ABSTRACT

The Effect of Adhesive Content and Wood Species to the Physical and Mechanical Properties of Small Scale and Full Scale OSB Made From Two Species of Community Forest Timber

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INTRODUCTION. Nowadays, the community forest has become one of timber supplier in Indonesia. The species that usually planted in this community forest is a fast growing species which low in quality. OSB is one of composite product that can produced from low quality wood. Many research about utilization local species timber for OSB has been applied. The objective of this research is to examine and to compare the physical and mechanical properties of small scale and full scale OSB made from two (2) kind of wood species and two (2) level of adhesive content. Furthermore, the objective is also to determine the best treatment for OSB.

MATERIAL AND METHOD. The raw material used is wood strand of Acacia (Acacia mangium Willd.) and Manii (Maesopsis eminii Engl.). The amount of Methylene di-Phenil di-Isocyanate (MDI) adhesive used was 5 and 7%. Wax was added in amount of 1%. The physical (i.e density, moisture content, water absorption and thickness swelling) and mechanical (i.e Modulus of Elasticity, Modulus of Rupture, Internal Bond and Screw Holding Power) properties were evaluated. The results were also be compared with JIS A 5908 and CSA 0437.0 (Grade O-2) standards.

RESULT. The difference of wood species that used in producing OSB affecting the physical and mechanical properties of OSB. The physical properties that did not affected are density and moisture content, whereas the mechanical properties that did not affected are wet MOR perpendicular to strand orientation and screw holding power. The level of adhesive content also affecting the physical and mechanical properties of OSB. The physical properties that did not affected are density, moisture content and thickness swelling (2 hour). The mechanical properties that did not affected is dry MOR parallel to strand orientation, internal bond and screw holding power. OSB made from Manii with 7% of adhesive content is the best board, whereas OSB made from mix wood (acacia and manii) with 5% of adhesive content is the worst board. Wood species that give the best properties is acacia and the worst is mix wood. The best adhesive content is 7%. The small scale board have a better quality than a full scale board.

Key words: acacia, manii, MDI, combination of strands, OSB

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