

**Analisis Pengaruh Variasi Kerapatan pada Nilai Konduktivitas Termal
Wood Plastic Composite Berbahan Kayu Lamtoro (*Leucaena leucocephala*)
dan Limbah Plastik Polipropilena**

Abstrak

Telah dilakukan penelitian tentang pengaruh variasi kerapatan terhadap nilai konduktivitas termal *Wood Plastic Composite* (WPC) yang berasal dari kayu lamtoro dan limbah polipropilena (PP). PP diperoleh dari limbah plastik air mineral gelas ukuran 240 ml dan untuk partikel kayu lamtoro diayak dengan ukuran 6 mesh. Komposisi PP dan partikel kayu adalah 70:30. Pengukuran nilai konduktivitas termal dilakukan menggunakan peralatan uji konduktivitas termal (*thermal conductivity apparatus*). Berdasarkan penelitian yang telah dilakukan, nilai konduktivitas termal WPC berbahan kayu lamtoro dan limbah polipropilena dipengaruhi oleh kerapatan papan. Hasil penelitian menunjukkan bahwa konduktivitas termal untuk sampel A sebesar 0,2 W/m°C, sampel B sebesar 0,4 W/m°C, dan sampel C sebesar 0,5 W/m°C, untuk kerapatan masing-masing 0,4 g/cm³, 0,5 g/cm³, dan 0,6 g/cm³. Nilai konduktivitas termal mengalami peningkatan saat kerapatan bertambah. Berdasarkan nilai konduktivitas termal, WPC yang terbuat dari bahan PP dan kayu lamtoro dapat dikategorikan sebagai isolator.

Kata kunci: Konduktivitas Termal, *Leucaena leucocephala*, PP, *Wood Plastic Composite*

Analysis of the Density Variation on Thermal Conductivity Wood Plastic Composite Made from Lamtoro Wood (*Leucaena leucocephala*) And Polypropylene Waste

Abstract

The thermal conductivity of Wood Plastic Composite (WPC) made with lamtoro wood and polypropylene (PP) was studied by varying its density. The PP was obtained from 240 ml mineral plastic glasses, and the lamtoro wood particles were sieved in 6 mesh sizes. In this study, we considered the composition ratio between PP and wood particles to be 70:30, and the thermal conductivity was measured using a thermal conductivity apparatus. Based on the data analysis, we found that the density of WPC made with PP and lamtoro wood influenced its thermal conductivity. The results showed that the thermal conductivity of sample A is 0.2 W/m°C, sample B is 0.4 W/m°C, and sample C is 0.5 W/m°C, for the densities of 0.4 g/cm³, 0.5 g/cm³, 0.6 g/cm³, respectively. In conclusion, as the density increases, the thermal conductivity of WPC also increases. Thus, based on its thermal conductivity, the WPC made from PP and lamtoro wood is classified as an insulator.

Keywords: Thermal Conductivity, *Leucaena leucocephala*, PP, Wood Plastic Composite