

**MECHANICAL AND PHYSICAL PROPERTIES OF WOOD  
PLASTIC COMPOSITE MADE FROM HYBRID COCONUT  
AND KENAF FIBER**

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## CANDIDATE'S DECLARATION

I declared that the work in this thesis was carried out accordance with the regulations of Universiti Teknologi Mara. It is original and is the result of my own work, unless otherwise indicate or acknowledgement as reference work. This thesis has not been submitted to any other academics institution or non-academics institution for any degree or qualification.

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## **ABSTRACT**

### **MECHANICAL AND PHYSICAL PROPERTIES OF WOOD PLASTIC COMPOSITE MADE FROM HYBRID COCONUT AND KENAF FIBER**

Composite materials are materials made from two or more constituent materials with significantly different physical or chemical properties, that when combined, produce a material with characteristics different from the individual components. While a hybrid composite refers to a special type of composite which contains more than one fibre material as reinforcing filler. The eco-friendly nature as well as the processing advantage, light weight and low cost have enhanced the attraction and interest of the natural fibre reinforced composite. Combination of both wood or fiber waste and plastic able to produce wood plastic composite. The objectives of present study are to study the effect of different filler loading on mechanical and physical properties of the wood plastic composite made from hybrid coconut and kenaf fiber. Also, the effects of lignocellulosic fiber hybridization on their physical and mechanical properties were subsequently identified. Two types of filler used were coconut and kenaf fiber which obtained around UiTM Jengka. Two types of filler loading were 30% and 50% of lignocellulosic fiber (coconut and kenaf fiber). Blending of lignocellulosic fiber and polypropylene took place in dispersion mixer for 1 hour at 180°C before hot pressed and cold pressed. Then testing on bending, tensile, water absorption, and thickness swelling were done. Result shown that there was highly significant effect of filler loadings on all mechanical properties but not significant on physical properties. For types of filler, highly significant effect was found on bending MOR, tensile MOR, and thickness swelling whereas the others are not significant. 50% filler loading shown the highest mechanical and physical properties compared to 30% while kenaf fiber perform slightly better than coconut fiber.