

**DETERMINATION OF THERMAL AND MECHANICAL
PROPERTIES OF PARTICLEBOARDS WITH DIFFERENT SIZE OF
PARTICLE**

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ABSTRACT

The past decade has seen fast and steady growth of wood industry. The environmental awareness has generated the necessity for people to study this field to find alternative biomasses or raw materials. Particleboard is an engineered wood product that has been used widely because of the low cost and high performance. This study presents the determination of thermal properties and mechanical properties of particleboard with different size of particle. The sizes of particles are course, medium, and fine. For the thermal properties, Transient Hot Bridge was used to determine the thermal conductivity, thermal diffusivity and heat capacity of the boards. The experimental results show that size of particles has a small effect on thermal properties of particleboards. From the results, the highest thermal conductivity value was given by particle board with fine size of particle which is 0.1938 W/m.K. For the mechanical testing, the bending testing was done by using Instron testing machine. The data shows that MOR of the boards increase with the size of particles. The MOR, thickness swelling and water absorption for the large size particleboard are 9.60 Mpa, 64.79%, and 108.68%. This study proves that size of particle gives a major effect on the mechanical properties of the boards.

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