PROPERTIES OF FINGER JOINT FROM *Acacia mangium* WOOD

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ABSTRACT

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Today, the demand of furniture is increasing from year to year (Boon and Thiruchelvam, 2011). So, the furniture manufactures has to think about using other alternative ways to continue their business due to the decreasing of raw materials (MTIB, 2012). In this study, *Acacia mangium* and finger joint are used as the subject. In this study, there are two objectives. The first objective is to determine the chemical, physical and mechanical properties of Acacia mangium according to the tree portion, specifically, the top, middle and bottom portions of the *Acacia mangium* tree. The other objective is to evaluate the effect of size dimension of finger profile and finger orientations on jointing system. The *Acacia mangium* were collected from Sabah Softwood Berhad (SSB) plantation. The material is from plantation species and harvested at the age of seven years. For the chemical properties, saw dust with sizes of 40 to 60 mesh from each tree portion were tested to determine the ash content, alcohol-toluene solubility and cold and hot water solubility. For the physical properties, each tree portion was tested to determine the basic density and moisture content. In this study, *Acacia mangium* is test for determine the mechanical properties by using two different forms; clear specimen and finger joint form. Both of this form is tested to know its Modulus of Rupture and Modulus of Elasticity. However, for the finger joint form, the different size dimensions of finger profile and random portion is used. The data is analysed with a computer program called SPSS (Statistical Package for the Social Sciences), the result shows that, the chemical properties are significantly correlated to all the *Acacia mangium* tree portions. For physical and mechanical analysis, there are no significant correlations with the tree portions. For the finger joint manufacturer, the size dimension of finger profile, it is positively correlated with the strength of finger joint. The smaller dimensional size of finger profile is stronger than the bigger one. For the finger orientations, although the vertical orientation is stronger than horizontal orientation, the correlation analysis shows there are no significant correlations to the strength of finger joint.