Stand firm, sit pretty on MPB wood decking

By combining the desirable structural properties of lodgepole pine with the appealing aesthetics of high-grade veneers, researchers have produced a stable decking or flooring product of high value suitable for interior use.

While the lumber made from mountain pine beetle-affected trees is acceptable for North American markets, the blue stained wood has limited appeal in other markets such as Japan.

To enhance the return on beetle-killed timber, studies have suggested that value-added products be developed. Forestry Innovation Investment Ltd. initiated research to determine the dimensional stability, durability and finishing properties of a veneer overlaid decking product.

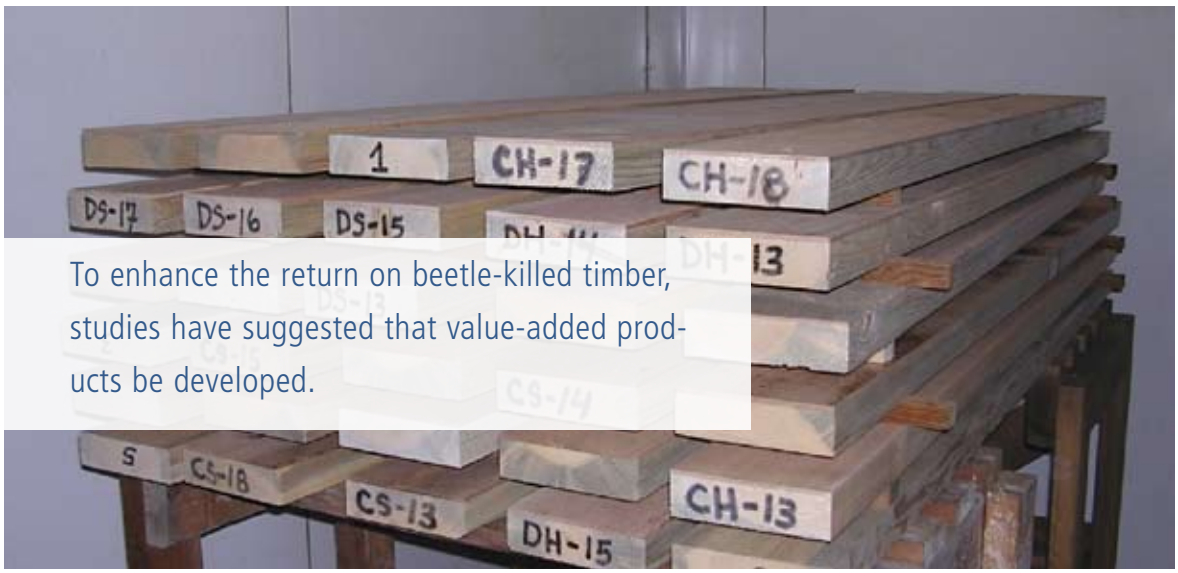
Researchers Igor Zaturecky, Doris Lougheed and Dan Henriques from Canadian Forest Products Ltd. and Frank Lam from the University of British Columbia prepared decking samples using 4 mm Douglas-fir and Western Red Cedar laminated to heavily bluestained 2x6 lumber.

PRODUCT DEVELOPMENT

To assess dimensional stability, researchers recorded initial measurements for cup, twist, bow and crook on 5 foot samples of the decking product. Samples were exposed for three weeks in three types of conditioning environments: humid, ambient and dry low humidity.

All of the decking samples exhibited very low combined average warp – the highest being 1.29 mm for Douglas-fir laminated to sapwood at ambient conditions – indicating that laminated decking is very dimensionally stable.

Durability performance of the polyvinyl acetate (PVA) glue was evaluated using three testing procedures: a one-cycle vacuum-pressure-dry method, a one-cycle boil-dry method and a one-cycle dry testing method. After testing, delamination of the



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veneer was evaluated using a 0.004-inch feeler gauge.

The decking samples laminated using PVA adhesive with Western Red Cedar veneer had a lower level of delamination than samples laminated with Douglas-fir, with average delamination of 0.5% and 3.3% respectively.

Both Western Red Cedar and Douglas-fir veneers performed well, with relatively low levels of delamination after harsh durability testing, but Western Red Cedar proved to be somewhat more durable.

Three types of finishes were selected for the finishing test: Watco's clear Danish oil, Clear Minwax satin oil-based polyurethane and Clear Minwax satin water-based polyurethane.

The final finishes were allowed to cure for 24 hours and each sample was evaluated for colour uniformity, presence of blotchiness, general attractiveness and fitness for end use.

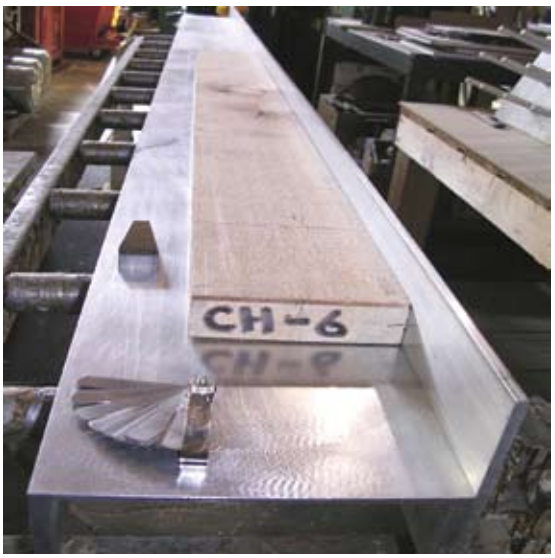
Ultimately, the intended end-use will be the deciding factor in determining what type of finish should be used on the laminated decking product.

FOR MORE INFORMATION ON THIS STUDY, GO TO WWW.BCFII.CA/MPB/ AND DOWNLOAD THE REPORT "MPB 2006-13: LAMINATED DECKING AND FLOORING PRODUCTS FROM MPB INFESTED WOOD".

For example, the satin oil-based polyurethane resulted in a finish that was smooth with a slightly higher sheen than the Danish oil or water-based polyurethane. In some applications, the slight sheen may render the finish undesirable; in others, this level of sheen is desired.

All three finishes created an attractive look for the decking product when applied according to the manufacturers' instructions. The appearance of the protective finishes applied was not affected by the surfacing of the product (either planed or sanded).

Results show that the PVA adhesive is suitable for decking products intended for interior applications. Alternative adhesives could yield higher bond durability under severe conditions. This could increase the decking product's potential to expand into exterior applications and provide an opportunity for industry to develop additional value-added products using beetle-killed wood.



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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