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TIMBERLINE

Wood Treaters Switch to New Chemicals

Change-over from CCA is costly and wood treated with new preservative costs more

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Chromated copper arsenate (CCA) was used for decades in the successful preservation of wood for power poles, fencing, decking lumber and numerous other outdoor applications.

At the start of this year, however, production of CCA-treated wood for residential construction was phased out.

Environmentalists had attacked the use of CCA because one of its components is inorganic arsenic. Several class action lawsuits were filed against some suppliers of pressure treated wood preserved with CCA.

The use of arsenic-based chemicals in the pesticide industry was banned some years ago by the U.S. Environmental Protection Agency (EPA) when a link to cancer was suggested, so perhaps the banning of CCA in the wood treatment industry was inevitable and only a matter of time. When arsenic-based pesticides were banned, however, the EPA was still approving the use of CCA treated wood as long as warning labels were attached to the treated lumber products.

The EPA and the American Council on Science and Health agreed that there was no conclusive evidence that CCA-treated wood caused harm. However, opponents raised concerns about CCA-treated lumber used in children's playgrounds, which generated media attention. In addition, home improvement chains, such as Lowe's and Home Depot, were under pressure to offer lumber treated with alternative preservatives.

The EPA revisited the issue. The wood treating industry voluntarily agreed to phase out CCA for residential applications at the end of 2003, although CCA is still approved for use in commercial applications. In addition, the EPA also advised that replacing existing structures made with CCA-treated lumber is not required.

(Residential applications include fencing, decks, picnic tables, playground equipment, and other construction projects that come into regular human contact in residential areas. Commercial applications include docks in salt or brackish water, boat construction, shakes and shingles, plywood flooring, laminated beams, highway barriers, agricultural timbers and poles, and similar projects.)

The voluntary ban also involved the chemical manufacturers, who agreed to stop making and supplying CCA to companies that treat wood for residential applications and to replace it with new, 'environmentally friendly' chemicals by the start of 2004.

CCA Replacement

Chemical companies are offering several new products for treating wood. Most are still copper-based chemicals, but they do not contain arsenic. The most popular replacement is Alkaline Copper Quaternary (ACQ).

Alternative preservatives to replace CCA are supplied by the three main companies. They are:

• Osmose Inc. of Griffin, Ga. Its product, sold under the brand name Naturewood, is an ACQ formula.

• Wolmanized Wood, a division of Arch Wood Protection Inc. of Smyrna, Ga., which offers Natural Select as its enviro-friendly substitute.

• Chemical Specialties Inc. of Charlotte, N.C., which markets ACQ Preserve.

Change to New Chemicals

Not all lumber treaters hanged over to the new chemicals. Some stayed with CCA, which still has its approved commercial uses.

Those that converted to new chemicals, however, had a lot of work to do. One company that made the conversion from CCA to ACQ is Gulf Lumber of Mobile, Ala. Its experience in making the change is pretty typical.

Gulf Lumber has a large pine mill that produces dimension lumber and also has its own pressure-treating facilities on the same site. The wood designated for preserving is impregnated in one of two pressure-treating cylinders. The treatment process is controlled by a computer system originally supplied by Osmose Inc., who supplied CCA in the past and now supplies ACQ to Gulf Lumber. The changeover to ACQ was completed in December 2003.

“Our switch to ACQ involved weekend work over a three and one-half month period, so we actually had only five production days of downtime,” said Jack Few, maintenance superintendent at the mill. “We had an outside contractor completely flush out all the CCA, and many of the pipes then had to be replaced by stainless steel. You can’t have any brass or copper touching ACQ.” Residual CCA was removed and taken to a disposal site for hazardous waste.

The mill also took the opportunity to make some improvements to other equipment at the same time. Without disclosing how much the complete changeover cost, Jack said, “ Let’s just say it was very expensive.”

Since all Gulf Lumber’s treated lumber products are for residential use, the company switched over completely to the new chemicals. “You can’t have a CCA system working anywhere near an ACQ plant because of possible contamination,” Jack explained. “Not even close to the same location.” Other treatment plants in the Mobile area decided not to change and now specialize in treated wood products for approved commercial applications, he noted.

Comparing Chemicals

Are the new chemicals as good as CCA? “The ACQ formulation offers equivalent performance against biological hazards, such as decay and termite attack,” said Dr. Alan Preston, vice president of technology at Chemical Specialties Inc.

From an appearance standpoint, wood preserved with ACQ initially weathers to a natural brown color. With long-term exposure to the sun it turns gray.

Chemical Specialties pointed out that ACQ has also been widely accepted in most places around the world, including Europe, Japan, Asia, Australia and New Zealand.

“We have every reason to believe that ACQ will perform as expected,” said Jim Hale, executive director of the Wood Preservative Science Council. “We are very confident.”

“CCA still has its many uses, however, and the EPA approval of ACQ for residential applications really only came about because the market demanded it,” Jim added.

ACQ is between 15%-20% more expensive than CCA due to higher manufacturing and transportation costs, according to Jim.

ACQ-treated wood is still roughly half the cost of cedar, redwood, plastic or composite alternatives, noted Alan.

It remains to be seen which of the approximately 350 U.S. lumber treatment plants will continue to use CCA or switch to ACQ.

New Preservative Corrodes Fasteners

The use of new preservatives for pressure-treated lumber has given rise to an unexpected problem. Alkaline Copper Quaternary apparently is more corrosive to screws and other fasteners typically used in building decks and similar projects.

The problem has been encountered by contractors who have used electroplated screws and other fasteners in deck construction — the same type they used in lumber preserved with Chromated Copper Arsenate (CCA), which is now banned for residential building applications. The fasteners have been quickly corroded by ACQ.

The building industry recommends using more expensive stainless steel or hot-dipped galvanized fasteners with ACQ-treated lumber. Hot-dipped fasteners also are subject to corrosion, but not as fast as the electroplated screws.

Stanley-Bostitch came up with a solution to the problem: its new Thickcoat. The Thickcoat galvanized fastener has more than 2-1/2 times more zinc than electroplated screws. Chromate and polymer coatings are then added for extra strength.

The technology differs from the common method of hot-tip galvanization, which involves dipping a fastener in molten zinc, resulting in a porous, non-uniform zinc

coating.

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