

Cell Penetration Study

Study Shows Uniform Cell Wall Penetration using μ CA-C with C9

A study conducted by researchers at Oregon State University has confirmed “...uniform copper distribution across the cell walls...” for southern pine pressure-treated with a solution consisting of both dispersed copper azole (μ CA-C) and dissolved copper (C9).

A report on the study, submitted August 7, 2008, was authored by Scott Leavengood, Oregon Wood Innovation Center, and J. J. Morrell, Department of Wood Science & Engineering. It is titled, “Distribution of elemental copper in southern pine sapwood blocks as visualized using SEM/EDXA.”

The authors investigated claims that finely ground copper preservatives do not adequately penetrate cell walls. Using scanning electron microscopy

(SEM) coupled with energy dispersive x-ray analysis (EDXA), chips of treated blocks were examined for copper distribution. The investigation found that penetration was not problematic for dispersed/dissolved copper azole.

Dispersed copper azole type C (μ CA-C) consists of finely ground copper combined with a synergistic, carbon-based co-biocide composed of propiconazole and tebuconazole. C9, which is registered with EPA as a wood preservative, is a solution of dissolved copper that can be added to μ CA-C.

SEM allows for imaging of wood at higher magnification than is possible with traditional light microscopy, while the EDXA permits assessment of metal distribution.

On the left, a scanning electron micrograph of a sample cross section shows the honey-combed network of cell walls. Green spots in the adjacent EDXA map reveal copper distribution throughout the cell walls, not just along their edges. This wood sample was pressure-treated with production grind copper plus 10% dissolved copper along with the appropriate levels of propiconazole and tebuconazole.

