

**PROPERTIES OF PARTICLEBOARD FROM WILD *Acacia mangium*:
EFFECT OF PARTICLE SIZE AND BOARD THICKNESS**

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TABLE OF CONTENTS

	Page
APPROVAL SHEET	
CANDIDATE'S DECLARATION	
ACKNOWLEDGEMENT	iii
TABLE OF CONTENT	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF PLATES	viii
LIST OF ABBREVIATIONS	ix
ABSTRACT	x
ABSTRAK	xi
CHAPTER 1 INTRODUCTION	
1.1 Background of the study	1
1.2 Research problem	3
1.3 Justification	4
1.4 Objectives	4
CHAPTER 2 LITERITURE REVIEW	
2.1 Malaysian particleboard industry	5
2.2 Forest plantation	7
2.2.1 Acacia mangium	8
2.3 Particleboard	10
2.3.1 Definition	10
2.3.2 Manufacturing process	11
2.3.3 Properties of particleboard	13
2.3.4 Uses of particleboard	14
2.4 Effect of particle size on properties of particleboard	15
2.5 Effect of board thickness on properties of particleboard	16

CHAPTER 3 MATERIALS AND METHODS

3.1	Field procedure	17
3.2	Experimental design	18
3.3	Material preparation	19
3.4	Particle screening	20
3.5	Oven drying	22
3.6	Particleboard manufacturing	23
3.7	Sample cutting	27
3.8	Board evaluation	28
3.9	Statistical analysis	28
3.10	Determination of Modulus of Elasticity (MOE)	29
3.11	Determination of Thickness Swelling (TS) and Water Absorption (WA)	31
3.12	Determination of Internal Bond (IB)	32

CHAPTER 4 RESULTS AND DISCUSSION

4.1	Bulk density	34
4.2	Particle analysis	34
4.3	Mechanical and physical properties of particleboard	35
4.4	Statistical significance	37
4.5	Effects of particle size	38
	4.5.1 Mechanical & physical properties	38
4.6	Effect of board thickness	41
	4.6.1 Mechanical & physical properties	41

CHAPTER 5 CONCLUSION AND RECOMMENDATION

5.1	Conclusion	44
5.2	Recommendation	45

CITED REFERENCES	46
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APPENDICES	50
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<i>CURRICULUM VITAE</i>	61
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ABSTRACT

PROPERTIES OF PARTICLEBOARD FROM WILD *Acacia mangium*: EFFECT OF PARTICLE SIZE AND BOARD THICKNESS

The purpose of this study was to determine the effect of particle size and board thickness on the mechanical properties (Modulus of Elasticity, Modulus of Rupture, and Internal Bond) and physical properties (thickness swelling and water absorption) of *Acacia mangium* particleboard. The particle sizes used were 0.5mm, 1.0mm and 2.0mm, while board thickness used were 6mm and 12mm. Each of the size was mixed with phenol formaldehyde resin with concentration 9%. The results showed that no significant effect in MOE and MOR was observed when particle size was increased. It also show, as the particle size increased, the particleboard's mechanical and physical properties increased. Meanwhile, mechanical properties (MOE and MOR) show an increment on thick board compared thin board and physical properties (WA and TS) show higher absorption of water when higher board thickness. Overall results showed that particleboard made from *Acacia mangium* for mechanical properties met the minimum Malaysian Standard requirement, but the physical properties for a board made of 2.0mm particle size at 12mm thickness exceed minimum standards. Thus, higher board thickness and large particle size gave better mechanical properties (MOE & MOR). IB strength increased by decreasing of particle size and reducing board thickness.