# BENDING STRENGTH OF SMALL CLEAR FROM KERUING AND KEMPAS

By

# **ROYANI BINTI AMRAN**

Final Project Submitted in Partial Fulfillment for the Diploma in Wood Industry, Faculty of Applied Sciences, Universiti Teknologi MARA, Pahang

**NOVEMBER 2004** 

#### ACKNOWLEDGEMENT

First of all, I would like to express my special thanks to Allah S.W.T for His Blessing give me Healthy to finish this final project paper entitle "Bending Strength of small clear specimen from Keruing and Kempas".

I also want to express my special thanks to my supervisor, Mr. Wan Mohd Nazri Bin Wan Abdul Rahman whose willingness to contribute his knowledge, time and effort till I completed my final project paper. He also gave me guidance also references and offering comment as the project evolved.

Thanks also to other lecturer In Department Wood Industry who's helped me either direct and indirectly especially Prof. Madya Abdul Jalil Bin Ahmad and also En. Marzuki, lecturer In Department Engineering. Not forgetting to the lab assistant Mr. Sardey for his help in my testing.

Not forget to all my members from class A and class B, especially to group B members. Thank you because always support me through my study.

v

# TABLE OF CONTENTS

APPROVAL SHEETS	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
LIST OF TABLES	viii
LIST OF PLATES	ix
LIST OF FIGURES	x
ABSTRACT	xi
ABSTRAK	xii

# CHAPTER

I	INTRODUCTION	1
	1.1 Justification	2
	1.2 Objective	2
		2
11		3
	2.1 Introduction	3
	2.2 Characteristic of Kempas	3
	2.2.1 The uses of Kempas	5
	2.3 The characteristic of Keruing species	5
	2.3.1 The uses of Keruing	7
	2.4 Mechanical and Related Properties of wood	8
	2.5 Properties affecting the strength of wood	10
	2.5.1 Specific gravity	10
	2.5.2 Moisture Content	11
	2 5 3 Knot	12
	2.5.4 Slope of Grain	12
	2.5.4 Stope of Ofalli	15
ш	MATERIAL AND METHOD	14
	3.1 Introduction	14
	3.2 Methodology	15
	3.3 Take measurement for length and thickness	16
	2.4 Motheda to make the testing	17
	3.4 Methods to make the testing	17

IV	RESULT AND DISCUSSION	19
	4.1 Small clear specimen of solid wood testing	19
	4.2 Bending Test	20
	4.3 Modulus of Elastic (MOE)	20
	4.3.1 Result Modulus of Elastic (MOE)	21
	4.4 Modulus of Rupture (MOR).	23
	4.4.1 Result Modulus of Rupture (MOR)	24
V	CONCLUSION AND RECOMMENDATION	26
	5.1 Conclusion	26
	5.2 Recommendation	26
	DEFEDENCES	27

REFERENCES	
APPENDIX	28
VITA	39

### **BENDING STRENGTH PROPERTIES SMALL CLEAR SPECIMEN FOR**

### **KERUING AND KEMPAS**

By

## **ROYANI BINTI AMRAN**

OCTOBER 2004

#### ABSTRACT

It is important to study wood and its characterization in order to reach a good utilization of this material. In Malaysia, wood is one of the source of income and it is still use widely as the construction especially in the housing sector such as roof system. It is because wood easy to work, durability and attractive. Beside that, wood can absorb the load which occurred with the shock way and the wood not have rust. The Keruing and Kempas species are selected to know either this species suitable or not to make various uses. This testing on the specimen is bending strength, Modulus of Elastic (MOE) and Modulus of Rupture (MOR). This result of the specimen compared with British Standard and after compared with this standard the potential of the board will know.