

Durability of superheated steam-treated light red meranti (*Shorea* spp.) and kedondong (*Canarium* spp.) wood against white rot fungus and Subterranean termite

ABSTRACT

In this study, the effect of superheated steam (SHS) treatment on the changes of the chemical composition and biological properties of two tropical hardwoods was investigated. SHS was carried out on light red meranti (*Shorea* spp.) and kedondong (*Canarium* spp.) wood with dimensions of 410 × 25 × 25 mm, using superheated steam as the heating medium. Wood samples were heat-treated at nine treatment levels, ranging from 172 to 228 °C and 95 to 265 min, respectively. The chemical constituents and resistance against white rot fungus (*Pycnoporus sanguineus*) and subterranean termite (*Coptotermes curvignathus*) of the treated wood were evaluated. A significant reduction in holocellulose content and increment in lignin was observed after SHS treatment. Consequently, the resistance against white rot fungus and termites improved. The biological durability improved with an increasing treatment temperature and time. A regression analysis revealed that the reduced equilibrium moisture content imparted superior biological resistance to the treated wood. Weight loss caused by the thermal degradation also served as a good indicator for fungal decay, as the loss of weight was directly proportional to the improvement in fungal resistance. However, this did not apply to termite resistance, as a very weak relationship was found between the two variables.

Keyword: Superheated steam treatment; Chemical constituents; *Pycnoporus sanguineus*; *Coptotermes curvignathus*; Mass loss