

## **Properties of medium-density fibreboard (MDF) made from treated empty fruit bunch of oil palm**

### **ABSTRACT**

The objective of this study was to evaluate the physical and mechanical properties of experimental medium density fibreboard (MDF) panels manufactured from empty fruit bunch (EFB) of oil palm (*Elaeis guineensis*). Panels were made from EFB treated with boiling water, soaked in sodium hydroxide (NaOH) or their combination by using phenol formaldehyde at 8, 10 and 12% based on oven-dry weight of fibre. Mechanical and physical properties including modulus of elasticity (MOE), modulus of rupture (MOR), internal bond strength, thickness swelling and water absorption of the samples were determined according to the Malaysian Standards (MS 1787: 2005). Based on results of this work, it seems that EFB can be used as raw material to manufacture value-added MDF with acceptable properties based on the standards. Panels made from fibres treated with NaOH in 12% resin produced the highest MOR (31.4 MPa). Fibres treated with the combination of NaOH and boiling water resulted in panels with reduced bending properties. All types of treatments enhanced dimensional stability of panels. All treated EFB fibres were less sensitive when exposed to alkaline condition compared with acidic condition.

**Keyword:** Dimensional stability; EFB; Mechanical properties; Resin level