



Beetles and borates create lumber with an advantage for the specialty construction sector

FORESTRY INNOVATION INVESTMENT LTD.

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Uppodate
MOUNTAIN PINE BEETLE

Researchers have found that timber attacked by mountain pine beetle has some desirable attributes for the specialty construction sectors that are currently using pressure-treated lumber.

Pine species from New Zealand and the U.S. South generally have an advantage over Canadian lumber in that they contain more sapwood, making them more accepting of the preservatives that repel termites and decay in parts of North America and Asia.

Beetle attacked lumber could be competitive with pressure-treated US Southern pine and New Zealand pine species. While the cost of treated lumber in a termite-prone house adds \$3,000 US to construction costs, the use of steel would add \$9,000 US. Using non-treated lumber and doing structural repairs later costs the unlucky homeowner an average of \$15,000 US.

Researchers have found that borate treatment would help prevent decay in mountain pine beetle-killed lumber used in North American structures with a high potential for interior condensation, such as swimming pools and ice arenas.

Under a contract with Forestry Innovation Investment Ltd., Forintek Canada scientists determined that the outer sapwood of lodgepole pine attacked by mountain pine beetle is more permeable to preservatives. Moreover, the beetle seems to prefer trees that have a higher proportion of sapwood compared to the core heartwood.

Identifying blue-stained lumber for diversion to preservative treatment is not difficult, and the researchers say best results will occur with pieces that have stain on three faces at least.



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For their study, the researchers tested lengths of 2x6 lumber in two batches, one stained on three sides and one containing varying degrees of stain. The lumber was supplied by a B.C. mill at an average moisture content of 60%, and then some pieces were kiln dried down to about 12%. Wood pieces were pressure treated with disodium octaborate tetrahydrate (DOT) and with a unique accelerated process proposed for use in Canada using a borate dip-plus-kiln conditioning process. An accelerated treatment process could also reduce storage times and costs.

The batch of wood with bluestain on three faces, either pressure treated with DOT or with the dip-

There was considerable variation in some of the results depending on wood characteristics and the chemicals and processes used, though it was observed

that lumber sorted for heavily stained sapwood content resulted in about twice the uptake from pressure treatments. Pressure treatment uptakes were lower in non-dried wood than in kiln-dried wood.

Brown and blue dyes both tended to accentuate rather than mask

bluestain discolouration. Additional pigments may be useful as masking agents, but they will need to be tested first to ensure preservative uptake is not affected.



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plus-kiln process, successfully treated the interior of the wood to a level of 85% after a week's storage, making it comparable to requirements for U.S. Southern yellow pine. The dip-plus kiln method gave the most even distribution.



Forestry Innovation Investment Ltd. is a British Columbia government corporation investing in initiatives to help market BC forest products, and promote our sustainable forest practices to the world. FII's Mountain Pine Beetle Program supports government's Mountain Pine Beetle Action Plan and its objective to maximize the economic value of mountain pine beetle wood. FII does this through marketing activities and research into new products and manufacturing processes for mountain pine beetle wood.

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