

Possibility of improving the properties of Mahang wood (*Macaranga* sp.) through phenolic compreg technique

ABSTRACT

Lesser known wood species (LKS) have the potentials to become an alternative sources of timber supply for wood based industries if their properties can be improved. In this study, Mahang wood (*Macaranga* sp.) was impregnated 15% (w/v) low molecular weight phenol formaldehyde (LMWPF) followed by compressing in a hot press at 70, 60 and 50% compression ratios (CR). The treated wood was partially dried in an oven at 65°C until 10% moisture content and subsequently followed by curing at 150°C for 30 min in a hot press. The results showed that the phenolic compreg technique had successfully increased the dimensional stability and mechanical properties of the wood. The polymer retention calculated based on weight gain regardless of compression ratio was approximately 30%. The majority of the properties were improved by the degree of compression in a hot press. Nevertheless, thickness swelling and swelling coefficient increased which were due to spring back effect. As regards to specific strength (strength to density ratio), the compreg wood displayed lower strength and stiffness in lateral direction compared with untreated solid wood. However, the specific compressive strength perpendicular to grain and hardness of the compreg wood were superior than untreated solid wood. The treatment had also changed the wood into highly resistant to fungal decay.

Keyword: Compression ratio; Mahang wood; Phenol formaldehyde; *Pycnopus sanguineus*; Swelling coefficient