New Pressure Treated Lumber Requires Use of Correct Fasteners to Resist Corrosion

By Patrick Ryan
The new year of 2004 brought to the residential construction industry a major change in the use of wood material commonly known as pressure treated lumber. New types of treated lumber have replaced the old CCA product for residential construction, as required by the Environmental Protection Agency.

The on-the-job uses for pressure-treated lumber, such as decks, sill plates and furring over block or concrete, will remain the same. But it is important that builders and tradesmen realize the need to use proper metal fasteners in construction to meet codes and assure safety and integrity of the built structures. That certainly means they must switch away from the electro-galvanized fasteners that were often used with the CCA-treated lumber. The new wood products are highly corrosive to those types of fasteners.

**The New lumber**

Effective Jan. 1, 2004, manufacture of lumber impregnated with copper Arsenic will be available only for industrial, agricultural, or permanent wood foundation residential construction. Replacing CCA-treated lumber for residential construction are two low-toxicity pesticide treated products that already have been in use for several years. One is treated with alkaline copper quat, the other with copper azole. They have been available under trade names including Natural Select®, Natural-Wood® and Preserve®.

Builders will find the new lumber is more expensive than CCA due to chemical and processing changes. And the cost varies according to the use category of the lumber. For example, the lowest chemical-retention level is intended for decking, while the highest—and most costly—is ground—contact lumber.

The critical point is to use the correctly treated material for residential construction. Manufacturers mark the categories on the lumber to identify the various uses, which helps builders avoid accidental misapplication.

**Use Correct Nails**

Electra-galvanized nails, which were the predominant fasteners used with CCA lumber, are not acceptable for use with ACQ and CBA pressure treated lumber. The zinc content in the coating of those nails is insufficient for long-term resistance to the corrosive action by the chemistry in the new lumber.

The International Building Code, International Residential Code, International Code Council Evaluation Services and the Treated Wood Industry recommend the use of hot-dipped galvanized nails or stainless steel products. The IBC and IRC also recommends copper and silicon-bronze fasteners. Local codes may vary, so builders should always check and follow the local codes.

Among all those options, hot-dipped galvanized should prove to be the most popular choice for residential builders. They provide long lasting protection against corrosion at substantially lower cost. Stainless products are about three times more expensive. Copper and silicon-bronze products are practically non-existent in the construction industry.

Galvanized coatings on sheet metal are rated on a scale that indicates the amount of zinc it includes. A rating of G-60, for example, means there is a total of 0.60 oz. of zinc on both sides of a square foot of steel, or to put this another way, 0.30 oz. per square foot zinc thickness per side. A G-90 rating means 0.45 oz per square foot area on a side and a G-185 rating means 0.925 oz per square foot area on a side.

Using the hot-dipped process, a consistent and thicker coating is applied to the carbon steel metal from which nails are manufactured. For example, good electrogalvanized nail would have a thickness equivalent rating of G-60, which is 0.30 oz of zinc per square foot. The American Society for Testing and Materials Standard A-153 Class D. requires 1.00 oz. of zinc per square foot surface area.

Within the fastener industry, unfortunately, fastener grades are not uniformly labeled on the boxes in which they are sold. For the moment, Paslode has added stickers to its boxes to identify those products as acceptable for use in all pressure treated lumber. Such infor-
The fastener resistance to salt corrosion, not wood corrosion. This test is more appropriate for determining corrosion resistance to water coastal exposure and winter road salt exposure. The type of corrosion reactions that occurs is entirely different from the corrosive chemical reactions of pressure treated lumber.

Prohesion (ASTM-G85). A different version of the salt spray test that includes wet and dry cycles. It too is applicable for measuring corrosion resistance in coastal environments. But, again, it does not have any relationship to corrosiveness of pressure treated lumber.

Builders should be cautious about accepting any testing that does not precisely measure corrosiveness of pressure treated lumber on the various metals in fasteners. At present, no such results are available. Until they are, relying on hot-dipped galvanized products that meet recommended corrosion resistance will assure integrity of residential construction projects.

About the Author
Patrick Ryan is marketing manager for framing with Paslode, a division of Illinois Tool Works. Ryan has extensive experience in the residential construction industry. He has been with ITW for 16 years, the last 10 of those with the Paslode division.