

REKAYASA

ABSTRAK

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**PEMANFAATAN LIMBAH SERBUK GERGAJI KAYU SENGON
LAUT DAN LIMBAH SERAT AREN SEBAGAI BAHAN PEMBUAT
PANEL KOMPOSIT SANDWICH UNTUK CAR BODY OTOMOTIF
DAN PERUMAHAN RAKYAT**

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**THE USE OF ALBIZZIA SAWDUST AND SUGER PALM FIBER
AS MATERIALS TO PRODUCE SANDWICH COMPOSITE PANE
FOR OTOMOTIVE CAR BODY AND HOUSING**

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ABSTRACT

This study aims to investigate the optimum design of sandwich composite reinforced sugar palm fiber (SPF) with albizzia sawdust (AS) core and investigate effect of thermal cyclic and dynamic flexural loading on mechanical properties. The SPF was alkali treated (5% NaOH) to remove lignin. The matrix used for skin composite reinforced SPF was unsaturated polyester resin (UPRs), whereas urea formaldehyde (UF) resin was used as binder of the core. The result shows that the skin composite reinforced by 4 hour of alkali treated fiber has the highest strength. By using press mold method, the optimum fiber content of the skin composite is about 30-35% (v/v). The 60% of sawdust content (w/w) results the highest mechanical properties of core. By using the optimum properties of skin and core, the sandwich composite, whose 2 mm of skin and 10 mm of core thickness, has better mechanical performance compared to that with other dimension. The sandwich composite, treated by using thermal cyclic, has lower mechanical properties compared to untreated composite. The increasing of temperature and cyclic number decreases the bending strength and impact toughness of the sandwich composite. For dynamic flexural loading test, the increasing of load cyclic number increases deflection and decreases stiffness of the sandwich composite. This composite has a good opportunity to be applied for housing and furniture panels.

Keywords: sugar palm fiber, albizzia sawdust, sandwich composite, mechanical properties