

Fire-Retardant Treatment Variations for Flakeboard

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Several different ways of achieving fire retardancy in flakeboards were investigated: application of the fire retardant as a powder, full-cell pressure impregnation, gas injection of the chemicals, and incorporation of the fire retardant by modification of a phenolic resin. The properties considered were shear strength, IB, MOE, MOR, and HRR. The fire retardants reduced the strength of the flakeboards as measured by IB and shear. Overall higher levels of chemicals inhibited bonding. Application

methods and load-on of the fire retardants were important; full-cell was the most efficient, followed by the boron resin, gas injection, and powder. The chemicals used were based on a variety of boron and phosphorus. The two press processes used, conventional and SIP, showed almost no difference for HRR and strength. A phenolic resin, an isocyanate resin, and a phenolic boron-modified resin were used. Fire retardancy was not affected by the resin, except for the boron-modified resin, with no additional

chemicals. The isocyanate resin gave the strongest bonds. The boron resin improved the fire retardancy, but was deleterious to board strength. Some interactions between resin, press type, and the load-on level were observed,

particularly between DPF-phenolic resin-SIP, which resulted in boards with good HRR and strength. DPF was the most efficient. Timber[®] gave a slight strength improvement when combined with steam and phenolic resin.

PROCEEDINGS OF THE TWENTY-EIGHTH
WASHINGTON STATE UNIVERSITY

INTERNATIONAL PARTICLEBOARD/COMPOSITE MATERIALS SYMPOSIUM

April 12, 13, & 14, 1994

Editor

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Pullman, Washington

1994