NFPA 703

Standard for Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials

2000 Edition

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An International Codes and Standards Organization

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Standard for

Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials

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This edition of NFPA 703, *Standard for Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials*, was prepared by the Technical Committee on Building Construction and acted on by the National Fire Protection Association, Inc., at its World Fire Safety Congress and Exposition™ held May 14–17, 2000, in Denver, CO. It was issued by the Standards Council on July 20, 2000, with an effective date of August 18, 2000, and supersedes all previous editions.

This edition of NFPA 703 was approved as an American National Standard on August 18, 2000.

Origin and Development of NFPA 703

In 1957, the Committee on Flameproofing and Preservative Treatments began to develop a standard for flameproofing of wood. It soon became clear to the committee that the fire retardant coating industry was expanding considerably, and that fire retardant admixtures of plastics and other building materials required coverage in the standard. Thus, in its many subsequent meetings, the Committee reexamined its approach and expanded the standard to cover all fire retardant treatments.

The standard was tentatively adopted at the 1960 Annual Meeting and was submitted for final adoption at the 1961 Annual Meeting.

The 1979 edition of NFPA 703, *Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials*, superseded the previous 1961 edition. The change in title was necessary to more adequately cover the subjects included in the text of the standard. The principal changes in the 1979 edition included improved definitions for fire retardant coatings.

The 1985 edition included the addition of a new Chapter 4 that listed referenced publications whose use is mandated within this standard.

In the 1992 edition, the Committee provided clarification in several areas defining fire resistance. The 1995 edition was reconfirmed with some editorial changes.

The 2000 edition reflects changes in the methods by which treated wood products are evaluated. Other changes are format driven to reflect the NFPA *Manual of Style*.

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NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on the design, installation, and maintenance of building construction features not covered by other NFPA committees. This Committee does not cover building code requirements, exits, protection at openings, vaults, air conditioning, blower systems, etc., which are handled by other committees.

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Standard for

Fire Retardant Impregnated Wood and Fire Retardant Coatings for Building Materials

2000 Edition

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

Changes other than editorial are indicated by a vertical rule in the margin of the pages on which they appear. These lines are included as an aid to the user in identifying changes from the previous edition. Where one or more complete paragraph(s) has been deleted, the deletion is indicated by a bullet between the paragraphs that remain.

Information on referenced publications can be found in Chapter 4 and Appendix B.

Chapter 1 General

1.1* Scope. This standard provides criteria for defining and identifying fire retardant impregnated wood and fire retardant coated building materials.

1.2 Definitions.

1.2.1* Authority Having Jurisdiction. The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure.

1.2.2 Fire Retardant Coating. A coating that reduces the flame spread of Douglas fir, and all other tested combustible surfaces to which it is applied, by at least 50 percent or to a flame spread classification value of 75 or less, whichever is the lesser value, and has a smoke developed rating not exceeding 200.

1.2.2.1 Class A Fire Retardant Coating. As applied to building materials, is a coating that reduces the flame spread to 25 or less, and that has a smoke developed rating not exceeding 200.

1.2.2.2 Class B Fire Retardant Coating. As applied to building materials, is a coating that reduces the flame spread to greater than 25 but not more than 75, and that has a smoke developed rating not exceeding 200.

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

Chapter 2 Fire Retardant Impregnated Wood

2.1 Application. These requirements shall apply to pressure impregnation treatments that reduce certain burning characteristics of wood. Pressure impregnated lumber and plywood shall be treated for fire retardance in accordance with the requirements of the American Wood Preservers' Association Standard C1, *All Timber Product-Preservative Treatment by Pressure Process*, as modified herein. Other approved methods of impregnation of wood products providing at least equal performance shall also be considered acceptable.

2.2 Results of Treatment — All Species.

2.2.1 Conditions of Material.

2.2.1.1 Moisture Content. Subsequent to treatment, fire retardant treated lumber and plywood shall be air-dried or kiln-dried to an average moisture content of 19 percent or less for lumber and 15 percent or less for plywood in accordance with end-use requirements.

2.2.1.1.1 Air-Drying. Where material is air dried it shall not be exposed to conditions that could cause chemicals to leach out.

2.2.1.1.2 Kiln-Drying. During kiln-drying, the dry bulb temperature of the kiln shall not exceed 160°F (71°C) until the average moisture content of the wood has dropped to 25 percent or less.

2.2.2 Performance Rating.

2.2.2.1 Fire Hazard Classification. Material shall have a flame spread index of 25 or less with no evidence of significant progressive combustions when tested for 30 minutes by the test listed in Section 2.3. In addition, the flame front shall not progress more than 10.5 ft (3.5 m) beyond the center line of the burner at any time during the test.

2.2.2.2 Interior Type A. Where experience demonstrates a specific need for the use of materials with low hygroscopicity, material shall have an equilibrium moisture content of not more than 28 percent when tested in accordance with the procedures in ASTM D 3201, *Standard Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-Base Products*, at 92 ± 2 percent relative humidity.

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2.2.2.3 Exterior Type. Where material is to be used outdoors and subjected to rainfall or sustained humidity of 80 percent or more, the material shall show no increase in flame spread index when subjected to the standard rain test described in ASTM D 2898, *Standard Methods for Accelerated Weathering of Fire Retardant-Treated Wood for Fire Testing* — Method A.

2.3* Tests. Fire retardant treated wood shall be tested in accordance with NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials.*

2.4 Inspection and Identification. Inspection shall be required by an independent and qualified test agency that establishes the requirements for treatment relative to the preceding requirements. All fire retardant treated wood products shall be labeled by the testing agency certifying such ratings.

2.5 Exposure. Design criteria for fire retardant impregnated wood shall take into consideration the temperature and humidity conditions to which the material will be exposed.

Chapter 3 Fire Retardant Coatings for Building Materials

3.1 Application. These requirements shall apply to fire retardant coatings such as paints and other surface coatings used to reduce certain burning characteristics of building materials.

3.2 General.

3.2.1 Fire retardant coatings shall remain stable and adhere to the material under all atmospheric conditions the material is exposed to.

3.2.2 A fire retardant coating shall not be used for unprotected outdoor installations unless labeled for such installations.

3.2.3 The classification of fire retardant coatings shall apply only when the coating is applied at the rates of coverage and to the type or kind of surfaces indicated on the test report when the coating is applied in accordance with the manufacturer's directions supplied with the container.

3.2.4 These coatings shall be applied in accordance with the manufacturer's direction.

3.2.5 The application shall be certified by the applicator as being in conformance with the manufacturer's direction for application.

3.2.6 A fire retardant coating shall not be overcoated with any material unless both the fire retardant coating and the overcoat have been tested as a system and are found to meet the requirements of a fire retardant coating.

3.3 Tests.

3.3.1* Fire retardant coatings shall be tested by NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials.*

3.3.2 Where fire retardant coatings are to be subjected to sustained humidity of 80 percent or more or exposure to the weather, certification by a testing laboratory shall be required to indicate that there is no increase in listed classification when subjected to the "Standard Rain Test" described in ASTM D 2898, *Standard Methods for Accelerated Weathering of Fire Retardant-Treated Wood for Fire Testing.*

3.4 Maintenance of Protection. Fire retardant coatings shall possess the desired degree of permanency and shall be maintained to retain the effectiveness of the treatment under the service conditions encountered in actual use.

3.5 Identification. Each container of fire retardant coating material shall be labeled to indicate conformance with the preceding requirements and shall include the manufacturer's instructions for application.

Chapter 4 Referenced Publications

4.1 The following documents or portions thereof are referenced within this standard as mandatory requirements and shall be considered part of the requirements of this standard. The edition indicated for each referenced mandatory document is the current edition as of the date of the NFPA issuance of this standard. Some of these mandatory documents might also be referenced in this standard for specific informational purposes and, therefore, are also listed in Appendix B.

4.1.1 NFPA Publication. National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101.

NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials,* 2000 edition.

4.1.2 Other Publications.

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

ASTM D 2898, *Standard Methods for Accelerated Weathering of Fire Retardant-Treated Wood for Fire Testing,* 1994.

ASTM D 3201, *Standard Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-Base Products,* 1986.

4.1.2.2 AWPA Publication. American Wood Preservers' Association, P.O. Box 5690, Granburg, TX 76049.

C1, *All Timber Product-Preservative Treatment by Pressure Process,* 1998.

Appendix A Explanatory Material

Appendix A is not a part of the requirements of this NFPA document but is included for informational purposes only. This appendix contains explanatory material, numbered to correspond with the applicable text paragraphs.

A.1.1 Fire resistance ratings measured on an hourly basis are not covered in this standard. To establish such ratings, tests should be made in accordance with NFPA 251, *Standard Methods of Tests of Fire Endurance of Building Construction and Materials.*

A.1.2.1 Authority Having Jurisdiction. The phrase "authority having jurisdiction" is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities. Where public safety is primary, the authority having jurisdiction may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the authority having jurisdiction. In many circumstances, the property owner or his or her designated agent assumes the role of the authority having jurisdiction; at government installations, the commanding officer or departmental official may be the authority having jurisdiction.

A.2.3 Test methods similar to NFPA 255, *Standard Method of Test of Surface Burning Characteristics of Building Materials,* include UL 723, *Test for Surface Burning Characteristics of Building Materials,* and ASTM E 84, *Standard Test Method for Surface Burning Characteristics of Building Materials.* Under the criteria of NFPA 255, the flame spread rating is expressed numerically on a scale for which the zero point is fixed by the performance of inorganic-reinforced cement board and the 100 point (approximately) is fixed by the performance of untreated red oak flooring.

A.3.3.1 The flame spread rating is expressed numerically on a scale for which the zero point is fixed by the performance of inorganic-reinforced cement board and the 100 point (approximately) is fixed by the performance of red oak flooring.