

Abstract

This research aims to study and develop a composite material from palm canopy for thermal insulation panel that effect on the value added purpose of agricultural wastes by the using of palm fiber in thermal insulation panel which made from polyurethane foam that produced by an ingredient of a mix – polyurethane and azodicarbonamide as a blowing agent with a ratio of 1:1. They are studies on an effect of palm fiber's quantities that is added by percentage of weight from 5 to 25 with step increment of 5 on properties of thermal insulation panel under the standard ASTM C 208 in 6 topic; density, moisture, thermal conductivity, bending strength, tensile strength, and linear expansion. As a matter of fact that all properties of thermal insulation panel is stand within limits of the standard; a density is stand in range between 160 to 497 kilogram per cubic meter, a moisture is lower than 10%, a thermal conductivity is lower than 0.38 watt per meter – kelvin, a bending strength is more than 44.5 newton, a tensile strength is more than 1034 kilopascal, and a linear expansion is lower than 0.5%. However, a statistic test by a one – way analysis of variance between groups (one – way anova) with significant level of 0.05 reveals that palm's quantities have an effect on moisture and bending strength properties with statistical significant level of 0.05.

Keywords : composite, thermal insulation panel, polyurethane, palm fiber