

INTERIOR FINISHES AND FURNISHINGS

Introduction

Because of the significant impact wall and ceiling finishes and furnishings, such as drapes, curtains and decorations, have on flame spread, both state and federal codes and standards contain fairly stringent requirements intended to either inhibit their ignition (in the case, for example, of drapes, curtains and decorations) or control the speed with which flame will travel across their surfaces (in the case of wall and ceiling finishes). While providing an obvious property protection benefit, the main purpose of such protections is to buy time for staff to safely evacuate residents under fire conditions.

The purpose of this guide is to outline the major requirements, both state and federal, that apply to:

- Interior wall and ceiling finishes
- Interior floor finishes
- Drapes, curtains and decorations
- Upholstered furniture
- Mattresses

The information provided in this guide is based on the more restrictive of the requirements found during a comparison between NFPA 101(00) and 2007 state codes as those requirements are applied by the Minnesota Department of Health and Minnesota State Fire Marshal Division.

Interior Wall and Ceiling Finishes

The basics

Federal certification requirements applicable to interior wall and ceiling finishes in healthcare occupancies can be found in NFPA 101(00), Sections 18/19.3.3 and 10.2. State licensure requirements can be found in MSFC(07), Sections 801.1.1, as amended, and 803 and Sec. 803.5 of the 2007 Minnesota State Building Code (MSBC). A review of the requirements will reveal that several factors affect the types of wall finishes (e.g. paneling, wallpaper and vinyl wall coverings) and ceiling finishes (e.g. acoustical tile) allowed in your facility including: (1) date of installation of the finish, (2) location of the finish – i.e. **where** it's installed in the building, and (3) automatic fire sprinklers

You must also determine which chapter of NFPA 101 applies to your facility – Chapter 18 or Chapter 19. In some cases, because of new additions or major renovations, some portions of your facility may fall under Chapter 18 and some may fall under Chapter 19. For guidance in making this determination, see the opening page to this web site.

Interior finishes are broken down into three classifications:

- Class A Interior Wall and Ceiling Finish (flame spread 0-25, smoke development 0-450)
- Class B Interior Wall and Ceiling Finish (flame spread 26-75, smoke development 0-450)
- Class C Interior Wall and Ceiling Finish (flame spread 76-200, smoke development 0-450)

These classifications are based on testing performed in accordance with NFPA 255(00), *Standard Method of Test of Surface Burning Characteristics of Building Materials*. This document is also known as ASTM E 84, *Standard Test Method for Surface Burning Characteristics of Building Materials*, and the test often referred to as the Steiner Tunnel Test.

For a definition of interior finish, see NFPA 101(00), Sec. 3.3.112. It should be noted that, by definition, interior wall finish includes the interior finish of columns, fixed or movable walls, and fixed or movable partitions. A more detailed explanation of the various flame spread classifications can be found in NFPA 101(00), Sec. 10.2.3. You'll find the 2000 *Life Safety Code*[®] *Handbook* to be another excellent resource.

It's important to note that exposed portions of structural members (e.g. wood columns, beams and girders) complying with the requirements for Type IV(2HH) construction, often referred to as heavy timber construction, are exempt from the NFPA 255 testing and classification [see Exception No. 1 to NFPA 101(00), Sec. 10.2.3.1]. This is based on the fact that these structural members are of substantial thickness, are spaced some distance apart and, as a result, do not form a continuous surface that would allow the spread of flame through a space. Type IV(2HH) construction is not very common in healthcare facilities, but has been found to be used for such things as chapel additions. NFPA 101(00), Chapter 18 limits Type IV(2HH) construction to one story in height, while NFPA 101(00), Chapter 19 allows up to two stories, so long as automatic fire sprinkler protection is provided [see NFPA 101(00), Sec. 18/19.1.6.2 and Table 18/19.1.6.2].

Exception No. 2 to NFPA 101(00), Sec. 10.2.3.1 also allows wall and ceiling finishes tested in accordance with NFPA 286(00), *Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*, to be exempt from the NFPA 255 testing and classification. It is felt that the NFPA 286 test represents an improvement over the NFPA 255 test, as it was specifically developed to measure such factors as whether flashover occurs, the heat released and the amount of smoke obscuration. NFPA 101(00), Sec. 10.2.3.5.3 sets forth the specific criteria that must be met when using the NFPA 286 test. The peak rate of heat release throughout the test, however, cannot exceed 800 kW [see MSBC(07), Sec. 803.2.1, Item 3].

Textile materials

The code has very stringent requirements regarding the use of textile materials (e.g. carpeting) on walls and ceilings [see NFPA 101(00), Sec. 10.2.4]. That is because studies of past fires have revealed that such materials can contribute to a very rapid spread of fire.

1. Textile materials having a Class A flame spread rating are allowed on the walls or ceilings of rooms protected with automatic fire sprinklers.
2. Previously approved, existing installations of textile material having a Class A flame spread rating are allowed to be continued to be used.
3. Textile materials are allowed on walls and partitions when tested in accordance with method B of NFPA 265(98), *Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings*. NFPA 101(00), Sec. 10.2.3.5.2 sets forth the specific criteria that must be met when using the NFPA 265 test. The total smoke released throughout the test, however, cannot exceed 1000 m² [see MSBC(07), Sec. 803.6.2.1, Item 3].
4. Textile materials tested in accordance with NFPA 286 and meeting the criteria specified in NFPA 101(00), Sec. 10.2.3.5.3 and MSBC(07), Sec. 803.2.1, Item 3 are allowed on walls and ceilings.

What follows is a breakdown of the requirements found in Chapters 18 and 19 of NFPA 101(00).

Chapter 18 interior finish [NFPA 101(00), Sec. 18.3.3.2; MSBC(07), Sec. 803.5 and Table 803.5]

Wall and ceiling finishes must be Class A or B throughout, except that Class C wall and ceiling finish is allowed in individual rooms with a capacity of not more than 4 persons.

NOTE: Although Exception No. 2 to Sec. 18.3.3.2 allows Class C corridor wall finish, provided the finish doesn't exceed 4 ft in height and is restricted to the lower half of the wall, MSBC(07), Sec. 803.5 and Table 803.5 are more restrictive. Table 803.5 only allows wainscoting or paneling at a grade level lobby to be a Class C finish, provided it doesn't exceed 1,000 sq ft of surface area and is applied over a noncombustible base in accordance with MSBC(07), Sec. 803.4.1.

Chapter 19 interior finish [NFPA 101(00), Sec. 19.3.3.2]

1. Existing wall and ceiling finishes:
 - a. Must be Class A or B, except that Class C is allowed:
 - Where the smoke compartment is completely sprinklered [see NFPA 101(00), Sec. 10.2.8.1].
 - In rooms separated from the corridor **and** protected with fire sprinklers.
 - b. Are exempt from the smoke development criteria specified in NFPA 255 [see Exception to NFPA 101(00), Sec. 10.2.3.2]
2. Wall and ceiling finishes installed on or after March 11, 2003:
 - a. Must be Class A, except that Class B is allowed in:
 - Individual rooms with a capacity of not more than 4 persons.
 - As corridor wall finish, provided the finish doesn't exceed 4 ft in height and is restricted to the lower half of the wall.
 - Smoke compartments that are completely sprinklered [see NFPA 101(00), Sec. 10.2.8.1].
 - b. Class C is allowed in accordance with NFPA 101(00), Sec. 10.2.8.1:
 - In individual rooms with a capacity of not more than 4 persons that are protected with fire sprinklers.
 - As corridor wall finish, provided the finish doesn't exceed 4 ft in height and is restricted to the lower half of the wall and the smoke compartment is protected with fire sprinklers.
3. Wall and ceiling finishes installed on or after July 10, 2007 must comply with the 2007 MSBC.

DOCUMENT your interior wall and ceiling finishes

Flame spread ratings of interior wall and ceiling finishes must be properly documented. Each piece of documentation should identify the specific location(s) in which the finishes are present.

NFPA 101(00), Sec. 10.2.6.1 allows the use of approved fire-retardant coatings (e.g. fire retardant paints and varnishes) to upgrade the flame spread ratings of interior finishes to meet the requirements of the code. The product used must be listed by Underwriters Laboratories (UL), Factory Mutual (FM) or some other nationally recognized independent testing laboratory. Such coatings need to be applied in strict conformance with manufacturer's instructions and, if so specified by the manufacturer, may need to be periodically reapplied or renewed.

Manufacturer's documentation needs to clearly identify the flame spread rating achieved with proper application of the product and should also provide information about whether the treatment will be negatively affected by washing or other cleaning procedures.

NOTE: In addition to the manufacturer's documentation (which should include a label from the container of each product used), the facility must be able to provide written documentation:

- Identifying who applied the fire retardant coating to the finish in question,
- Stating the date the coating was applied,
- Listing the interior finish(es) to which the coating was applied, and
- Certifying that the coating was applied in accordance with manufacturer's instructions.

It's important that at least two people in your facility know where the documentation on your facility's interior wall and ceiling finishes is kept to increase the likelihood that it can be readily provided if requested during an inspection. This documentation needs to be maintained for the life of the finish.

Interior finish policy

The best way to maintain compliance with the requirements of the code is to have a policy in place to help ensure that only approved wall and ceiling finishes are purchased in the first place. The policy should specify that no wall or ceiling finishes will be allowed in the building unless written documentation can be provided showing that they meet the flame resistance requirements of the code. A sample policy has been developed to assist healthcare facilities in formulating their own policies.

[Click Here for Sample Interior Finish Policy](#)

Interior Floor Finish

The basics

Federal certification requirements applicable to interior floor finishes in healthcare occupancies can be found in NFPA 101(00), Sections 18/19.3.3.3 and 10.2.7. State licensure requirements can be found in Section 804 of the 2007 Minnesota State Building Code.

By definition, interior floor finish includes the interior finish of floors, ramps, stair treads and risers, and other walking surfaces [see NFPA 101(00), Sec. 3.3.112.2]. Since most traditional smooth surface floor coverings (like wood, vinyl, linoleum or terrazzo) generally contribute minimally to fire growth and spread in the early stages of a fire, the requirements in the state code and federal standards focus primarily on textile floor coverings, like carpeting.

A review of the requirements will reveal that the two major factors affecting the type of floor finish allowed in a healthcare facility are date of installation and automatic fire sprinklers. Interior floor finishes are grouped in two classes, based on their critical radiant flux ratings:

- Class I Interior Floor Finish (critical radiant flux of 0.45 watts/cm² or greater)
- Class II Interior Floor Finish (critical radiant flux of 0.22 watts/cm² or greater but less than 0.45 watts/cm²)

Critical radiant flux ratings are based on tests conducted in accordance with NFPA 253(00), *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*. This document is also known as ASTM E 648, *Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source*.

More information about floor finishes can be found in NFPA 101(00), Sec. A.10.2.7.1. You'll find the 2000 *Life Safety Code*[®] *Handbook* to be another excellent resource. Here's a breakdown of the requirements found in Chapters 18 and 19 of NFPA 101(00) and Chapter 8 of the 2007 Minnesota State Building Code (MSBC).

Chapter 18 interior floor finish

Chapter 18 has no requirements applicable to interior floor finish [see NFPA 101(00), Sec. 18.3.3.3]. This is based on the fact that healthcare facilities that fall under Chapter 18 are required to be protected with fire sprinklers.

This is one of those circumstances, however, where state licensure requirements are more restrictive than federal certification requirements. MSBC(07), Sec. 804.4 specifies that, even in completely sprinklered buildings, interior floor finish and floor covering materials in exit enclosures, exit passageways, corridors and rooms or spaces not separated from corridors by full-height partitions extending from the floor to the underside of the ceiling must be, at a minimum, Class II materials.

In addition, MSBC(07), Sec. 804.4.1 requires that floor covering materials installed in all areas comply with DOC FF-1-00 "Methenamine Pill Test" (CPSC 16 CFR, Part 1630, *Standard for the Surface Flammability of Carpets and Rugs*). This should really be a moot point, however, as all carpeting greater than 24 sq ft sold in the United States since 1971 is required to pass this test procedure.

As explained earlier, these requirements do not apply to traditional smooth surface floor coverings.

Chapter 19 interior floor finish

1. Chapter 19 has no requirements applicable to **existing** interior floor finish [see NFPA 101(00), Sec. 19.3.3.3].
2. Interior floor finish installed in corridors and exits on or after March 11, 2003 must be of Class I materials.
 - a. By exception, no interior floor finish requirements apply in smoke compartments protected throughout by automatic fire sprinklers. Again, however, state licensure requirements are more restrictive. This means that the MSBC requirements outlined above (see Chapter 18 interior floor finish) must be met as follows:
 - Interior floor finish and floor covering materials in exit enclosures, exit passageways, corridors and rooms or spaces not separated from corridors by full-height partitions extending from the floor to the underside of the ceiling must comply with MSBC(07), Sec. 804.4, and
 - Floor covering materials installed in all areas must comply with MSBC(07), Sec. 804.4.1.
 - b. Again, these requirements do not apply to traditional smooth surface floor coverings.

DOCUMENT your floor finishes

Flame spread ratings of interior floor finishes must be properly documented. Each piece of documentation should identify the specific location(s) in which the finishes are present.

It's important that at least two people in your facility know where the documentation on your facility's floor finishes is kept to increase the likelihood that it can be readily provided if requested during an inspection. This documentation needs to be maintained for the life of the finish.

Floor finish policy

The best way to maintain compliance with the requirements of the code is to have a policy in place to help ensure that only approved floor finishes are purchased in the first place. The policy should specify that no floor finishes will be allowed in the building unless written documentation can be provided showing that they meet the flame resistance requirements of the code. A sample policy has been developed to assist healthcare facilities in formulating their own policies.

[Click Here for Sample Floor Finish Policy](#)

Drapes, Curtains and Decorations

The basics

Federal certification requirements applicable to drapes, curtains and decorations in healthcare occupancies can be found in NFPA 101(00), Sections 18/19.7.5 and 10.3.1. State licensure requirements can be found in MSFC(07), Sections 806 and 807, as amended.

All draperies, curtains (including cubicle or privacy curtains, but excluding curtains at showers), and other loosely hanging fabrics and films serving as furnishings or decorations in healthcare occupancies are required to be flame resistant as demonstrated by testing in accordance with NFPA 701(99), *Standard Methods of Fire Tests for Flame Propagation of Textiles and Films*. The terms curtains, draperies or furnishings also include:

- Stage or theatre curtains
- Horizontal and vertical folding shades
- Roll-type window shades
- Fabric horizontal and vertical shades or blinds
- Swags

Two different test methods are found in NFPA 701 – a small- or intermediate-scale test (Test Method 1) and a large-scale test (Test Method 2). *It's important to note that Test Method 2 must be used for such things as plastic films, vinyl-coated fabric blackout linings, awnings, banners and 100 percent solid PVC blinds and shades [see NFPA 701(99), Sec. 1-1].*

It must be noted that if textiles and films are applied to surfaces of buildings or backing materials as interior finishes, they must meet the requirements for interior wall and ceiling finishes discussed earlier in this guide.

The term “decorations” includes artificial plants, but excludes such things as photographs and paintings, when used in limited quantities. Natural cut trees (e.g. Christmas trees) are prohibited in healthcare occupancies [see MSFC(07), Sec. 806.1.1].

DOCUMENT your drapes, curtains and decorations

The flame resistance of drapes, curtains and decorations must be properly documented. Each piece of documentation should identify the specific location(s) in which the materials are present.

The code allows the use of approved fire-retardants (e.g. chemicals, coatings and sprays) to render drapes, curtains and decorations flame resistant. This can be done commercially (e.g. by a local dry cleaner) or by facility staff. The product used must be listed by Underwriters Laboratories (UL),

Factory Mutual (FM) or some other nationally recognized independent testing laboratory and must be compatible with the material(s) to which it is applied. Application needs to be performed in strict conformance with manufacturer's instructions and, if so specified by the manufacturer, may need to be periodically reapplied or renewed.

Manufacturer's documentation needs to clearly identify the material(s) to which its product can be applied (e.g. paper, fabric, plastic, etc.) and certify that, with proper application of the product, the material to which it is applied will be rendered flame resistant as demonstrated by testing in accordance with NFPA 701. In addition to the manufacturer's documentation (which should include a label from the container of each product used), the facility must be able to provide written documentation:

- Identifying who applied the fire retardant to the material(s) in question,
- Stating the date the fire retardant was applied,
- Listing the material(s) to which the fire retardant was applied, and
- Certifying that the fire retardant was applied in accordance with manufacturer's instructions.

It's very important that manufacturer's documentation provide proper care instructions. Some flame retardant treatments (whether factory-applied or otherwise) are affected by laundering, dry cleaning or water leaching. Others may just leach out over time, especially on exposure to sunlight. For these reasons, some treatments may need to be periodically reapplied or renewed.

Care should be taken to ensure that at least two people in your facility know where the documentation on your facility's drapes, curtains and decorations is kept to increase the likelihood that it can be readily provided if requested during an inspection. This documentation needs to be maintained for the life of the product.

Drapes/curtains/decorations policy

The best way to maintain compliance with the requirements of the code is to have a policy in place to help ensure that only approved drapes, curtains and decorations are purchased in the first place. The policy should specify that no drapes, curtains or decorations will be allowed in the building unless written documentation can be provided showing that they are flame resistant or have been rendered flame resistant by treatment with an approved fire retardant. A sample policy has been developed to assist healthcare facilities in formulating their own policies.

[Click Here for Sample Drapes/Curtains/Decorations Policy](#)

Upholstered Furniture

The basics

Federal certification requirements applicable to upholstered furniture in healthcare occupancies can be found in NFPA 101(00), Sections 18/19.7.5.2, 10.3.2(2) and 10.3.3. State licensure requirements can be found in MSFC(07), Sec. 805.2.1.

A review of the codes will reveal that there are no special fire safety requirements that apply to upholstered furniture located in rooms or spaces protected by an approved automatic fire sprinkler system. Where automatic fire sprinkler protection is not present, the following federal certification requirements apply to upholstered furniture brought into the facility on or after March 11, 2003:

1. It must be resistant to ignition by cigarettes and other smoldering sources of ignition as demonstrated by passing the criteria set forth in NFPA 101(00), Sec. 10.3.2(2) when tested in accordance with NFPA 261(98), *Standard Method of Test for Determining Resistance of Mock-Up Upholstered Furniture Material Assemblies to Ignition by Smoldering Cigarettes*.
2. In addition, it must have limited rates of heat release as demonstrated by passing the criteria set forth in NFPA 101(00), Sec. 10.3.3 when tested in accordance with NFPA 267(98), *Standard Method of Test for Fire Characteristics of Upholstered Furniture Exposed to Flaming Ignition Source*, or ASTM E 1537, *Standard Method for Fire Testing of Real Scale Upholstered Furniture Items*.
3. Upholstered furniture belonging to a resident is allowed in resident sleeping rooms without meeting the criteria spelled out in Items 1 and 2 above, provided automatic smoke detection is present in such rooms [See Exception to NFPA 101(00), Sec. 19.7.5.2]. Battery-operated single-station smoke alarms are allowed to be used to meet this exception.

DOCUMENT your upholstered furniture

Upholstered furniture located in areas not protected by automatic fire sprinklers, except pieces meeting the exception mentioned in Item 3 above, is required to bear the label of an approved agency confirming compliance with the criteria specified in Items 1 and 2 above. Care must be taken to ensure that these labels (tags) are not removed. That being said, it's always a good idea to have hard copy documentation on each piece of upholstered furniture purchased as a back-up. It's also important that the manufacturer's documentation provide proper care instructions.

Make sure that at least two people in your facility know where the documentation on your facility's upholstered furniture is kept to increase the likelihood that it can be readily provided if requested during an inspection. This documentation needs to be maintained for the life of the furniture.

Upholstered furniture policy

In facilities not protected throughout by an approved automatic fire sprinkler system, the best way to maintain compliance with the requirements of the code is to have a policy in place to help ensure that only properly tested and labeled upholstered furniture is brought into the facility in the first place. The policy should specify that no upholstered furniture will be allowed in the building unless written documentation can be provided showing that it complies with the requirements of the code. A sample policy has been developed to assist healthcare facilities in formulating their own policies.

[Click Here for Sample Furnishings Policy](#)

Mattresses

Federal certification requirements applicable to mattresses in healthcare occupancies can be found in NFPA 101(00), Sections 18/19.7.5.3, 10.3.2(3) and 10.3.4. State licensure requirements can be found in MSFC(07), Sec. 805.2.2.

A review of the codes will reveal that:

1. Mattresses brought into the facility on or after July 10, 2007 must be resistant to ignition by cigarettes and other smoldering sources of ignition as demonstrated by passing the criteria set forth in NFPA 101(00), Sec. 10.3.2(3) when tested in accordance with DOC 16 *CFR* 1632, *Standard for the Flammability of Mattresses and Mattress Pads*. Actually, this should be a moot point as DOC 16 *CFR* 1632 is part of federal regulations governed by the Consumer Product Safety Commission (CPSC) and applies to **all** mattresses sold in the United States.

NOTE: This same requirement applies to mattresses brought into the facility on or after March 11, 2003, if located in rooms or spaces **not** protected by an approved automatic fire sprinkler system

2. Mattresses brought into the facility on or after March 11, 2003, if located in rooms or spaces **not** protected by an approved automatic fire sprinkler system, must have limited rates of heat release as demonstrated by passing the criteria set forth in NFPA 101(00), Sec. 10.3.4 when tested in accordance with NFPA 267(98), *Standard Method of Test for Fire Characteristics of Mattresses and Bedding Assemblies Exposed to Flaming Ignition Source* or ASTM E 1590, *Standard Method for Fire Testing of Real Scale Mattresses*.
3. Federal certification requirements would allow a mattress belonging to a resident in a resident sleeping room without meeting the criteria spelled out in Items 1 and 2 above, provided automatic smoke detection is present in such rooms [See Exception to NFPA 101(00), Sec. 19.7.5.3]. Battery-operated single-station smoke alarms are allowed to be used to meet this exception.

DOCUMENT your mattresses

Mattresses are required to bear the label of an approved agency confirming compliance with the criteria specified in Items 1 and 2 above. Care must be taken to ensure that these labels (tags) are not removed. That being said, it's always a good idea to have hard copy documentation on each mattress purchased as a back-up. It's also important that the manufacturer's documentation provide proper care instructions.

Make sure that at least two people in your facility know where the documentation on your facility's mattresses is kept to increase the likelihood that it can be readily provided if requested during an inspection. This documentation needs to be maintained for the life of the mattresses.

Mattress policy

The best way to maintain compliance with the requirements of the code is to have a policy in place to help ensure that only properly tested and labeled mattresses are brought into the facility in the first place. The policy should specify that no mattress will be allowed in the building unless written documentation can be provided showing that it complies with the requirements of the code. A sample policy has been developed to assist healthcare facilities in formulating their own policies.

[Click Here for Sample Mattress Policy](#)