

**PROPERTIES OF *Acacia mangium* WOOD CEMENT
BOARD IN RELATION TO PARTICLE SIZE AND
ADDITIVES (Na_2SiO_3)**

MOHAMAD ALIF AIZAT BIN MOHD AZHAR

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Name of Candidate : **MOHAMAD ALIF AIZAT M. AZHAR**

Candidate's ID No : 2011348247

Signature of Candidate :

ABSTRACT

PROPERTIES OF *Acacia Mangium* WCB IN RELATION TO PARTICLE SIZE AND ADDITIVES ($\text{Na}_2\text{S}_i\text{O}_3$)

Particle size and additives ($\text{Na}_2\text{S}_i\text{O}_3$) had significance effect on physical and mechanical properties of WCB. One way analysis of variance (ANOVA) has been used to examine if there is any significance differences between the populations mean. The findings were revolved around the mechanical and physical properties of Wood Cement Board (WCB) from *Acacia mangium*. The two parameters that involved in this study are the particle sizes and the additives ($\text{Na}_2\text{S}_i\text{O}_3$). Particle size, additives ($\text{Na}_2\text{S}_i\text{O}_3$) and the correlation between particle size and additives ($\text{Na}_2\text{S}_i\text{O}_3$) influence on all the WCB properties. The values of physical properties for particle size effect all met the standards of MS544:2001 except for particle size 2.0mm of 0% $\text{Na}_2\text{S}_i\text{O}_3$ and 1.5% $\text{Na}_2\text{S}_i\text{O}_3$ which are WA not met the standards of MS544:2001. Effect of particle size on mechanical properties indicate fluctuation due to the decreasing of particle sizes while the effect of particle size on physical properties also show fluctuation due to the decreasing of particle sizes. Meanwhile, the effect of additives which are 3% of $\text{Na}_2\text{S}_i\text{O}_3$ tends to cause higher values of MOR (13.6MPa), MOE (5,979MPa) and IB (1.56Mpa) on the effect of mechanical properties. The effect of additives ($\text{Na}_2\text{S}_i\text{O}_3$) on physical properties, the value of WA and TS tends to decrease corresponding due to the percentage (3%) of $\text{Na}_2\text{S}_i\text{O}_3$.

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