

## Use of treated wood in roof assemblies

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Treated wood commonly is used in the U.S. construction industry as a component in roof assemblies. In *The NRCA Roofing and Waterproofing Manual, Fifth Edition*, NRCA specifically recommends the use of decay-resistant, treated wood for blocking and nailers at roof perimeters and penetrations for fastening membrane and sheet-metal flashings. Many roof product and system manufacturers also make similar recommendations for the use of treated wood.

Recent changes in the chemical treatments used in treated wood have resulted in reports and concerns about corrosion of fasteners and metals that come in contact with treated wood that use specific, current generation chemical treatments.

In this bulletin, NRCA provides a brief background of this issue and offers specific interim recommendations intended to address the concern of corrosion relating to the use of treated wood.

### Background

Since the early 1930s, the most widely used chemical treatment for treated wood has been chromated copper arsenate (CCA) compounds. CCA-treated wood has proven to perform successfully in many applications, including as components of roof assemblies where nontreated wood's resistance to insects, micro-organisms and fungal decay may be a concern.

As of January 2004, wood preservers voluntarily removed CCA-treated wood from U.S. and Canadian consumer markets as a result of a voluntary agreement with the U.S. Environmental Protection Agency (EPA). EPA cited the arsenic and chromium contained in the CCA treatment as being possible environmental concerns in certain exposed-to-the-weather applications, such as with outdoor furniture and playground equipment.

Wood preservers have introduced a number of CCA-treatment substitutes, including alkaline copper quat (ACQ-C, ACQ-D, ACQ-D Carbonate), copper azole (CBA-A, CA-B), sodium borates (SBX/DOT) and ammoniacal copper zinc arsenate (ACZA). These new-generation treatments contain biocides that do not include arsenic and chromium and are currently acceptable to EPA.

The long-term performance under various conditions of the current, new generation of treated wood products still is largely undetermined. Variations in chemical treatments and other variations that can affect long-term performance including product combinations, installation techniques and environmental conditions make it nearly impossible to predict the new products' long-term performances. This problem is compounded by the fact there are few standards that adequately define the expected performance of treated wood. For example, no recognized standards exist to measure or define the corrosion resistance of metal fasteners and connectors used in contact with treated wood.

### **Concern of corrosion**

NRCA is concerned with the increasing number of reports and bulletins from the treated wood and fastener industries regarding the increased potential for corrosion when using the current, new generation of treated wood.

Published reports of testing indicate most new, current generation treatment alternatives to CCA are more corrosive than CCA. ACQ compounds and ACZA exhibit more than twice the corrosiveness of CCA, and copper azoles exhibit slightly less than twice the corrosiveness. The high copper content in ACQ and ACZA treatments fosters a galvanic reaction. SBX/DOT treatments may be less corrosive than CCA treatments, but SBX/DOT cannot tolerate exposure to the elements.

A complicating factor is the specific chemical treatment used in treated wood is not always readily identifiable to users by the wood's appearance, markings or product labeling.

For the roofing industry, the potential for there to be corrosion-related problems with the use of the current, new generation of treated wood is a particular concern. In roof assemblies, treated wood is oftentimes used in as a component that interfaces with or is in direct contact with metal--metal fasteners, metal flashings and other metal accessories, or metal roof decks.

### **NRCA's recommendations**

Until more definitive information is available regarding the long-term performance and corrosion potential of the current, new generation of treated wood, NRCA recommends taking a conservative approach when using or interfacing with treated wood.

NRCA suggests the following guidelines when encountering the current, new generation of treated wood:

Carbon steel, aluminum and electroplated galvanized steel fasteners and connectors should not be used in contact with treated wood. Hot-dipped galvanized fasteners complying with ASTM A153 and connectors complying with ASTM A653, Class G185, generally are acceptable. Type 304 or Type 316 stainless-steel fasteners and connectors are recommended for maximum corrosion resistance.

Fasteners with proprietary anti-corrosion coatings may be acceptable for use with treated wood. When considering the use of such proprietary coated fasteners and connectors, consult fastener manufacturers for specific information regarding the performances of their products in treated wood and any precautions or special instructions that may be applicable.

Aluminum fasteners, flashings and accessory products should not be used in direct contact with any treated wood. ACQ-treated wood is not compatible with aluminum.

Uncoated metal and painted metal flashings and accessories, except for 300-series stainless steel, should not be used in direct contact with treated wood. Metal products, except stainless steel, may be used if separated from treated wood by a spacer or barrier, such as single-ply membrane or self-adhered polymer-modified bitumen membrane material.

Care should be taken in identifying treated wood where it is a component of or interfaces with roof assemblies. If it cannot be determined whether the wood is not of the current generation of treated wood, it would be prudent to consider the wood as the current generation of treated wood and implement NRCA's recommendations.

As a result of NRCA's concerns of corrosion relating to the use of treated wood, NRCA is revising its recommendation in *The NRCA Roofing and Waterproofing Manual, Fifth Edition*, for use of treated wood as a component of roof assemblies.

NRCA now is of the opinion that the corrosion-related concerns regarding the use of the current generation of treated wood possibly outweigh the benefits treated wood provides as a component in roof assemblies. In many instances, the use of nontreated, construction-grade wood is suitable for use in roof assemblies as blocking or nailers, provided reasonable measures are taken to ensure the nontreated wood remains reasonably dry when in service. Where a specific construction detail provides for a secondary means of waterproofing, NRCA now considers the use of nontreated, construction-grade wood to be an acceptable substitute for treated wood. Construction details depicting such a secondary means of waterproofing are provided in the Construction Details section of *The NRCA Roofing and Waterproofing Manual, Fifth Edition*.

NRCA remains of the opinion use of the current generation of treated wood is acceptable as a component of roof assemblies, provided NRCA's recommendations are followed.

As more information becomes available regarding the current generation of treated lumber and its corrosion-related issues, NRCA may revise its recommendations and guidelines contained in this document.

Questions regarding the information contained in this *Special Report* should be directed to NRCA's Technical Services Section by calling (800) 323-9545 or (847) 299-9070.