UNIVERSITI TEKNOLOGI MARA

MECHANICAL AND PHYSICAL PROPERTIES OF HYBRID OIL PALM-RUBBERWOOD ENGINEERED VENEER LUMBER (HOPREV) FOR FURNITURE COMPONENTS

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Thesis submitted in fulfillment of the requirements
for the degree of
Master of Science

Faculty of Applied Sciences

August 2011

Candidate's Declaration

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any other degree or qualification.

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ABSTRACT

The main objective of this study was to evaluate some of the mechanical and physical properties of Hybrid Oil Palm-Rubberwood Engineered Veneer Lumber (HOPREV). This study evaluated the affect of different binders (urea formaldehyde as control sample (HOPREV I) and polyethylene with fiber glass (HOPREV II)), hot press pressures (17.24 kg/cm^2 (1200psi) and 25.86 kg/cm^2 (1800psi)) and pressing times (10 and 20 minutes) on the HOPREV. In the mechanical test, bending, shear and screw withdrawal strength were determined. Thickness swelling, water absorption, delamination and density were investigated in the physical test. Based on the results tested, HOPREV II pressed at hot press pressure of 25.86 kg/cm^2 (1800psi) for 10 minutes showed the best mechanical and physical properties compared to the other test samples. Both HOPREV I and II showed improvement in mechanical and physical properties as the specific pressure increase. Mechanical and physical properties of HOPREV I also become better as pressing time was increased except for HOPREV II pressed for 10 minutes that showed better properties compared to HOPREV II pressed for 20 minutes. However, both HOPREV I and HOPREV II passed the standards BS EN 312-3: 1996, BS 5669: Part 1:1989 Section Three, BS EN 314-2:1993, BS EN 312-4: 1996 and JAS 233: 2003 for interior purposes in dry condition. HOPREV II performed better, but HOPREV I would be a better choice as it would be cheaper to produce. Therefore HOPREV I could be marketed at a more competitive price.

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TABLE OF CONTENTS