



Green, red and grey-stage MPB wood show true colours in tests

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M O U N T A I N P I N E B E E T L E

Studies by the University of British Columbia and Canfor Research and Development Centre provide preliminary information about the effects of beetle-infested wood on fibre characteristics and pulp quality.

An interim report on Year 2 of a research project sponsored by Forestry Innovation Investment Ltd. looks at the changes that occur in fibre as trees attacked by the mountain pine beetle pass from green to red to grey stages of age and deterioration. It's information that should help companies plan how and when to process increasing volumes of the different stages of fibre.

Several challenges facing the mills include the fact that beetle-killed timber contains bluestain in the sapwood and extensive checking due to decreased moisture content, which lowers its commercial value for use in lumber and pulp.

For the UBC-Canfor research project, about 10 kilograms each of wood chips from beetle-attacked wood in green, red and grey stages were collected from the Clear Lake sawmill near Prince George. Sampling was completed during a milling trial when six to seven truckloads of logs from each condition were run through the sawmill, with the mill cleaned out between each of the three runs.



A standard mill digester feed blend of spruce-pine-fir (SPF) wood chips was obtained from Prince George Pulp as a reference batch. Kiln-dried chips were received from Brink Forest Products in Prince George and served as a dry SPF wood chip reference.

It was found the moisture content of the beetle-killed and SPF kiln-dried wood chip samples were lower than the SPF reference, by 18% for green stage, about 40% for red and grey stages and 80% for kiln-dried.

There was no significant difference in decay of the beetle-killed wood samples relative to the SPF digester feed (plus or minus 3%). Decay in the kiln-dried wood was higher by 14%, which may be due to higher heartwood content and the presence of heartrot.

The beetle-killed and kiln-dried samples had lower amounts of the 16 mm chip fractions in comparison to the digester feed reference. Green stage was lower by 5%, red by 3%, grey by 10% and kiln-dried by 44%. The less desirable 7 mm fractions were 24% lower for green and red stages, not significantly different in grey, and 67% higher for kiln-dried.

Water re-absorption rates were highest for grey stage chips, followed by red, kiln-dried, green and SPF digester feed. This has positive implications

for improved white liquor impregnation in beetle-killed fibre.

Researchers have shown that chemical pulp becomes coarser with increasing time-since-beetle attack. Red stage chemical pulps had the longest fibre length while grey stage chemical pulps had the shortest fibre length.

Even though beetle-affected and kiln-dried wood chip chemical pulps refined easier than the reference batch, at higher refining energies, they showed poorer drainage characteristics.

In relation to chemical pulp strengths, grey stage has the highest tear at given tensile. Grey and kiln-dried show the highest tensile strength development, and burst results were generally similar among the samples.

For refiner mechanical pulp, beetle-affected pulps have lower tensile and burst and similar tear strengths. The green and grey-stage strength indices were 3% lower and red-stage strength index was 5% lower.

The Bauer McNett fibre distributions of refiner mechanical pulps indicate that there is a decreasing trend in long fibre fraction with increasing time-since-beetle attack. The grey-stage material had a significantly greater fines content than the SPF, green and red stages.

Additional sampling and testing will be needed to confirm the preliminary findings of this project.

FOR MORE RESULTS FROM THIS STUDY, GO TO WWW.BCFII.CA/MPB/ AND DOWNLOAD "MPB 2006-16 - LOG QUALITY OF MPB INFESTED WOOD IN RELATION TO LUMBER MANUFACTURE – YEAR 2 LUMBER AND FIBRE PROPERTIES."

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.

**For more information, contact
Dan Alexander, Director, MPB Program,
(604) 685 7507**

