

Enhancing the Properties of Mahang (*Macaranga spp.*) Wood through Acrylic Treatment in Combination with Crosslinker

ABSTRACT

Macaranga spp. (mahang) was treated with methyl methacrylate (MMA) in combination with a crosslinker trimethylolpropane trimethacrylate (TMPTMA). Polymerisation was carried out by catalyst heat treatment. A fairly consistent acrylic retention was found in the wood when treated with or without crosslinker. Polymerisation of MMA is at maximum with 1% crosslinker and beyond this concentration the polymerisation decreased. The dimensional stability in terms of anti-swelling efficiency (ASE) was determined and found to be improved on treatment. Water absorption was also found to be decreased considerably for treated wood. Mechanical strength of the treated wood in terms of modulus of rupture (MOR), compressive stress and hardness were improved, but the stiffness (modulus of elasticity) did not change. In terms of specific strength (strength to density ratio), the treated material is less stiffer and less strength in lateral direction compared to untreated wood. However, the specific compressive strength perpendicular to the grain and hardness of the treated material were superior compared with the untreated.

Keyword: Mahang, Methyl methacrylate, Crosslinker, Anti-swelling efficiency