

UNIVERSITI TEKNOLOGI MARA

**MECHANICAL PROPERTIES OF HYBRID PLYWOOD
FROM COCONUT TRUNK AND RUBBERWOOD**

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ABSTRACT

Plywood is a panel product composed of three or more thin layers of wood that are glued together one or more veneers to perpendicular for both side of a veneer and united under high temperature and pressure. The shortage of wood as a raw material has recently become a great concern. Therefore, wood-based industries must find alternative sources of local raw materials, and coconut tree currently appears to be an alternative source for substitute. The coconut, *Cocos nucifera* L., has been proven to be a good substitute for many conventional woods. Like conventional wood, the coconut stem is durable, sturdy and versatile and can often be used at a considerably lower cost. The cost of coconut wood is only about half or a little more than half the price of conventional wood traditionally used for structural purposes. This study investigated the effects of plywood (coconut, hybrid and rubberwood) and spread level on the mechanical and water resistant properties of different types of plywood. The measured mechanical properties include tensile strength (TS), modulus of rupture (MOR) and modulus of elasticity (MOE). Water absorption and thickness swelling were tested to evaluate the water resistance properties. The plywood made from rubberwood give higher quality compare to the plywood made from hybrid coconut with plywood and plywood made from coconut. The plywood made from spread level 360 g/m² PF resin had lower qualities than the plywood made from spread level 180 g/m² PF resin. The quality of plywood was decrease as the spread level of PF increase. The results indicated that the bond between spread level 360 g/m² of PF and veneer is over to tight and becomes less bond because too much resin content. The water absorption and thickness swelling presence resulted in higher water resistance related to the mechanical properties. The plywood made from hybrid had potential as an appropriate material for plywood manufacturing.

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