

Equilibrium moisture content and volumetric changes of *Gigantochloa scortechinii*

ABSTRACT

Equilibrium moisture content and volumetric changes of *Gigantochloa scortechinii*. Relative humidity (RH) is known to affect the moisture content (MC) of bamboo but to date, only the maximum shrinkages at the tangential and radial directions were commonly determined. For bamboo to be glue-laminated and used as building components, the hygroscopicity of bamboo split and strip, and its effects on the shrinkage/swelling behaviour in relative humidities between 12 and 93% were studied. The equilibrium moisture content (EMC) and dimensional changes of *Gigantochloa scortechinii* (buluh semantan) were determined with the fibre saturation point (FSP) obtained by extrapolation. Experimental EMC values obtained at various levels of RH showed little variation between bamboo split and strip. However the degree of volumetric shrinkage and swelling changes varied between the variables studied. In transverse section, the bamboo strip is relatively stable in shrinkage at lower relative humidity, although during adsorption the volumetric swelling is high. The mean FSP for *G. scortechinii* was 24.28%. This study showed that the readiness of bamboo to dimensional changes below FSP was of prime concern. By understanding the hygroscopic characteristics and behaviour of *G. scortechinii*, users would be able to understand the limitations of the material and find alternatives to prevent these changes before it could be used as building components.

Keyword: Bamboo, fibre saturation point, volumetric shrinkage and swelling