

Providing compete construction specifications documentation, systems and performance descriptions, and risk and quality advisory services.

Conspectus's Tech Tips received the national Communications Award from the Construction Specifications Institute.

ABSTRACT:

What are those Commodity Specifications referenced by the building codes? The AWPA U1 specifies wood preservative treatments by application, exposure, and type of wood product. Know what the terms mean to be sure you get the intended results.

FILING:

UniFormat™
B1010 - Floor Construction
B1020 - Roof Construction
B2010 - Exterior Walls

MasterFormat®
06 10 00 - Rough Carpentry

KEYWORDS:

Preservative treatment, fire retardant treatment, wood, naturally durable, decay resistant, use categories, commodity specifications, sawn products, wood composites

REFERENCES:

AWPA U1 - Use Category System - User Specification for Treated Wood
AWPA M4 - Standard for the Care of Preservative-Treated Wood Products

International Building Code, 2009.
International Residential Code, 2009.

Preservative Treated Wood

By David Stutzman, AIA, CSI, CCS, SCIP, LEED AP

Background

Natural wood is simply the right solution for certain design aesthetics. Wood adds an element of elegance and warmth that many materials cannot. But when used outdoors, there are hazards to consider. Wood is organic. Wood exposed to the elements, without care, will eventually decay. Finishes can protect the wood and extend its life. Finishes require maintenance or periodic refinishing and are certainly not a permanent solution for protecting wood. Just ask any boat owner about maintaining wood trim and decks.

So how can wood be used successfully outdoors and in other moisture prone locations to enhance architectural designs? Use naturally durable wood (see Tech Tips B2080) or rely on preservative treatments.

The Codes

The International Building Code (IBC) and the International Residential Code (IRC) address the need for either naturally decay resistant wood or preservative treated wood.

Designers may choose the means to comply.

Naturally Durable Wood: IBC Section 2302.1 defines what is considered naturally durable wood. For decay resistance the choices are limited to the heartwood of redwood, cedar, black locust, and black walnut. When a design requires any other wood species in a moisture prone application, preservative treatment must be used.

Preservative Treated Wood: IBC Section 2303.1.8 requires preservative treated wood to comply with AWPA U1 and AWPA M4.

NB (that's nota bene for you non-Latin scholars meaning: Note Well): The term "pressure treated wood" is ambiguous, yet is commonly used to mean preservative treated wood. There are two different types of pressure treated wood: preservative treated wood and fire retardant treated (FRT) wood. When identifying treated wood on construction drawings and in specifications be sure to use "preservative treated wood" to match the code terminology and to get the right results.

IBC Section 1403.5 requires preservative treated wood when used in exterior walls extending below the base flood elevation. In the aftermath of Sandy, along the New Jersey coast, the reason to require water damage resistance is obvious. IBC Section 2304.11 addresses the need for wood preservative treatment based principally on location and use. The code includes a list of applications, with exceptions, when preservative treatment is required (see IBC for specific applications):

- Wood used above ground
- Laminated timbers exposed to the weather
- Wood in contact with ground or fresh water
- Structural support members exposed to weather without protection from moisture

The Standards

When preservative treatment is selected for wood used in above ground applications, the IBC requires compliance with AWPA U1 Commodity Specifications A or F. AWPA U1 describes several different

factors affecting preservative treatments:

- Use Categories
- Standardized Preservatives
- Standardized Wood Species
- Commodity Specifications

Use Categories define the applications and potential exposure to weather and sources of water. For preservative treatments, use category applications include the following ranked from least to greatest potential decay exposure:

- UC1 interior, above ground, dry
- UC2 interior, above ground, damp
- UC3 exterior, above ground
- UC4 exterior, ground contact or fresh water
- UC5 exterior in salt or brackish water

Standardized Preservatives include 21 different chemicals governed by product standards for each class of preservative. When the type of preservative is important, it must be specified. Otherwise the supplier may choose from any that suit the use, species, and commodity defined by the standard. Chromated Copper Arsenate (CCA) is included in the list of preservative chemicals, even though it is not permitted for building applications. The typical preservative used for building construction today is Alkaline Copper Quat (ACQ). Standardized Wood Species defines individual wood species that are permitted for specific use categories. Not all species are permitted in all uses. Douglas fir and southern pine, commonly used for preservative treated lumber, are permitted for nearly all use categories. Sawn products using hemlocks, spruces, and true firs are permitted for UC1 through UC4.

Commodity Specifications define the type of wood product and the retention for the chemical used for the preservative treatment. The retention rate varies depending on the Use Category; the greater the exposure to decay, the greater the required retention.

- A Sawn Products
- B Posts
- C Crossties and Switchties
- D Poles
- E Round Timber Piling
- F Wood Composites
- G Marine (Salt Water) Applications
- H Fire Retardants
- I Nonpressure Applications

Sawn Products include boards, framing lumber, and timbers. Wood Composites include:

- Plywood
- Glue-laminated members
- Parallel strand lumber (PSL)
- Laminated veneer lumber (LVL)

Section 3 of AWPA U1 includes a guide to commodity specifications for treated wood arranged by common use. The chart lists the general use in building and other construction, the exposure condition, the Use Category, the Commodity Specification and any special requirements needed to comply with the standard. This chart is a handy reference to quickly determine specific preservative treatment requirements for any particular application.

Conclusion

Carefully review the code requirements to determine if preservative treatment is required. Be sure to check the exceptions. Specify the allowable preservative treatment chemicals. Be sure to

coordinate the fastener materials with the preservative materials. Copper based preservatives will corrode steel fasteners through galvanic action. Specify hot dipped galvanized steel or stainless steel fasteners for copper based preservatives to limit corrosion. Protect exterior wood from direct exposure to water. Use roof overhangs to protect exterior wood cladding and trim. Design wood elements to shed water rather than allowing water to stand on wood surfaces. Crown, bevel, or slope horizontal surfaces or cap the surfaces with sheet metal to protect the wood.

Add Your Comments

We invite your comments. Visit our blog and add your comments.

Like it? Share it!

[Tweet](#) or [Email](#) your friends

The information contained in this document is offered for educational purposes, only, and not as technical advice suitable for any particular project or specific condition. Technical consulting is unique to the facts of a particular condition, and Conspectus recommends that a specialist be consulted to determine solutions for each specific condition.