response Message:**

Public Input No. 133-NFPA 101-2015 [Section No. 10.3.4]

Public Input No. 134-NFPA 101-2015 [Section No. 10.3.4]

## 10.2* Interior Finish.

### A.10.2
The requirements pertaining to interior finish are intended to restrict the spread of fire over the continuous surface forming the interior portions of a building.

The requirements are based on fire testing to NFPA 286 (with the criteria of 10.2.3.2), which apply to all interior finish materials. Many interior finish materials are permitted to be tested based on other fire tests, such as ASTM E84, UL 723, or NFPA 265 as provided in the relevant section of 10.2.

### 10.2.1* General

### A.10.2.1
The requirements pertaining to interior finish are intended to restrict the spread of fire over the continuous surface forming the interior portions of a building. The presence of multiple paint layers has the potential for paint delamination and bubbling or blistering of paint. Testing (NFPA *Fire Technology*, August 1974, "Fire Tests of Building Interior Covering Systems," David Waksman and John Ferguson, Institute for Applied Technology, National Bureau of Standards) has shown that adding up to two layers of paint with a dry film thickness of about 0.007 in. (0.18 mm) will not change the fire properties of surface-covering systems. Testing has shown that the fire properties of the surface-covering systems are highly substrate dependent and that thin coatings generally take on the characteristics of the substrate. When exposed to fire, the delamination, bubbling, and blistering of paint can result in an accelerated rate of flame spread.

#### 10.2.1.1
Classification of interior finish materials shall be in accordance with tests made under conditions simulating actual installations, provided that the authority having jurisdiction is permitted to establish the classification of any material for which classification by a standard test is not available.

#### 10.2.1.2
Fixed or movable walls and partitions, paneling, wall pads, and crash pads applied structurally or for decoration, acoustical correction, surface insulation, or other purposes shall be considered interior finish and shall not be considered decorations or furnishings.

#### 10.2.1.3
Lockers shall be considered interior finish.

#### 10.2.1.4
Washroom water closet partitions shall be considered interior finish.

#### 10.2.1.5
Fire-retardant coatings shall be in accordance with 10.2.6.

### 10.2.2* Use of Interior Finishes.

A.10.2.2

Table A.10.2.2 provides a compilation of the interior finish requirements of 7.1.4 and the occupancy chapters (Chapters 12 through 42) of this *Code*.

**Table A.10.2.2 Interior Finish Classification Limitations**

| Occupancy | Exits | Exit Access Corridors | Other Spaces | |
|---|---|---|---|---|
| Assembly — New | | | | |
| >300 occupant load | A<br>I or II | A or B<br>I or II | A or B<br>NA | |
| ≤300 occupant load | A<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |
| Assembly — Existing | | | | |
| >300 occupant load | A | A or B | A or B | |
| ≤300 occupant load | A | A or B | A, B, or C | |
| Educational — New | A<br>I or II | A or B<br>I or II | A or B; C on low partitions[†]<br>NA | |
| Educational — Existing | A | A or B | A, B, or C | |
| Day-Care Centers — New | A<br>I or II | A<br>I or II | A or B<br>NA | |
| Day-Care Centers — Existing | A or B | A or B | A or B | |
| Day-Care Homes — New | A or B<br>I or II | A or B | A, B, or C<br>NA | |
| Day-Care Homes — Existing | A or B | A, B, or C | A, B, or C | |
| Health Care — New | A | A | A | |
| | | NA | B on lower portion of corridor wall[†] | B in small individual rooms[†] |
| | | I or II | I or II | NA |
| Health Care — Existing | A or B | A or B | A or B | |
| Detention and Correctional — New (sprinklers mandatory) | A or B<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |
| Detention and Correctional — Existing | A or B<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |
| One- and Two-Family Dwellings and Lodging or Rooming Houses | A, B, or C | A, B, or C | A, B, or C | |
| Hotels and Dormitories — New | A<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |
| Hotels and Dormitories — Existing | A or B<br>I or II[†] | A or B<br>I or II[†] | A, B, or C<br>NA | |
| Apartment Buildings — New | A<br>I or II | A or B<br>I or II | A, B, or C<br>NA | |

| Occupancy | Exits | Exit Access Corridors | Other Spaces |
|---|---|---|---|
| Apartment Buildings — Existing | A or B<br>I or II† | A or B<br>I or II† | A, B, or C<br>NA |
| Residential Board and Care — *(See Chapters 32 and 33.)* | | | |
| Mercantile — New | A or B<br>I or II | A or B | A or B<br>NA |
| Mercantile — Existing | | | |
| Class A or Class B stores | A or B | A or B | Ceilings — A or B; walls — A, B, or C |
| Class C stores | A, B, or C | A, B, or C | A, B, or C |
| Business and Ambulatory Health Care — New | A or B<br>I or II | A or B | A, B, or C<br>NA |
| Business and Ambulatory Health Care — Existing | A or B | A or B | A, B, or C |
| Industrial | A or B<br>I or II | A, B, or C<br>I or II | A, B, or C<br>NA |
| Storage | A or B<br>I or II | A, B, or C | A, B, or C<br>NA |

NA: Not applicable.Notes:
(1) Class A interior wall and ceiling finish — flame spread index, 0–25 (new applications); smoke developed index, 0–450.
(2) Class B interior wall and ceiling finish — flame spread index, 26–75 (new applications); smoke developed index, 0–450.
(3) Class C interior wall and ceiling finish — flame spread index, 76–200 (new applications); smoke developed index, 0–450.
(4) Class I interior floor finish — critical radiant flux, not less than 0.45 W/cm$^2$.
(5) Class II interior floor finish — critical radiant flux, not more than 0.22 W/cm$^2$, but less than 0.45 W/cm$^2$.
(6) Automatic sprinklers — where a complete standard system of automatic sprinklers is installed, interior wall and ceiling finish with a flame spread rating not exceeding Class C is permitted to be used in any location where Class B is required, and Class B interior wall and ceiling finish is permitted to be used in any location where Class A is required; similarly, Class II interior floor finish is permitted to be used in any location where Class I is required, and no interior floor finish classification is required where Class II is required. These provisions do not apply to new detention and correctional occupancies.
(7) Exposed portions of structural members complying with the requirements for heavy timber construction are permitted.
†See corresponding chapters for details.

10.2.2.1
Requirements for interior wall and ceiling finish shall apply as follows:

(1) Where specified elsewhere in this *Code* for specific occupancies *(see Chapter 7 and Chapters 11 through 43)*
(2) As specified in 10.2.3 through 10.2.6.

**10.2.2.2***
Interior floor finish shall comply with 10.2.7 under any of the following conditions:
(1) Where floor finish requirements are specified elsewhere in the *Code*
(2) Where the fire performance of the floor finish cannot be demonstrated to be equivalent to floor finishes with a critical radiant flux of at least 0.1 W/cm$^2$

**A.10.2.2.2**
This paragraph recognizes that traditional finish floors and floor coverings, such as wood flooring and resilient floor coverings, have not proved to present an unusual hazard.

**10.2.3* Interior Wall or Ceiling Finish Testing and Classification.**
When interior wall or ceiling finish is required elsewhere in this *Code* to be classified for fire performance and smoke development it shall be classified in accordance with 10.2.3.1 or 10.2.3.3, except as indicated in sections 10.2.4.

**A.10.2.3**
ASTM E84, *Standard Test Method of Surface Burning Characteristics of Building Materials*, and UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, are considered nationally recognized consensus standard test methods for determining the flame spread index and smoke developed index of building materials and are likely to yield equivalent test results. *(See also A.10.2.4.1.)*

**10.2.3.1 Interior wall and ceiling finish materials tested in accordance with NFPA 286.**

**10.2.3.1.1**
Interior wall and ceiling finish materials shall be classified in accordance with NFPA 286 and comply with 10.2.3.2.

**10.2.3.1.2**
Materials tested in accordance with 10.2.3.1.1 and complying with 10.2.3.2 shall be considered also to comply with the requirements of a Class A, Class B or Class C in accordance with 10.2.3.3.

**10.2.3.2 Acceptance criteria for NFPA 286.**
The interior finish shall comply with the following:
1. During the 40 kW exposure, flames shall not spread to the ceiling.
2. The flame shall not spread to the outer extremity of the sample on any wall or ceiling.
3. Flashover, as defined in NFPA 286, shall not occur.
4. The peak heat release rate throughout the test shall not exceed 800 kW.
5. For new installations, the total smoke released throughout the test shall not exceed 1,000 m$^2$.

**10.2.3.3* Interior wall and ceiling finish materials tested in accordance with ASTM E84 or ANSI/UL 723.**

Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or ANSI/UL 723, except as indicated in 10.2.3.4 and 10.2.3.5, and shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.
Class A: Flame spread index 0-25; smoke developed index 0-450.
Class B: Flame spread index 26-75; smoke developed index 0-450.
Class C: Flame spread index 76-200; smoke developed index 0-450.

A.10.2.3.3
It has been shown that the method of mounting interior finish materials usually affects actual performance. The use of standard mounting methods will be helpful in determining appropriate fire test results. Where materials are tested in intimate contact with a substrate to determine a classification, such materials should be installed in intimate contact with a similar substrate. Such details are especially important for "thermally thin" materials. For further information, see ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*.

Some interior wall and ceiling finish materials, such as fabrics not applied to a solid backing, do not lend themselves to a test made in accordance with ASTM E84. In such cases, the large-scale test outlined in NFPA 701 is permitted to be used. In 1989 the NFPA Technical Committee on Fire Tests eliminated the so-called "small-scale test" from NFPA 701 because the results had been shown not to represent a fire performance that corresponded to what happened in real scale. Since then, NFPA 701 no longer contains a "small-scale test" but it now contains two tests (Test 1 and Test 2), which apply to materials as a function of their areal density. Thus NFPA 701 Test 1 applies to fabrics (other than vinyl-coated fabric blackout linings) having an areal density less than or equal to 21 oz/yd$^2$ (700 g/m$^2$), while NFPA 701 Test 2 applies to fabrics with an areal density greater than 21 oz/yd$^2$ (700 g/m$^2$), vinyl-coated fabric blackout linings, decorative objects, and films. Representations that materials or products have been tested to the small-scale test in NFPA 701 normally refer to the pre-1989 small-scale test, which no longer exists and which does not represent acceptable fire performance.

Prior to 1978, the test report described by ASTM E84 included an evaluation of the fuel contribution as well as the flame spread index and the smoke developed index. However, it is now recognized that the measurement on which the fuel contribution is based does not provide a valid measure. Therefore, although the data are recorded during the test, the information is no longer normally reported. Classification of interior wall and ceiling finish thus relies only on the flame spread index and smoke developed index.

The 450 smoke developed index limit is based solely on obscuration. (*See A.10.2.4.1.)*

10.2.3.3.1
Existing interior finish shall be exempt from the smoke developed index criteria of 10.2.3.3.

10.2.3.3.2
The classification of interior finish specified in 10.2.3.3 shall be that of the basic material used by itself or in combination with other materials.

10.2.3.3.3
Wherever the use of Class C interior wall and ceiling finish is required, Class A or Class B shall be permitted. Where Class B interior wall and ceiling finish is required, Class A shall be permitted.

10.2.3.4
Materials complying with the requirements of 10.2.3.1 shall not be required to be tested in accordance with 10.2.3.3.

10.2.3.5
Materials described in 10.2.4 shall be tested as described in the corresponding sections.

10.2.4* Interior Wall and Ceiling Finish Materials with Special Requirements.
The materials indicated in 10.2.4.1 through 10.2.4.16 shall be tested as indicated in the corresponding sections.

A.10.2.4
Surface nonmetallic raceway products, as permitted by *NFPA 70,* are not interior finishes and are not subject to the provisions of Chapter 10.

10.2.4.1 Thickness Exemption.
The provisions of 10.2.3 shall not apply to materials having a total thickness of less than 1⁄28 in. (0.9 mm) that are applied directly to the surface of walls and ceilings where both of the following conditions are met:
(1) The wall or ceiling surface is a noncombustible or limited combustible material.
(2) The materials applied meet the requirements of Class A interior wall or ceiling finish when tested in accordance with 10.2.3, using fiber cement board as the substrate material.

10.2.4.1.1
If a material having a total thickness of less than 1⁄28 in. (0.9 mm) is applied to a surface that is not noncombustible or not limited-combustible, the provisions of 10.2.3 shall apply.

10.2.4.1.2
Approved existing installations of materials applied directly to the surface of walls and ceilings in a total thickness of less than 1⁄28 in. (0.9 mm) shall be permitted to remain in use, and the provisions of 10.2.3 shall not apply.

**10.2.4.2* Exposed Portions of Structural Members.**
In other than new interior exit stairways, new interior exit ramps, and new exit passageways, exposed portions of structural members complying with the requirements for Type IV (2HH) construction in accordance with NFPA 220 or with the building code shall be exempt from testing and classification in accordance with 10.2.3.

**A.10.2.4.2**
Paragraph 10.2.4.2 does not require Type IV (2HH), heavy timber, other than that used in interior exit stairs, interior exit ramps and exit passageways be tested by either ASTM E84 or UL 723 to determine a flame spread rating. Taller wood buildings and new

technology, primarily new "mass timber" make taller buildings of Type IV possible. To that end, the requirements for Type IV have been changed to require the testing for components in the egress system such that they too need to be tested and meet the appropriate classification required in this section. This means that Type IV is "presumed" to comply with the finish requirements in this section for the purpose of meeting the requirements of this section for any wall or ceiling finish of elements other than interior exit stairways, interior exit ramps, and exit passageways.

**10.2.4.3 Cellular or Foamed Plastic.**

Cellular or foamed plastic materials shall not be used as interior wall and ceiling finish unless specifically permitted by 10.2.4.3.1 or 10.2.4.3.2. The requirements of 10.2.4.3 shall apply both to exposed foamed plastics and to foamed plastics used in conjunction with a textile or vinyl facing or cover.

**10.2.4.3.1***

Cellular or foamed plastic materials shall be permitted where subjected to large-scale fire tests that substantiate their combustibility and smoke release characteristics for the use intended under actual fire conditions.

**A.10.2.4.3.1**

See A.10.2.4.3.1.2.

**10.2.4.3.1.1**

One of the following fire tests shall be used for assessing the combustibility of cellular or foamed plastic materials as interior finish:

(1) NFPA 286 with the acceptance criteria of 10.2.3.2

(2) ANSI/UL 1715 (including smoke measurements, with total smoke release not to exceed 1000 $m^2$)

(3) ANSI/UL 1040

(4) ANSI/FM 4880

**10.2.4.3.1.2***

The tests shall be performed on a finished foamed plastic assembly related to the actual end-use configuration, including any cover or facing, and at the maximum thickness intended for use.

**A.10.2.4.3.1.2**

Both NFPA 286 and ANSI/UL 1715, *Standard for Fire Test of Interior Finish Material*, contain smoke obscuration criteria. ANSI/UL 1040, *Standard for Fire Test of Insulated Wall Construction*, and FM 4880, *Approval Standard for Class I Insulated Wall or Wall and Roof/Ceiling Panels; Plastic Interior Finish Materials; Plastic Exterior Building Panels; Wall/Ceiling Coating Systems; Interior or Exterior Finish Systems*, do not. Smoke obscuration is an important component of the fire performance of cellular or foamed plastic materials.

**10.2.4.3.2**

Cellular or foamed plastic shall be permitted for trim not in excess of 10 percent of the specific wall or ceiling area to which it is applied, provided that it is not less than 20 lb/ft$^3$ (320 kg/m$^3$) in density, is limited to 1⁄2 in. (13 mm) in thickness and 4 in. (100 mm) in width, and complies with the requirements for Class A or Class B interior wall and ceiling finish as described in 10.2.3.3; however, the smoke developed index shall not be limited.

**10.2.4.4* Textile Wall Coverings.**

Where used as interior wall finish materials, textile materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of one of the following: section 10.2.3.1, 10.2.4.4.1 or 10.2.4.4.3.

**A.10.2.4.4**

Previous editions of the *Code* have regulated textile materials on walls and ceilings using ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials,* or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*. Full-scale room/corner fire test research has shown that flame spread indices produced by ASTM E84 or ANSI/UL 723 might not reliably predict all aspects of the fire behavior of textile wall and ceiling coverings.

NFPA 265 and NFPA 286 both known as room/corner tests, were developed for assessing the fire and smoke obscuration performance of textile wall coverings and interior wall and ceiling finish materials, respectively. As long as an interior wall or ceiling finish material is tested by NFPA 265 or NFPA 286, as appropriate, using a mounting system, substrate, and adhesive (if appropriate) that are representative of actual use, the room/corner test provides an adequate evaluation of a product's flammability and smoke obscuration behavior. Manufacturers, installers, and specifiers should be encouraged to use NFPA 265 or NFPA 286, as appropriate — but not both — because each of these standard fire tests has the ability to characterize actual product behavior, as opposed to data generated by tests using ASTM E84 or ANSI/UL 723, which only allow comparisons of one product's performance with another. If a manufacturer or installer chooses to test a wall finish in accordance with NFPA 286, additional testing in accordance with ASTM E84 or ANSI/UL 723 is not necessary.

The test results from ASTM E84 or ANSI/UL 723 are suitable for classification purposes but should not be used as input into fire models, because they are not generated in units suitable for engineering calculations. Actual test results for heat, smoke, and combustion product release from NFPA 265, and from NFPA 286, are suitable for use as input into fire models for performance-based design.

**10.2.4.4.1***

Products tested in accordance with NFPA 265 shall comply with the criteria of 10.2.4.4.2.

**A.10.2.4.4.1**

The methodology specified in NFPA 265 includes provisions for measuring smoke obscuration.

**10.2.4.4.2***

The interior finish shall comply with all of the following when tested using method B of the test protocol of NFPA 265.
(1) During the 40 kW exposure, flames shall not spread to the ceiling.
(2) The flame shall not spread to the outer extremities of the samples on the 8 ft. × 12 ft. (2440 mm × 3660 mm) walls.
(3) Flashover, as described in NFPA 265, shall not occur.
(4) For new installations, the total smoke released throughout the test shall not exceed 1000 $m^2$.

A.10.2.4.4.2
See A.10.2.4.4.1 and A.10.2.4.4.

10.2.4.4.3
Textile materials meeting the requirements of Class A when tested in accordance with ASTM E84 or ANSI/UL 723 using the specimen preparation and mounting method of ASTM E2404 shall be permitted as follows:
(1) On the walls of rooms or areas protected by an approved automatic sprinkler system.
(2) On partitions that do not exceed three-quarters of the floor-to-ceiling height or do not exceed 8 ft. (2440 mm) in height, whichever is less.
(3) On the lower 48 in. (1220 mm) above the finished floor on ceiling-height walls and ceiling-height partitions.
(4) Previously approved existing installations of textile material meeting the requirements of Class A when tested in accordance with ASTM E84 or ANSI/UL 723 shall be permitted to be continued to be used.

10.2.4.5* Expanded Vinyl Wall Coverings.
Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of one of the following sections: 10.2.3.1, 10.2.4.4.1 or 10.2.4.4.3.

A.10.2.4.5
Expanded vinyl wall covering consists of a woven textile backing, an expanded vinyl base coat layer, and a nonexpanded vinyl skin coat. The expanded base coat layer is a homogeneous vinyl layer that contains a blowing agent. During processing, the blowing agent decomposes, which causes this layer to expand by forming closed cells. The total thickness of the wall covering is approximately 0.055 in. to 0.070 in. (1.4 mm to 1.8 mm).

10.2.4.6 Textile Ceiling Coverings.
Where used as interior ceiling finish materials, textile materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall either:
(1) comply with the requirements of the requirements of 10.2.3.1 or
(2) meet the requirements of Class A when tested in accordance with ASTM E84 or ANSI/UL 723 using the specimen preparation and mounting method of ASTM E2404 and shall be permitted on the ceilings of rooms or areas protected by an approved automatic sprinkler system.

### 10.2.4.7 Expanded Vinyl Ceiling Coverings.

Where used as interior ceiling finish materials, expanded vinyl materials shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall either:

(1) comply with the requirements of the requirements of 10.2.3.1 or

(2) meet the requirements of Class A when tested in accordance with ASTM E84 or ANSI/UL 723 using the specimen preparation and mounting method of ASTM E2404 and shall be permitted on the ceilings of rooms or areas protected by an approved automatic sprinkler system.

### 10.2.4.8 Lockers.

#### 10.2.4.8.1 Combustible Lockers.

Where lockers constructed of combustible materials other than wood are used, the lockers shall be considered interior finish and shall comply with 10.2.3, except as permitted by 10.4.8.2.

#### 10.2.4.8.2 Wood Lockers.

Lockers constructed entirely of wood and of noncombustible materials shall be permitted to be used in any location where interior finish materials are required to meet a Class C classification in accordance with 10.2.3.

### 10.2.4.9 Polypropylene (PP) and High-Density Polyethylene (HDPE).

Polypropylene and high-density polyethylene materials shall not be permitted as interior wall or ceiling finish unless the material complies with the requirements of 10.2.3.1. The tests shall be performed on a finished assembly and on the maximum thickness intended for use.

### 10.2.4.10 Site-Fabricated Stretch Systems.

For new installations, site-fabricated stretch systems containing all three components described in the definition in Chapter 3 shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3. If the materials are tested in accordance with ASTM E84 or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2573.

### 10.2.4.11 Reflective Insulation Materials.

Reflective insulation materials shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3. If the materials are tested in accordance with ASTM E84 or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2599.

### 10.2.4.12 Metal Ceiling and Wall Panels.

Listed factory finished metal ceiling and wall panels meeting the requirements of Class A in accordance with 10.2.3, shall be permitted to be finished with one additional application of paint. Such painted panels shall be permitted for use in areas where Class A interior finishes are required. The total paint thickness shall not exceed 1⁄28 in. (0.9 mm).

### 10.2.4.13 Laminated Products Factory-produced with a Wood Substrate.

Laminated products factory-produced with a wood substrate shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3. If the materials are tested in accordance with ASTM E84 or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2579 using the product-mounting system (including adhesive) of actual use.

**10.2.4.14 Facings or Wood Veneers Intended to be Applied On Site Over a Wood Substrate.**
Facings or veneers intended to be applied on site over a wood substrate shall be tested in the manner intended for use and shall comply with the requirements of 10.2.3.1 or 10.2.3.3. If the materials are tested in accordance with NFPA 286 they shall use the product-mounting system, including adhesive, described in Section 5.8.9 of NFPA 286. If the materials are tested in accordance with ASTM E84 or ANSI/UL 723, specimen preparation and mounting shall be in accordance with ASTM E2404.

**10.2.4.15* Light-Transmitting Plastics.**
Light-transmitting plastics shall be permitted to be used as interior wall and ceiling finish if approved by the authority having jurisdiction.

A.10.2.4.15
Light-transmitting plastics are used for a variety of purposes, including light diffusers, exterior wall panels, skylights, canopies, glazing, and the like. Previous editions of the *Code* have not addressed the use of light-transmitting plastics. Light-transmitting plastics will not normally be used in applications representative of interior finishes. Accordingly, ASTM E84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials,* can produce test results that might or might not apply.

Light-transmitting plastics are regulated by model building codes such as *NFPA 5000*. Model building codes provide adequate regulation for most applications of light-transmitting plastics. Where an authority having jurisdiction determines that a use is contemplated that differs from uses regulated by model building codes, light-transmitting plastics in such applications can be substantiated by fire tests that demonstrate the combustibility characteristics of the light-transmitting plastics for the use intended under actual fire conditions.

For additional information on light transmitting plastics, see Section 48.7 of *NFPA 5000*.

**10.2.4.16 Decorations and Furnishings.**
Decorations and furnishings that do not meet the definition of interior finish, as defined in 3.3.92.2, shall be regulated by the provisions of Section 10.3.

**10.2.5 Trim and Incidental Finish.**

**10.2.5.1 General.**
Interior wall and ceiling trim and incidental finish, other than wall base in accordance with 10.2.5.2 and bulletin boards, posters, and paper in accordance with 10.2.5.3, not in excess of 10 percent of the specific wall and ceiling areas of any room or space to which it is applied

shall be permitted to be Class C materials in occupancies where interior wall and ceiling finish of Class A or Class B is required.

10.2.5.2 Wall Base.
Interior floor trim material used at the junction of the wall and the floor to provide a functional or decorative border, and not exceeding 6 in. (150 mm) in height, shall meet the requirements for interior wall finish for its location or the requirements for Class II interior floor finish as described in 10.2.7.4 using the test described in 10.2.7.3. If a Class I floor finish is required, the interior floor trim shall be Class I.

10.2.5.3 Bulletin Boards, Posters, and Paper.

10.2.5.3.1
Bulletin boards, posters, and paper attached directly to the wall shall not exceed 20 percent of the aggregate wall area to which they are applied.

10.2.5.3.2
The provision of 10.2.5.3.1 shall not apply to artwork and teaching materials in sprinklered educational or day-care occupancies in accordance with 14.7.4.3(2), 15.7.4.3(2), 16.7.4.3(2), or 17.7.4.3(2).

10.2.6* Fire-Retardant Coatings.

A.10.2.6
Fire-retardant coatings need to be applied to surfaces properly prepared for the material, and application needs to be consistent with the product listing. Deterioration of coatings applied to interior finishes can occur due to repeated cleaning of the surface or painting over applied coatings.

10.2.6.1*
The required flame spread index or smoke developed index of existing surfaces of walls, partitions, columns, and ceilings shall be permitted to be secured by applying approved fire-retardant coatings to surfaces having higher flame spread index values than permitted. Such treatments shall be tested, or shall be listed and labeled for application to the material to which they are applied, and shall comply with the requirements of NFPA 703.

A.10.2.6.1
It is the intent of the *Code* to mandate interior wall and ceiling finish materials that obtain their fire performance and smoke developed characteristics in their original form. However, in renovations, particularly those involving historic buildings, and in changes of occupancy, the required fire performance or smoke developed characteristics of existing surfaces of walls, partitions, columns, and ceilings might have to be secured by applying approved fire-retardant coatings to surfaces having higher flame spread ratings than permitted. Such treatments should comply with the requirements of NFPA 703. When fire-retardant coatings are used, they need to be applied to surfaces properly prepared for the material, and application needs to be consistent with the product listing. Deterioration of coatings applied to interior finishes can occur due to repeated cleaning of the surface or painting over applied coatings, but permanency must be assured in some appropriate

fashion. Fire-retardant coatings must possess the desired degree of permanency and be maintained so as to retain the effectiveness of the treatment under the service conditions encountered in actual use.

10.2.6.2*
Surfaces of walls, partitions, columns, and ceilings shall be permitted to be finished with factory-applied fire-retardant coated products that have been listed and labeled to demonstrate compliance with the requirements of ASTM E2768 on the coated surface.

A.10.2.6.2
The intent of this section is that factory-applied fire-retardant-coated products, such as panels or tiles applied to walls or ceilings, replace the existing finish and are not applied on top of the existing finish.

10.2.6.3 Fire-retardant coatings or factory-applied fire retardant coated assemblies shall possess the desired degree of permanency and shall be maintained so as to retain the effectiveness of the treatment under the service conditions encountered in actual use.

10.2.7* Interior Floor Finish Testing and Classification.

A.10.2.7
The flooring radiant panel provides a measure of a floor covering's tendency to spread flames where located in a corridor and exposed to the flame and hot gases from a room fire. The flooring radiant panel test method is to be used as a basis for estimating the fire performance of a floor covering installed in the building corridor. Floor coverings in open building spaces and in rooms within buildings merit no further regulation, provided that it can be shown that the floor covering is at least as resistant to spread of flame as a material that meets the U.S. federal flammability standard 16 CFR 1630, "Standard for the Surface Flammability of Carpets and Rugs" (FF 1-70). All carpeting sold in the United States since 1971 is required to meet this standard and, therefore, is not likely to become involved in a fire until a room reaches or approaches flashover. Therefore, no further regulations are necessary for carpet, other than carpet in exitways and corridors.

It has not been found necessary or practical to regulate interior floor finishes on the basis of smoke development.

Full-scale fire tests and fire experience have shown that floor coverings in open building spaces merit no regulation beyond the U.S. federally mandated DOC FF 1-70 "pill test." This is because floor coverings meeting the pill test will not spread flame significantly until a room fire approaches flashover. At flashover, the spread of flame across a floor covering will have minimal impact on the already existing hazard. The minimum critical radiant flux of a floor covering that will pass the FF 1-70 test has been determined to be approximately 0.04 W/cm$^2$ (Tu, King-Mon and Davis, Sanford, "Flame Spread of Carpet Systems Involved in Room Fires," NFSIR 76-1013, Center for Fire Research, National Bureau of Standards, June 1976). The flooring radiant panel is only able to determine critical radiant flux values to 0.1 W/cm$^2$. This provision will prevent use of a noncomplying material, which can create a problem, especially when the *Code* is used

outside the United States where U.S. federal regulation FF 1-70 (16 CFR 1630) is not mandated.

**10.2.7.1***
Carpet and carpet like interior floor finishes shall comply with ASTM D2859.

A.10.2.7.1
Compliance with 16 CFR 1630, "Standard for the Surface Flammability of Carpets and Rugs" (FFI-70), is considered equivalent to compliance with ASTM D2859, *Standard Test Method for Ignition Characteristic of Finished Textile Floor Covering Materials.*

**10.2.7.2***
Floor coverings, other than carpet for which 10.2.2.2 establishes requirements for fire performance, shall have a minimum critical radiant flux of 0.1 W/cm$^2$.

A.10.2.7.2
The fire performance of some floor finishes has been tested, and traditional finish floors and floor coverings, such as wood flooring and resilient floor coverings, have not proved to present an unusual hazard.

**10.2.7.3***
Interior floor finishes shall be classified in accordance with 10.2.7.4, based on test results from NFPA 253 or ASTM E648.

A.10.2.7.3
ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*, and NFPA 253 are considered nationally recognized consensus standard test methods for determining the critical radiant flux from floor covering systems and are likely to yield equivalent test results.

**10.2.7.4**
Interior floor finishes shall be grouped in the classes specified in 10.2.7.4.1 and 10.2.7.4.2 in accordance with the critical radiant flux requirements.

**10.2.7.4.1 Class I Interior Floor Finish.**
Class I interior floor finish shall have a critical radiant flux of not less than 0.45 W/cm$^2$, as determined by the test described in 10.2.7.3.

**10.2.7.4.2 Class II Interior Floor Finish.**
Class II interior floor finish shall have a critical radiant flux of not less than 0.22 W/cm$^2$, but less than 0.45 W/cm$^2$, as determined by the test described in 10.2.7.3.

**10.2.7.5**
Wherever the use of Class II interior floor finish is required, Class I interior floor finish shall be permitted.

**10.2.8 Automatic Sprinklers.**

10.2.8.1
Other than as required in 10.2.4, where an approved automatic sprinkler system is installed in accordance with Section 9.7, Class C interior wall and ceiling finish materials shall be permitted in any location where Class B is required, and Class B interior wall and ceiling finish materials shall be permitted in any location where Class A is required.

10.2.8.2
Where an approved automatic sprinkler system is installed in accordance with Section 9.7, throughout the fire compartment or smoke compartment containing the interior floor finish, Class II interior floor finish shall be permitted in any location where Class I interior floor finish is required, and where Class II is required, the provisions of 10.2.7.2 shall apply.

## First Revision No. 4503-NFPA 101-2015 [ Section No. A.3.3.51 ]

**A.3.3.52** Critical Radiant Flux.

Critical radiant flux is the property determined by the test procedure of NFPA 253~~,~~ ~~*Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*~~ or by ASTM E648, *Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source* . The unit of measurement of critical radiant flux is watts per square centimeter ($W/cm^2$).

## Submitter Information Verification

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## Committee Statement

**Committee Statement:** Revision adds the equivalent ASTM standard which is consistent with other references to NFPA 253 throughout the Code. Asterisk is missing from 3.3.51 and needs to be added (editorial change).

**Response Message:**

Public Input No. 263-NFPA 101-2015 [Section No. A.3.3.51]

Public Input No. 264-NFPA 101-2015 [Section No. 3.3.51]