

PRESERVATIVE-TREATED WOOD TODAY

BY KRIS OWEN, CONSULTANT, PRESERVATIVE- AND FIRE-RETARDANT-TREATED WOOD



Figure 1. Splash plank and mechanically laminated posts. (Photo courtesy of Wick Buildings.)

In the late 1970s, a significant portion of the wood-preserving industry was transitioning to the use of waterborne preservatives, primarily chromated copper arsenate, or CCA. This fact can be confirmed by observing the purchasing patterns of agricultural suppliers like Agway, FCX, Southern States, Farm Bureau, Gold Kist and Farmland Industries. Until that time, oilborne treatments of creosote and pentachlorophenol (penta) had been the standard treatments for the poles and lumber used for post-frame structures. The new waterborne treatments impart less weight and are cleaner, easier to work with, less expensive and equally as effective against termites and decay.

By the late 1970s, most post-frame buildings were framed with solid sawn posts instead of round poles. In the 1980s, engineered products such as the mechanically laminated post and the glued, laminated (glulam) timber post entered the marketplace and began to replace solid sawn posts (Figure 1).

The industry was changing in other ways as well. The strengthening of the National Frame Building Association—achieved with the formation of numerous chapters, the addition of professional engineers and designers to the membership, and the development of design standards—had created a more respected construction method in the general construction marketplace (Figure 2).

With the rise of environmental concerns, the activism of environmental groups and the scrutiny of various chemicals used in construction in the first years of the 21st century, atten-

tion came to be focused on CCA because it contained chromium and arsenic. The U.S. Environmental Protection Agency proposed eliminating CCA from the marketplace or restricting its use in such a way as to make it nearly unattainable. The wood-preserving industry compromised by offering new alternative copper products and keeping CCA for industrial applications. Label changes submitted by CCA registrants then withdrew CCA from most residential applications effective January 1, 2004. This change was accepted by the EPA and entered into the Federal Register.

It should be noted that NFBA representatives and industry leaders met with the EPA in an attempt to keep CCA for use with splash plank in particular. The EPA ruled against NFBA because of the confusion caused in mixing dimensional products at a retail location. However, solid vertical timber columns (6" x 6" and larger), glued or mechanically fastened timber col-



Figure 2. Typical post-frame construction. (Photo courtesy of Wick Buildings.)

umns and plywood products were exempt from the ban, and they may continue to be treated with CCA.

To replace CCA-treated lumber in the marketplace, both in residential and other post-frame applications, the preservative industry had been developing a variety of alternative copper preservatives. These treated products began shipping in 2004 and have been performing successfully after 14 years in service.

The primary alternative copper preservatives available across most of the country are alkaline copper quaternary (ACQ), copper azole type C–dissolved (CA-C) and micronized copper azole (MCA) for the various retentions needed for the post-frame builder according to the American Wood Protection Association’s use-category system. Much of this material may be carried by independent dealers who work with post-frame clients, and some big-box stores may also carry the correct material. It is important to note that NFBA (2015, 2016) has recommended in the *Post-Frame Building Design Manual* that splash plank be treated to UC4A (for ground contact, general use) because of its location and the conditions it has to withstand. Other preservatives used in post frame, though somewhat limited geographically, would be copper naphthanate (CuNap, in oilborne and waterborne formulations) and ammoniacal copper zinc arsenate (ACZA, trade name Chemonite) which are primarily used for industrial and commercial applications but may also be used in post frame.

Relatively new to the market are the metal-free preservatives Ecolife 2 and Wolman AG. These preservatives were developed primarily without copper to be even more environmentally friendly; they have nothing in them to accelerate corrosion. They may be used in above-ground exterior applications, where they offer excellent protection and can have water repellent added during the pressure-treating process.

Like the metal-free preservatives, pressure-treated borates are somewhat limited in where they may be used. They can be used only in interior applications that are not subject to constant wetting. However, one of the better uses for agricultural applications is in dairy barn free-stall applications above a knee wall and in some panelized applications.

During the early stages of this transition of chemistries, it was noted that one of the new alternative copper products was exhibiting unexpected early corrosion in a specifically vulnerable area near the seacoast in southern California. That preservative formula was altered immediately, the old formula was removed from the market and the revised product has performed well against corrosion since mid-2004, as have all the copper alternatives, if the correct hardware meets ASTM Standard M153 for fasteners and ASTM Standard M653 for connectors.

Because the alternative copper chemistries contain more copper (by percentage), it was noticed in early testing of fasteners that most fasteners did not meet the coating requirements of ASTM Standard A153. Apart from the products of one longtime U.S.-based fastener manufacturer, the coating weights of most fastener products (mainly those produced offshore) did not meet the hot-dipped galvanized coating weights required by the standard (also required by the International Code Council’s International Building Code and International Residential Code). These companies have taken steps over the

years to ensure that their products meet or exceed the standard, and new coated systems meeting an equivalent standard have come onto the market in recent years as well. Check the label on the box for use with treated wood, and remember that electroplated fasteners have never been recommended or allowed for use with preservative- or fire-retardant-treated wood.

A similar problem was anticipated in the coated-connector industry as well, and a G185 coating weight was recommended under ASTM A653. The connectors are marked on the box and on the products. Remember that you must use galvanized fasteners with galvanized connectors; never use stainless fasteners with galvanized connectors.

Significant changes have been made to the AWWPA standards in the last two years. The first was in AWWPA Standard M4, Standard for the Care of Preservative-Treated Wood Products. Essentially, any piece of treated wood that is cut, bored, chamfered or milled after treatment should be coated with an appropriate remedial product, regardless of size. Recommended coating products would be at least a 2-percent copper naphthanate solution. Other products are also allowed under the standard.

The second change was made in 2015, when new recommendations were added to the use-category applications and retentions. The primary reason for the recommended changes was the frequent misuse of the treated product by unsophisticated users and the resulting subsequent failure. An example would be where material labeled for above-ground use was used within 6 inches of the ground or actually on the ground. Because most big-box stores and many independent stores did not carry treated lumber appropriate for ground contact, a special order was necessary, requiring extra time. The wrong product was routinely being used in these applications, and the product was failing prematurely. Similar problems were occurring with unventilated decks too close to the ground and with spa and pool decks that should have been using a more robust treatment, to cite two examples.

The tag examples shown in **Figure 3** are for one chemical; they show the listing of the use-category number and the conditions of use. **Figure 4**, a drawing from American Society of Agricultural and Biological Engineers S618 (2010), shows an application using preservative-treated wood in a grade girt (splash plank, splash-board or ground girt), a timber post, and wood uplift anchors.

A visit to one or more of the following sites will help readers

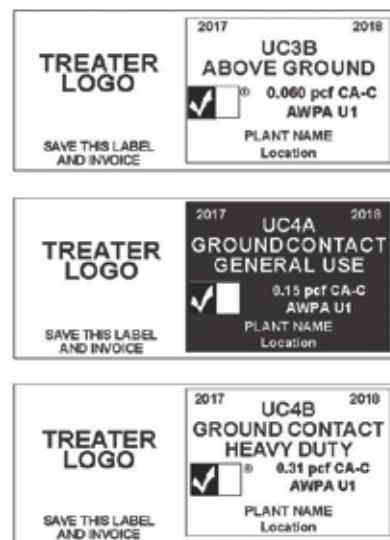


Figure 3. Tags for preservatives showing American Wood Protection Association’s use categories and conditions. (The labels were created with the help of Lonza Wood Protection.)

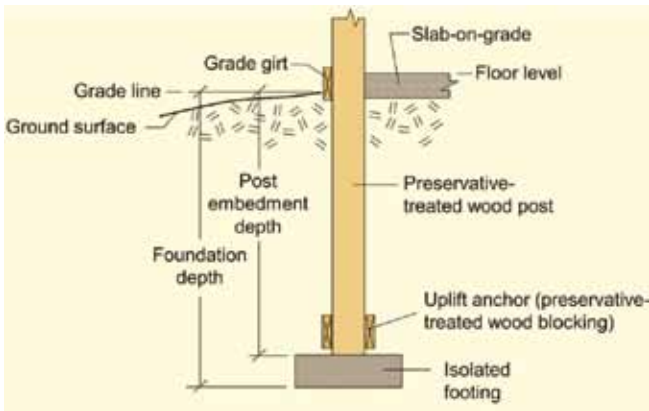


Figure 4. Post foundation featuring preservative-treated grade girts, wood posts and wood blocking for uplift anchorage. The American Wood Protection Association's use category for grade girt (or splash plank) is UC4A, and for the post and uplift anchor, UC4B. (From American Society of Agricultural and Biological Engineers S618, Post Frame Building System Nomenclature, fig. 22.)

ensure that they are applying the correct product:

AWPA: www.awpa.com/standards/U1excerpt.pdf

Koppers: www.koppers.com

Lonza: www.wolmanizedwood.com

Viance: www.treatedwood.com

Even though the wood-treating industry has had to make significant changes in the last 14 years, it continues to supply the post-frame market with pressure-treated wood products that can be used to construct better and more creative buildings in agricultural and light-commercial markets. Today's preservatives will continue to evolve and play a significant role in extending the life of post-frame buildings. Those working in the wood-preservative industry will continue to supply builders with the only sustainable, renewable building product: wood.

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References

American Society of Agricultural and Biological Engineers. 2010. S618, Post Frame Building System Nomenclature. St. Joseph, MI: ASABE.

National Frame Building Association. 2015, 2016. *Post-Frame Building Design Manual*, 2nd edition. Chicago, IL: NFBA.

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