

## **Treatment of oil palm wood with low-molecular weight phenol formaldehyde resin and its planing characteristics**

### **ABSTRACT**

In line with the Malaysian government calls to turn waste into wealth, oil palm wood (OPW) is establishing itself as a potential wood substitute. However, the OPW on its own has four imperfections, i.e.: low strength, low durability, poor dimensional stability, and poor machining characteristics. Previous studies have shown that the first three imperfections were able to be solved by impregnating with low molecular weight phenol formaldehyde (Lmw-PF) through modified compreg method. But, the machining behaviour of OPW remains uncovered. A planing test was carried out to evaluate the machining characteristics of the treated OPW. For comparison purpose, another set of test for the rubberwood and untreated OPW samples were also conducted. It is acknowledged that the planing quality of the treated OPW is of equal grade to that of rubberwood. In general, the planing of the treated OPW and the rubberwood fell into the Grade I (very good), compared to Grade III (average) for untreated OPW. The treatment significantly improves the machining characteristics of OPW, adding significant improvements on the physico-mechanical properties, durability, and appearance that have been proven in the previous studies, which make it can be used as a new, high-grade alternative for solid wood material.

**Keyword:** Oil palm wood; Low-molecular weight PF; Modified compreg method; Planing; High-grade material