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MECHANICAL PROPERTIES OF COMPOSITE PANEL FROM SUGARCANE BAGGASE, OIL PALM FROND AND FIBERGLASS – AN ALTERNATIVE FOR FURNITURE MATERIAL

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ABSTRACT

Readily available agriculture fibers such as sugarcane bagasse fibers and oil palm frond fibers were mixed with fiberglass to produce composite panels in the hope to study the mechanical properties (bending and tensile) in accordance to the ASTM standard. The composite panel produced from sugarcane bagasse fibers and fiberglass gave bending strength of 3934.23 MPa and 80.16 MPa for MOE and MOR respectively. The tensile strength values were 5742.25 MPa for MOE and 34.76 MPa for MOR. The bending strength values of composite panel made from oil palm frond fibers and fiberglass were 4321.27 MPa for MOE and 94.31 MPa for MOR, while the tensile strength values were 5590.45 MPa and 32.87 MPa for MOE and MOR respectively. On the other hand, composite panel produced from sugarcane bagasse fibers, oil palm frond fibers and fiberglass resulted in bending strength values of 4376.40 MPa for MOE and 99.58 MPa for MOR. Meanwhile the tensile strength values were 6023.53 MPa for MOE and 35.72 MPa for MOR. It can therefore be concluded that oil palm frond fibers when combined with fiberglass produced more flexible composite panel and thus possesses higher potential for alternative material for the furniture industry.