

**PERFORMANCE OF ADHESIVE FORMULATION USING
GLUTINOUS, SAGO AND TAPIOCA FLOUR**

ALAIN DILLON ANAK MICHAEL JOPIE

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ABSTRACT

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The performance of adhesive formulation using glutinous, sago and tapioca flour had been studied. This exploratory research was for determining the use of different types of natural adhesive towards different types of substrates. This includes the production of natural adhesive by using glutinous, sago and tapioca flour as the main raw material according to a fixed ratio of formulation. Adhesives were then carefully observed and evaluated in terms of its changes of state or any kind of obvious observation when the application of heat treatment occur. Observation adhesive condition and color upon storage for 3 weeks at room temperature was made. This shows that glutinous type of adhesive resulting in the highest degradation which released rancid odor and changed its state to aqueous. While for the lowest degradation level was sago adhesive which remained in paste form and has absent of odor. Evaluation of bonding performance of the three adhesives was done using maximum load (ML) and internal bonding (IB). In this assessment, four different types of substrates veneer, cardboard, paper and plastic were used as to determine the bonding strength of respective natural adhesives. With this, sago was the best type of adhesive among the other two types of adhesives which react effectively with amount of glue spread value, GSV (79.24g/m^2), ML (25.06N) and IB (0.04MPa). Besides that, glutinous has the lowest properties of adhesive compared to the other two types of adhesives to react with the amount of GSV (64.61g/m^2), ML (17.73N) and IB (0.03MPa). In terms of substrates, veneer has the best reaction towards the GSV (115.42g/m^2), ML (41.74N) and IB (6.48×10^{-2} MPa). While plastic have poor reaction towards GSV (20.69g/m^2), ML (11.69N) and IB (1.81×10^{-2} MPa).

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