

Copper Azole: Discoloration / Staining of Adjacent Materials

What causes discoloration of copper azole treated wood?

Discoloration and staining are related to the chemistry of the preservatives now used for many residential applications. These products have higher levels of copper than traditional CCA preservative. Natural variation in the wood surface around knots and resin streaks, or dripping of treating solution on wood surfaces after treatment are common causes of surface discoloration. Discoloration may occur on all species, although the color and appearance may vary.

Why are knots often a different color?

During the treating process, copper reacts with resins in the wood and can on occasion leave a slight blue-green residue or discoloration around knots or on surface resin streaks. This type of discoloration may be prominent immediately after treatment, however it usually fades rapidly when the wood is exposed to sunlight and weathering. After weathering there is often a granular, white residue that is the oxidized resin from the wood. This can be removed with mineral spirits or by light sanding.

When discoloration of knots or resin streaks is an issue with customers, you may want to put a discolored sample outside for several weeks and use it to demonstrate that this type of stain fades rapidly when exposed to the weather.

What can be done to minimize discoloration?

During the treating process, avoid using treating solutions that are stronger than necessary to meet retention requirements and avoid using pressure periods longer than needed to obtain conforming penetration. Wood that is of higher quality with fewer knots and resin streaks will have less discoloration and look better after treatment.

Why can there be stains on freshly treated products?

When freshly treated products are stacked on the drip pa, dark green stains may occur when preservative solution drips or runs down the sides or across the surfaces of the wood. Such staining can be avoided by using treating cycles that minimize dripping after treatment or by sloping the packs of wood and stacking them evenly at the lower end so all drips run down the ends or fall directly onto the drip pad.

How can adjacent materials become stained?

Although nearly all of the copper in the copper azole treated wood reacts and becomes insoluble, there is still a small amount of copper that is not fully reacted or that can redissolve when the wood is wetted by rain or other moisture. When copper azole treated wood becomes wet, small amounts of copper have the potential to diffuse into or creep over the surface of adjacent materials. This can result in visible stains on some light-colored materials, but will not show on similar treated wood surfaces.

What construction situations should be avoided?

Whenever a project using copper azole treated wood includes untreated wood products – such as cedar, redwood, wood-plastic composites or other synthetics such as vinyl or fiber cement products – there is potential for staining. Problems can occur in situations when the copper azole treated wood becomes wet and the other materials are either in direct contact with it or in a position where they will be exposed to runoff or dripping from the treated wood.

How can staining be prevented on non-treated decking?

When cedar, redwood, tropical hardwood, composites, plastics or similar untreated decking products are used over a copper azole deck understructure, use flashing, joist caps, or similar barriers on the tops of the joists. These products provide for separation of the deck board from the joist and prevent possible discoloration caused by diffusion of the copper into and around the edges of the decking board.

A couple of different types of products that will help to prevent movement of copper from joists into non-treated decking products are Grace Construction Products Vycor® deck protector and DeckZone™ Joistcap. The Vycor® deck protector is a 25 mil thick self-adhered, flexible flashing that is comes in 4 inch wide, 75 foot long rolls. Joistcap is a solid plastic product that comes in 4 foot lengths and is made for either single or double joists. Further information on these products can be found at:

Deckzone™ Joistcap

<http://deckzone.kabis.net/joist.asp>

Grace Vycor® Deck Protector

http://www.graceathome.com/pages/deckingprod.htm#DECK_PROTECT

How can staining from overhead structures be prevented?

When overhead structures are constructed using copper azole treated wood, they should be designed in a manner to avoid water dripping or runoff onto other materials that may be stained by residual copper. When elevated decks are constructed, this can be accomplished by use of any of the numerous under deck water collection systems designed to keep the under deck space dry. When runoff or dripping cannot be controlled, such as when there is an overhead trellis, all components under the trellis should be constructed of treated wood or from dark colored materials that will not show staining from residual copper.