

## Evaluation of Adhesion Promotion Techniques for Structural Bonded Timber Joints

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*Long-term durability of a structural adhesive joint is an important requirement, because it has to be able to support the required design loads, under service conditions, for the planned lifetime of the structure. Epoxy adhesives, whilst not ideal, are currently the best family of adhesives for in situ repair operations. As long as the bonded joint remains dry and unexposed to high service temperatures, epoxy adhesives produce strong bonds to timber. However, once they are exposed to severe stresses as a result of repeated water soaking and drying cycles, the bonded joint delaminates and does not fulfill the requirements for structural timber adhesives intended for exterior exposure. One way of improving bond durability is through the use of surface treatments prior to bonding. In this study, the effects of corona discharge surface treatment, hydroxymethylated resorcinol (HMR) and  $\gamma$ -glycidoxypropyltrimethoxysilane (GPMS) adhesion promoters on the durability enhancement of pine, iroko, and oak bonded joints were evaluated. The results proved that surface modification methods for adhesion promotion can be adapted to cellulosic substrates with significant improvements in bonded joint durability.*

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