

CCA-treated wood substitutes

by Tom Bollnow

Pressure treating wood with water-borne preservatives is done to counteract the harmful effects insects, microorganisms and fungal decay can have on wood. But as of Jan. 1, chromated copper arsenate- (CCA-) treated wood voluntarily has been removed by wood producers from the consumer market in the United States and Canada. The bastion of the treated wood industry since its development in 1933, CCA has joined the ranks of products deemed environmentally incorrect by agencies such as the U.S. Environmental Protection Agency (EPA).

The replacements to CCA soon will become familiar by their acronyms. The most commonly used alternative water-borne preservatives are alkaline copper quaternaries (ACQ-C and ACQ-D with carbonate), sodium borates (SBX) and copper azoles (CBA-A and CA-B). There are some lesser used water-borne chemicals, such as ammonial copper zinc arsenate (ACZA), and variations of the previously mentioned compounds. Naturally weathering wood alternatives such as redwood, yellow cypress and certain cedars are environmentally acceptable but more expensive than CCA-treated wood.

The consumer market generally uses treated lumber for decks, outdoor furniture, gazebos, fences, railings, landscaping, and park and playground equipment. The roofing industry's primary contact with pressure-treated lumber is for wood blocking, curbs, sleepers, batten strips and other integrated locations where a fastening substrate is needed.

Environment

Environmental issues related to all pressure-treated wood encompass chemical contamination, handling and

disposal. The new-generation pressure-treatment compounds have biocides that do not contain arsenic and are EPA- and building code-approved. Treated wood should not be used for mulch or in situations where wood may contact food, feed or related components. Discarded CCA-treated lumber should not be burned because it releases chemical treatment compounds into the atmosphere.

The new-generation wood products' long-term performance under various conditions generally is undetermined. Borate-treated wood should not be used in exposed construction because it is susceptible to preservative washout, which leaves the wood unprotected. All exposed pressure-treated wood should be finished with a sealer, stain or paint. Moisture content directly affects warping, twisting and corrosion. Therefore, treated wood is best installed dry.

Fasteners

The ability to resist corrosion may be a more important issue. Initial testing shows ACQ carbonate and ACZA are more than twice as corrosive as CCA and SBX is slightly less corrosive than CCA. Aluminum products and ACQ are not compatible—even surface contact should be avoided by using a spacer or other physical barrier. Electroplated galvanized fasteners should not be used for exterior applications, and galvanized and stainless-steel connectors and fasteners should not be mixed. The high copper content in the lumber treatment chemicals will foster a galvanic reaction.

Fastener use for pressure-treated wood is referenced in the *National Building Code* Section 2311.3.3, *Uniform Building Code* Section 2304.3, *Standard Building Code* Section

2306.3, *International Building Code* Section 2304.9.5 and *International Residential Code* Section R 319.3. For fasteners in treated wood, these codes require the use of hot-dipped, zinc-coated galvanized steel; stainless steel; silicon bronze; or copper. However, no standards are referenced for minimum weight or thickness of galvanized coating or type of stainless steel.

Preservative manufacturers, treaters and fastener manufacturers are developing a consensus test protocol to evaluate long-term corrosion resistance of fasteners in treated wood. Currently, these groups are recommending interim guidelines, which follow:

- As a minimum, hot-dipped galvanized fasteners should conform to ASTM A153, "Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware," Class D, minimum weight of zinc coating 1 ounce per square foot (305 g/m²).
- As a minimum, hot-dipped, galvanized-coated connectors should conform to ASTM A653, "Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process," Class G-185, minimum required weight of zinc coating total both sides 1.85 ounces per square foot (564 g/m²).
- Stainless-steel fasteners and connectors using type 304 stainless steel or 316 stainless steel should be used.

Other types of fasteners and connectors with proprietary anticorrosion treatments are available. Electroplated galvanized fasteners should not be used for exterior applications. Consult fastener or hardware manufacturers for more information.

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