

Exterior FRT Wood

References to ICC Building Codes

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Building Codes

Introduction

Building codes regulate the construction of buildings and structures by establishing minimum requirements to ensure public health, safety and welfare and to provide protection for firefighters and emergency responders in building emergencies.

A City, Township, County, or State government may have a proprietary building code prepared or it may adopt and/or amend one of the model building codes. The full text of a particular adopted code should be used in all instances when making any final decision on the use of fire retardant treated wood or any other material or assembly.

The provisions of the codes are not intended to prohibit the installation of any alternate materials, designs or methods of construction and uses that are not prescribed by the code, provided the alternative material, design or method of construction to be substituted has been determined to comply with the intent of the code and is a least equivalent in quality, strength, effectiveness, fire resistance, durability and safety, and is approved by the "Authority Having Jurisdiction" (AHJ).

International Code Council

Effective October 1, 2002, the nation's three leading model code development organizations, the International Conference of Building Officials (ICBO), Building Official and Code Administrators International, Inc. (BOCA) and Southern Building Codes Council International (SBCCI) were consolidated to form the International Code Council (ICC). As a result, the existing ICBO Uniform Building Code (UBC), BOCA National Building Code (NBC) and SBCCI Standard Building Code (SBC) merged to become the International Building Code (IBC). And, the existing Council of American Building Officials (CABO) One and Two Family Dwelling Code became the International Residential One and Two Family Dwelling Code (IRC). In addition,

ICC has developed a complete set of consensus construction codes to include the International Plumbing Code (IPC), Mechanical Code (IMC), Fuel-Gas Code (IFGC), Energy Conservation Code (IECC) and Urban-Wildland Interface Code (IUWIC), as well as others. However, the traditional model base codes may still be adopted and enforced in some State and Local Governments or referenced by a given AHJ.

Code Criteria: Fire Retardant Treated Wood Lumber and Plywood

- Fire-retardant-treated wood is any wood product pressure impregnated with chemicals or other means during manufacture having a flame spread classification of 25 or less for a time period of 10 minutes and showing no evidence of significant progressive combustion when the test is continued for an additional period of 20 minutes. In addition, the flame front shall not progress more than 10.5 feet beyond the center line of the burners at any time when tested in accordance with ASTM E 84. {Ref.: IBC Section 2303.2; IRC Section R802.1.3}
 - Fire-retardant-treated lumber and wood structural panels shall be properly labeled to include the identification mark of an approved agency, treating manufacturer, name of fire-retardant treatment, wood species, flame spread and smoke developed rating, method of drying after treatment and conformance with any ASTM standards required. {Ref.: IBC Section 2303.2.1; IRC Section R802.1.3.1}
 - Fire-retardant-treated wood exposed to the weather, damp or wet locations shall be identified as "Exterior" to indicate there is no increase in the listed classification when subjected to the Standard Rain Test (ASTM D 2898). {IBC 2303.2.1; IBC 2303.2.3; IRC R802.1.3.3}
 - Interior applications of fire-retardant-treated wood shall be marked "Type A" and shall not have moisture content greater than 28 percent at 92 percent relative humidity when tested using ASTM D 3201 procedures. {IBC 2303.2.4; IRC R802.1.3.4}
 - Design values for untreated lumber and wood structural panels shall be adjusted for strength for fire-retardant-treated wood. Design value adjustments shall be based on an approved investigation method that considers the effect of the anticipated temperature and humidity that the fire retardant wood will be exposed to and the type of treatment and re-drying procedures used. {IBC 2303.2.2; IRC R802.1.3.2}
1. Fire-retardant-treated wood structural panels (softwood plywood) shall meet the requirements of ASTM D 5516 and ASTM D 6305 where applicable. Each manufacturer shall publish the allowable maximum loads and spans for floor and roof sheathing for its treatment. {IBC 2303.2.2.1; IRC R802.1.3.2.1} Design values differ by product.
 2. Fire-retardant-treated lumber shall meet the requirements of ASTM D 5664 for each species of wood treated. Each manufacturer shall publish the modification factors for service at temperature of not less than 80° F and for roof framing. The roof framing modification factors shall take in consideration the climatological location. {IBC 2303.2.2.2; IRC R802.1.3.2.2}
- Prior to use, fire-retardant-treated wood shall be dried to a moisture content of 19 percent or less for lumber and 15 percent or less for wood structural panels. Wood kiln dried after treatment (KDAT) shall not exceed the kiln or drying temperatures used previously to dry the lumber and plywood. {IBC 2303.2.5; IRC R802.1.3.5}

- Fasteners for fire-retardant-treated wood shall be of hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper except for 1/2 inch diameter or greater steel bolts in residential 1 & 2 family dwellings. Fastenings for wood foundations shall be as required in AF&PA Technical Report No. 7. {IBC Section 2304.9.5; IRC 319.3; See also Tips on Use for Arch's fastener recommendations}

Code Criteria: Fire Retardant Treated Wood Shingles and Shakes

- Fire-retardant-treated wood shingles and shakes are permitted for use when the material is treated in accordance with AWPA C1 and labeled and classified by the testing required by Section 1501.1, the testing agency and the quality control agency. {IBC 1505.6; IRC R902.1}
- Fire-retardant-treated wood shakes shall be minimum Grade 1 in accordance with the Cedar Shake and Single Bureau standards. {IBC Table 1507.9.5; IRC Table R905.8.5; IRC 702.6 and R703.5}
- Class A, B and C roof assemblies and roof covering shall meet ASTM E 108 or UL 790. Fire-retardant-treated wood roof coverings shall be tested in accordance with ASTM D 2898. {IBC 1505.1; R902.1}

INTERNATIONAL BUILDING CODE (IBC)

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Uses

1. Noncombustible Type Construction - Untreated wood is typically not permitted. Fire-retardant-treated wood may be used in specific instances where permitted by the code.

2. Combustible Type Construction - Fire-retardant-treated wood may be used in specific instances where permitted by the code. It may also be used anywhere untreated wood is permitted by the code.

Applications

Exterior Wood Veneers

- Wood veneers not less than 1-inch nominal thickness, 0.438-inch exterior hardboard siding or 0.375-inch exterior-type wood structural panels or particleboard is permitted as exterior wall coverings in Type I, II, III and IV construction on buildings not more than three stories in height, except where fire-retardant-treated wood is used. In this case, the building height is increased to four stories provided the veneer is attached to or furred from an approved fire-resistant rated noncombustible backing and any open or spaced wood veneers do not project more than 24 inches from the building wall. Untreated wood cannot exceed three stories in height. {IBC 1405.4}
- Exterior wall coverings, balconies and similar appendages, and bay and oriel windows constructed of combustible materials on the exterior side of exterior walls shall comply with Section 1406. {IBC 1406.1}

Fire separation distances

- Where installed on exterior walls having a fire separation distance of 5 feet (1524 mm) or less, combustible exterior wall coverings shall not exhibit sustained flaming as defined in NFPA 268. {IBC 1406.2.1.1}

- For fire separation distances greater than 5 feet (1524 mm), an assembly shall be permitted that has been exposed to a reduced level of incident radiant heat flux in accordance with the NFPA 268 test method without exhibiting sustained flaming. The minimum fire separation distance required for the assembly shall be determined from Table 1406.2.1.2 based on the maximum tolerable level of incident radiant heat flux that does not cause sustained flaming of the assembly. {IBC 1406.2.1.2}
- Fire-retardant-treated lumber and plywood may be used for exterior wall coverings where the fire separation distance is greater than 15 feet. {IBC Table 1406.2.1}

Projections

Projections, such as cornices, eave overhangs, exterior balconies or similar architectural appendages, such as bay windows and oriel windows that extend beyond the floor area shall conform to the requirements of this Section and Section 1406. Projections shall not extend beyond the distances specified. {IBC 704.2}

- In Type I and II construction, projections from walls shall be of noncombustible materials or combustible materials allowed by Section 1406.3 and 1406.4. {IBC 704.2.1}
- In Type II, IV or V construction, projections shall be of any type of approved materials. {IBC 704.2.2}
- Combustible projection where protection of opening is required shall be of at least 1-hour-fire-resistance-rated construction, Type IV construction, or as required by Section 1406.3 except Type V construction for R-3 occupancies. {IBC 704.2.3}

Balconies and Similar Projections

Exterior balconies and similar projections of floors may be constructed of fire-retardant-treated wood in accordance with IBC Chapter 14. {Ref.: IBC Section 603.1, Note 10.} The aggregate length of balconies and similar projections on each floor cannot exceed 50% of the building perimeter unless the balcony areas are protected by fire sprinklers. {IBC 1406.3}

1. In Type I and II construction, balconies, porches, decks and exterior stairways not used as the required exits in buildings three stories or less in height are permitted to be constructed of fire-retardant-treated wood. {IBC 1406.3, Exception 1}
2. Pickets and rails or similar guardrail devices 42 inches or less in height may be of untreated wood. Any similar such devices greater than 42 inches in height must have a fire resistance rating afforded by Table 601 or be of Type IV construction or be constructed of fire-retardant-treated wood. {IBC 1406.3, Exception 2}
3. In Type III, IV and V construction, balconies and similar appendages not protected by a sprinkler system may be constructed of fire-retardant-treated wood. {IBC 1406.3, Exception 3}

Bay Windows and Oriel Windows

Bay windows and oriel windows in Type I, II, III and IV construction on buildings that are not more than three stories in height are permitted to be constructed using fire-retardant-treated wood. {IBC 1406.4}

Architectural Trim

- Exterior wall coverings in Type I, II, III and IV construction of buildings not more than three stories or 40 feet in height are permitted to be constructed of fire-retardant-treated wood veneers complying with Section 1405.4 or equivalent combustible materials.

Combustible exterior wall coverings other than fire-retardant-treated wood shall not exceed 10 percent of the exterior wall surface area if the fire separation distance is not more than 5 feet or less. Architectural trim exceeding 40 feet in height shall be constructed of approved noncombustible materials. {IBC 1406.2.2}

- Architectural trim and embellishments, such as, cornices, soffits, fascias, gutters and leaders, attached to exterior walls on buildings located in fire districts shall be constructed of approved noncombustible materials or fire-retardant-treated wood. {IBC Appendix D102.2.7}

Awnings and Canopies

- Awnings may have frames of noncombustible material, fire-retardant-treated wood, wood of Type IV size, or 1-hour construction with combustible or noncombustible covers and shall be either, fixed, retractable, folding or collapsible. {IBC 3105.3}
- Canopies shall be constructed of a rigid framework with an approved covering that is flame resistant in accordance with NFPA 701 or has a flame spread index not greater than 25 when tested in accordance with ASTM E 84. {IBC 3105.4}

Roof Coverings – Shakes and Shingles

- In Construction Types IA, IB, IIIA, IV and VA, fire-retardant-treated wood shakes and shingles with a minimum roof covering classification of Type B may be used for roof coverings. {IBC 1505.3}
- In Construction Types, IIB, IIIB and VB, fire-retardant-treated wood shakes and shingles with a minimum roof covering classification of Type C may be used for roof coverings. {IBC 1505.1, IBC Table 1505.4}

Wall Coverings – Shingles and Shakes

Fire-retardant-treated wood shingles not less than 0.375 inch nominal thickness may be used as exterior veneer wall coverings on buildings of Type I, II, III, and IV construction when the veneer does not exceed four stories in height where combustible exterior wall coverings are permitted by code. Materials less than 0.5-inch thick wood siding may be used provided that it is installed over an approved sheathing conforming to the requirements of Section 2304.6.1. {IBC 1405.4; IBC Table 1405.2}

INTERNATIONAL RESIDENTIAL CODE (IRC)

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Uses

- Combustible Type Construction – Fire-retardant-treated wood may be used in specific instances. It may also be used anywhere untreated wood is permitted by the code.
- The provisions for fire-retardant-treated wood in the International Residential Code (IRC) specifically apply only to the design and construction of roof-ceiling systems as required by Section R801. {IRC R801.1}

Applications

Wall Coverings

When the exterior wall is located within the 3 foot fire separation distance required from the lot line, FRX® fire retardant treated wood lumber and plywood may be substituted for untreated wood used in wall assemblies having not less than the required 1 hour fire-resistance rating with exposure from both sides. Fire retardant treated wood may be substituted for untreated wood used for projections, such as bay windows and roof eaves which are required to be protected on the underside. Exception: Tool storage sheds, playhouses and similar structures are not required to be protected based on the lot location. {IRC R302.1}

Building Codes

Fire retardant treated Western Red Cedar shakes and shingles complying with a Minimum Grade 1 in accordance to the Cedar Shake and Shingle Bureau Grading Rules for Wood Shakes and Shingles may be used for exterior wall coverings. {IRC R703.5}

Roof Coverings and Recovering

Fire retardant treated Western Red Cedar shakes and shingles complying with a Minimum Grade 1 in accordance with the applicable grading rules of the Cedar Shake and Shingle Bureau may be used for roof coverings and roof recovering. {IRC Table R905.8}

Roof-mounted Collectors

Where solar collectors are mounted on or above the roof coverings, the collectors and supporting structure shall be constructed of noncombustible materials or fire-retardant-treated wood equivalent to that required for the roof construction. Roof mounted solar collectors shall conform to the Chapter 9 requirements for roof coverings and the roof shall be constructed to support the loads imposed by roof-mounted solar collectors. {IRC M2301.2.2}

INTERNATIONAL URBAN-WILDLAND INTERFACE CODE (IUWIC)

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Uses

- In Class 1 and 2 ignition-resistant construction areas, materials approved for a minimum 1 hour fire-resistance rating or constructed with noncombustible materials are typically required for exterior use, except heavy timber or log wall construction.
- In Class 3 ignition-resistant construction areas, fire-retardant-treated wood may be substituted anywhere untreated or unprotected wood is permitted by the code.

Applications

Exterior Walls

Fire retardant treated lumber and plywood may be used in lieu of untreated wood. Fire retardant treated wood shakes and shingles, minimum Grade 1, Class A flamespread rated (in panel format), may be used for exterior wall coverings of buildings and structures in Class 3 ignition-resistant-construction areas. {IUWIC 506}

Appendages and Projections

Fire retardant treated wood may be used in lieu of untreated wood for projections and appendages, such as, wood decks, of buildings or structures located in Class 3 ignition-resistant construction provided all under-floor areas are enclosed to the ground, except the complete enclosure may be omitted where the underside of all exposed floor and structural columns, beams and supporting walls are protected by 1 hour fire resistance rated construction or heavy timber construction. {IUWIC 506.3}

Protection of Eaves

Fire retardant treated wood with a minimum nominal dimension of 2 inches may be used in lieu of untreated wood for fascias of buildings or structures in Class 1 ignition-resistant construction areas. {IUWIC 504.3}

Fire retardant treated wood with a minimum thickness of 3/4 inch may be used in lieu of untreated wood for eaves and soffits of buildings and structures in Class 2 ignition-resistant construction areas except for rafter tails, which may not be exposed unless they are constructed of heavy timber. {IUWIC 505.3}

Fire retardant treated wood may be used in lieu of untreated wood for eaves and soffits of buildings and structures in Class 3 ignition-resistant construction areas. {IUWIC 506}

Detached Accessory Structures

In Class 1 and 2 ignition-resistant construction areas, fire retardant treated lumber may be substituted for untreated wood for the construction of any detached accessory structures that are located 50 feet or more from a building containing habitable space. {IUWIC 504.11 and 505.11}

In Class 3 ignition-resistant construction areas, fire retardant treated lumber may be used in lieu of untreated wood for construction of any detached accessory structures regardless of the distance from a building containing habitable space. {IUWIC 506}

Roof Coverings

In areas requiring Class 1 ignition-resistant construction, fire retardant treated shakes, shingles, coverings or assemblies with a Class A rating may be used for roofs provided that the eave ends are fire-stopped where the profile allows a space between the roof covering and the roof deck. {IUWIC Section 504.2}

In areas requiring Class 2 ignition-resistant construction, Class B fire retardant treated wood shakes and shingles may be used for roof coverings or roof assemblies provided that the eave ends are fire-stopped where the profile allows a space between the roof covering and the roof deck. {IUWIC Section 505.2}

In areas requiring Class 3 ignition-resistant construction, Class C fire retardant treated wood shakes and shingles may be used for roof coverings or roof assemblies provided that the eave ends are fire stopped where the profile allows a space between the roof covering and the roof deck. {IUWIC Section 506.2}