



## Development of CLT products with improved fire performance

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Author: He, Guangbo  
 Feng, Martin  
 Roussière, Fabrice

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Abstract: The fire resistance of cross-laminated timber (CLT) could be improved by treating the lamina with fire retardants. The major issues with this technology are the reduced bondability of the treated lamina with commercial adhesives. This study assessed several surface preparation methods that could improve the bondability and bond durability of fire-retardant treated wood with two commercial adhesives. Four surface preparation methods, including moisture/heat/pressure, surface planing, surface chemical treatment, and surface plasma treatment were assessed for their impact on the bondability and bond durability of lodgepole pine lamina. The block shear test results indicated that all surface preparation methods were somewhat effective in improving bond performance of fire-retardant treated wood compared to the untreated control wood samples, depending on the types of fire retardants and wood adhesives applied in the treatment process and bonding process. The selection of surface preparation, fire retardant, and wood adhesive should be considered interactively to obtain the best bond properties and fire performance. It may be possible to effectively bond the treated lamina with PUR adhesive without any additional surface preparation for the fire retardant used in the treatment at FPInnovations.

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