

## **Enhancing the properties of low density Hardwood *Dyera costulata* through impregnation with Phenolic Resin Admixed with Formaldehyde Scavenger.**

### **ABSTRACT**

The formaldehyde emission, properties and decay durability of *Dyera costulata* wood, impregnated with low molecular weight phenol formaldehyde (LmwPF) resin mixed with urea were investigated. The air-dry wood was impregnated with 20-40% LmwPF (Mw 600) mixed separately with urea (30% based on solid PF), partially cured at 60°C for 30 min and subsequently heated at 150°C for 60-120 min. The treatments had successfully reduced the formaldehyde emission (FE) of the impreg and the degrees of reduction depend on curing time. Statistical analyses showed that the concentration of resin affected the density, stiffness, water absorption and thickness swelling, while the curing time affected the density, polymer loading, water absorption and thickness swelling. Impreg product had higher MOR, MOE and dimensional stability compared to the untreated wood. The treatments rendered the impreg product with approximately 20% in anti-swelling efficiency and had also changed the wood into highly resistant to fungal decay.

**Keyword:** Impreg; Phenol formaldehyde; Urea; Scavenger.