

**PROPERTIES OF PARTICLEBOARD (550 KG/M<sup>3</sup>) FROM  
SESENDOK (*Endospermum malaccensis*)**

**SITI HAJAR BINTI HUSSIN**

**DIPLOMA IN WOOD INDUSTRY  
UNIVERSITI TEKNOLOGI MARA  
2005**

# بِسْمِ الرَّحْمَنِ الرَّحِيمِ

Assalamualaikum warahmatullahi wabarakatuh..

First of all, we would like to thank to the Almighty ALLAH S.W.T for He Blessing and Strength rendered to us to complete our thesis about The Properties of Particleboard from *Endospermum malaccensis* species with 550 kg/m<sup>3</sup> resin 8%, 10% and 12%.

To my advisor, Mr Ahmad Fauzi Bin Othman whose willingness to contribute his knowledge, time and effort till us had completed our final projects for guiding, reading and offering comment as the project involved. We gratefully acknowledge his helpful suggestion.

Also to Mr. Shaikh Abdul Karim Yamani and Mr. Sardey where helped us when we had problem in machines uses. They also teach us how to use the machine testing and how make that testing board are properly.

To all our friends and ourselves to member especially Norjihana, and Safura, from their helped and support to completed these thesis.

To Al-Bukhari Library (UITM Pahang) for all technical services reference.

Finally, our proudest gratitude goes out to our beloved family, especially to our parents who had always support us though out our life.

## TABLE OF CONTENT

<b>ACKNOWLEDGMENT</b>	<b>II</b>
<b>LIST OF TABLE</b>	<b>V</b>
<b>LIST OF FIGURE</b>	<b>Vi</b>
<b>LIST OF PLATE</b>	<b>Vii</b>
<b>LIST OF ABBREVIATION</b>	<b>ix</b>
<b>ABSTRACT</b>	<b>X</b>
<b>ABSTRACK</b>	<b>Xi</b>
CHAPTER	
<b>1 INTRODUCTION</b>	
1.1 General description .....	1-2
1.2 Justification.....	3
1.3 Objective.....	4
<b>2 LITERATURE REVIEW</b>	
2.1 Sesendok Spp ( <i>Endospermum malaccensis</i> ).....	5
2.1.1 Ecology.....	5-6
2.1.2 Morphological properties.....	6-7
2.1.3 Chemical and anatomical properties.....	7-8
2.1.4 Uses.....	8-9
2.1.5 Prospect.....	10
2.2 Particleboard .....	10-12
2.2.1 Particleboard industry.....	12-14
2.2.2 Uses.....	14
2.3 Effect of the resin content.....	15
2.3.1 Urea Formaldehyde.....	15-17
2.3.2 Wax.....	17
<b>3 MATERIAL AND METHOD</b>	
3.1 Material preparation	
3.1.1 Wood.....	21-24
3.1.2 Hardener.....	25
3.1.3 Wax.....	26
3.2 Particle preparation.....	27
3.2.1 Debarking.....	28
3.2.2 Chipping and flaking.....	29
3.2.3 Air-Dried.....	30

3.2.4	Particle Geometry.....	31-34
3.2.5	Screening.....	35
3.2.5	Oven-Dry.....	36
3.3	Particleboard manufacturing process	
3.3.1	Glue mixing and blending.....	37-38
3.3.2	Mat forming.....	39
3.3.3	Cold press.....	40
3.3.4	Hot press.....	41
3.3.5	Cooling.....	42
3.3.6	Trimming.....	43
3.4	Testing.....	44-45
3.4.1	Mechanical Test (MOE & MOR).....	46-49
3.4.2	Physical Test (T.S & W.A).....	50-51
<b>4</b>	<b>RESULT AND DISCUSSION</b>	
4.1	Result.....	52
4.2	Discussion	
4.2.1	Mechanical test (MOE & MOR).....	53-59
4.2.2	Physical test (T.S & W. A).....	60-63
<b>5</b>	<b>CONCLUSION AND RECOMENDATION.....</b>	<b>64-66</b>
	<b>REFERENCES.....</b>	<b>67-68</b>
	<b>APPENDICES</b>	
A	Calculation for fabrication of particleboard.....	69-74
B	Material required for each resin of board.....	75-76
C	Hot press schedule.....	77
D	Calculation foe density of Sesenduk spp.....	78
E	Result of particle Geometry.....	79-81
F	Result of Mechanical and physical test.....	82-87
	<b>VITA.....</b>	<b>88</b>

**PROPERTIES OF PARTICLEBOARD (550 Kg/m<sup>3</sup>)**

**FROM (*Endospermum malaccensis*)**

**BY**

**SITI HAJAR BINTI HUSSIN**

**APRIL 2005**

**ABSTRACT**

Particleboard is one of many wood composites. Today, this panel is the most popular in furniture industry for world wide since this tremendous material replace plywood for building construction and furniture industry. The *Endospermum malaccensis* is selected to particleboard manufacturing. In this study, three percentages of Urea Formaldehyde (UF) that are 8%, 10%, and 12% will be mixed with *Endospermum malaccensis* wood particle. This mixed will be made a board that called particleboard after been cured by heat and pressure. The properties of particleboard will be determined by several type of test. The result shows that the percentages of resin used are affected the properties of the board. For the standard (EN 312-3 1996) is evaluate this particleboard. Just internal bonding test that reach the value that been specified.