

**THE STUDY OF ORIENTED STRAND BOARD (OSB) FROM LUDAI SPECIES
WITH THE DENSITY 500 KG/M³, 600 KG/M³ AND 700 KG/M³ AT 5% RESIN
CONTENT**

By

MOHD RAFIZAL BIN OMAR

**Final Project Submitted in Fulfilment of the Requirement for the
Diploma in Wood Industry, Faculty of Applied Science,
Universiti Teknologi MARA**

April 2003

ACKNOWLEDGEMENTS

I would like to express my deepest appreciation and sincere gratitude to my Advisor Mr. Wan Nazri bin Wan Abdul Rahman for his unfailing help, support and guidance throughout the study.

Sincere thanks are also due to Mr. Saimin Basir and Mr. Jalali Haji Salleh (FRIM Research Assistance) for their guidance and assistance in the interpretation and analysis of data. My appreciation is also forwarded to Dr. Rahim bin Sudin (FRIM), Wood Technology Laboratory and Wood-based Panel Products Laboratory of FRIM for the cooperation rendered that had made the study possible. Not forget, this appreciation also forwarded to Mr Anuar and Mr. Sardey (Staff DIP) for their helping during this study.

I also wish to thank all my friends who in one way or another contributed invaluable support and encouragement towards the completion of this study.

Finally, my deepest and special appreciation goes to my beloved parents for their moral and financial support throughout the years of my study. May Allah S.W.T bless us all.

TABLE OF CONTENT

CONTENTS	PAGE
APPROVAL SHEETS.....	i
DEDICATION.....	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT.....	vi
ABSTRAK.....	vii
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
LIST OF PLATES.....	x
LIST OF ABBREVIATIONS.....	xi
CHAPTER I	
1.0 INTRODUCTION.....	1
1.1 Justification.....	3
1.2 Objective	3
CHAPTER II	
2.0 LITERATURE REVIEW	4
2.1 History of OSB.....	4
2.2 Type of OSB.....	5
2.3 OSB in Industrial Applications.....	6
2.4 Loads versus Deformation of an OSB.....	8
2.5 OSB in Commercial Production.....	9
CHAPTER III	
3.0 MATERIAL AND METHOD.....	12
3.1 Treatment	12
3.2 Methodology.....	13
3.3 Raw Material Preparation.....	14
3.3.1 Felling Tree.....	14
3.3.2 Cut-to-Billet.....	15
3.3.3 Flaking.....	15

3.3.4	Drying.....	16
3.3.5	Screen.....	17
3.4	Calculation of Material Needed.....	18
3.5	Forming Section.....	19
3.5.1	Blending Process and Forming.....	19
3.5.2	Pre-Press.....	20
3.5.3	Hot-Press.....	21
3.5.4	Conditioning and Trimming.....	22
3.6	Testing.....	23
3.6.1	Bending Test.....	23
3.6.2	Water Absorption and Thickness Swelling Test.....	25

CHAPTER IV

4.0	RESULT AND DISCUSSION.....	26
4.1	Specific Gravity.....	26
4.2	Result.....	27
4.3	Bending Test Result.....	28
4.3.1	MOR.....	29
4.3.2	MOE.....	31
4.4	Thickness Swelling and Water Absorption Test.....	32
4.4.1	Thickness Swelling and Water Absorption Result ...	32
4.4.2	Thickness Swelling Test Result.....	34

CHAPTER V

5.0	CONCLUSION AND RECOMMENDATION.....	35
5.1	Conclusion.....	35
5.2	Recommendation	36

BIBLIOGRAPHY.....	37
APPENDIX.....	38
DECLARATION.....	42
VITA.....	43

ABSTRACT

PROPERTIES OF ORIENTED STRAND BOARD FROM LUDAI SPECIES WITH THE DENSITY 500 KG/M³, 600 KG/M³ AND 700 KG/M³ AT 5% RESIN

CONTENT

By

MOHD RAFIZAL BIN OMAR

APRIL 2003

Oriented strand board (OSB) is a multi-layered board made from strands of wood of predetermines shape and thickness together with a binder. The strands in the outer-layers a aligned and parallel to the board length or width, the strand in the centre layer or layers can be randomly oriented or aligned, generally at right angles to the strand of the external layers. Ludai (*Sapium baccatum*) has potentials for commercialize in OSB productions. Recovery of wood strands production has the high percentage (90.29%). It able recommended for commercial production of OSB. OSB from Ludai species is also has the high value of MOE and MOR in bending test and appropriates for many uses. OSB with 700 Kg/m³ density shows the good strength properties and has the low percentage of thickness swelling and water absorption. This new panel product is able to improve their properties and be as a substitute to other panel products such as MDF and Particle board.