

## **Development of a new pilot scale production of high grade oil palm plywood: Effect of pressing pressure.**

### **Abstract**

Nowadays, the use of waste materials such as, saw dust, rice husk, coconut coir, empty fruit bunch (EFB), oil palm mass and oil palm stem (OPS) as alternative material for wood-based industry in producing various commercial product have been extensively explored. Nevertheless, the used of OPS as raw material replacing hardwood species in plywood production has been in practice for the past 10. years. However, high resin consumption and low mechanical properties in OPS plywood are still the limitation. Hence, in this study we explored the potential of a new resin treatment approach using LmwPF in order to produce high grade OPS plywood. Pilot scale production of LmwPF treated OPS plywood was assessed for properties such as, thickness swelling, water absorption, hot-press pressure, bonding integrity, density, the modulus of rupture (MOR) and modulus of elasticity (MOE). LmwPF resin treatment of OPS in plywood production indicated that with this new resin treatment method, improvement of  $\geq 200\%$  in strength,  $\geq 259\%$  in stiffness, dimensional stability ( $\geq 6\%$  thickness swelling and  $\geq 36\%$  water absorption) as well as, 28% and 80% greater in dry and WBP shear, respectively as compare to the conventional method of commercial OPS plywood.

**Keyword:** Natural materials; Surface treatments; Mechanical.