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Dolphin Bay manufactures new-generation wood preservative

A new-generation wood preservative considered to be a 'greener' option, ammonium copper quaternary (ACQ), is now being manufactured in South Africa by Dolphin Bay under its well established Permacure brand.



Dolphin Bay MD Bertus Coetzee

As the only ACQ manufacturer in Africa, Dolphin Bay is also one of only two companies on the continent which manufacture chromated copper arsenate (CCA), one of the world's most popular wood preservatives.

"ACQ is an alternative to CCA and not a replacement for CCA," explains Dolphin Bay managing director, Bertus Coetzee. "The availability of Permacure ACQ in South Africa creates new opportunities for timber treatment companies to expand by offering a new product and broadening their markets. It shows that the South African industry is maturing by diversifying into new products. That's the sign of a healthy industry."

Alternative product

Working with the US Environmental Protection Agency (EPA), the American timber industry developed ACQ as an alternative product for consumers with concerns over the use of arsenic and chromium in CCA. The EPA, however, did not conclude that CCA-treated wood structures posed an unacceptable risk.

In line with international developments, Dolphin Bay registered its own ACQ formula with the Department of Agriculture, Forestry and Fisheries in 2011, and began local manufacturing of the product. Permacure ACQ complies with South African national standards.

CCA is made up of copper as the primary fungicide, arsenic as a secondary fungicide and an insecticide, and chromium as a fixative. ACQ also consists of copper as a fungicide, but contains a quaternary ammonium compound as an insecticide which augments the fungicidal treatment. ACQ is more

biodegradable than CCA.

Like CCA, ACQ liquid is impregnated into wood by vacuum pressure in a timber treatment plant. ACQ and CCA manufacturing costs are similar, but a higher volume of ACQ is required, making it more expensive to apply and raising the price of the treated timber.

Permacure ACQ can be used for wood in hazard classes H2 to H5, where H2 stands for low exposure to the elements and weathering, and H5 for high exposure.

Finished appearance

The finished appearance of CCA- and ACQ-treated timber is the same. CCA liquid has a brownish colour and CCA-treated timber has a greenish tint. ACQ liquid has a bluish colour but treated timber also has a greenish tint. "Customers need not be concerned that the appearance of CCA- and ACQ-treated timber will be different," says Coetzee.

Like CCA, ACQ is odourless, adds Coetzee. However, ACQ is more corrosive to metal fasteners than CCA. Galvanised metal fasteners therefore need to be used when constructing with ACQ-treated timber.

The copper in each brand functions as a bactericide and fungicide, just as in Permacure CCA, allowing the treated wood to be resistant to biological attack. The pressure impregnation of the bivalent copper into timber allows the preservative to bond to the cellulose and hemicellulose within the wood.

The quaternary ammonium salts ADBAC and DDAC act as biocides, increasing the tolerance of treated timber to copper-resistant bacteria and fungi, and also acting as an insecticide. A quaternary ammonium salt is a compound in which the number of bonds to a central nitrogen atom is four instead of three, leading to a positively charged ion (balanced by the chloride anion).

These quaternary ammonium salts also bond to cellulose in the wood, and provide an action to allow for the bonding of bivalent copper ions to the cellulose structure. The action of copper and quaternary salts results in Permacure ACQ being an effective and environmentally friendly wood preservative, says Coetzee.

Posted on 4 Aug 2014 06:35