

UNIVERSITI TEKNOLOGI MARA

**PROPERTIES OF WOOD PLASTIC COMPOSITES
MADE FROM SESENDOK**

MOHAMMAD BAKRI BIN ZULKIFILI

Thesis submitted in fulfillment of the requirements for the degree of

Bachelor of Science (Hons.) in Furniture Technology

Faculty of Applied Sciences

May 2011

ACKNOWLEDGEMENTS

Alhamdulillah, grateful to praise Allah S.W.T for the permission given, our final project paper under the title “Properties of Wood Plastic Composites Made from Sesendok” had been successfully submitted as planned.

I also want to express the special thanks to my advisor, MissNoorshashillawatiAzuraBt Mohammad whose willingness to contribute her knowledge, effort and time to monitor the work we do till we completed our final project paper. Along the way without her instruction order, i could not complete our paper project. From the lesson given i can be done our final project.

Thanks a lot also to other lecturers Department Wood Industry who is helped us either direct or indirectly especially Dr Wan MohdNazri Bin AbdRahman, lecturer of my project paper. Also not forget to the lab assistant MrSardey for his help in our testing and honestly give me borrowed the apparatus from Lab.

Not forget to all members. We together go through to finish our project paper for the last semester here. Thank you for all the supports, guidance and the co-operative showed. I appreciated it.

Last but not least, our proudest gratitude goes out to our beloved family, especially for our parents because gives their advice to finish our final project and thank you to my friend give their support and helped when we needed. May Allah bless you all.

TABLE OF CONTENTS

CONTENT	PAGE
APPROVAL SHEET	ii
CANDIDATE'S DECLARATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	viii
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF PLATES	xi
LIST OF ABBREVIATIONS	xii
1 INTRODUCTION	1
1.1 General	1
1.2 Problem Statement	2
1.3 Objectives	3
2 LITERATURE REVIEW	4
2.1 Sesendok	4
2.1.1 The Properties of Sesendok	5
2.1.2 Uses	6
2.2 Wood Plastic Composite Industry	6
2.3 Wood Plastic Composites	7
2.3.1 Thermoplastic	8
2.3.2 Additives	10
2.3.3 Manufactured of Wood Plastic Composite	11
2.3.4 Properties of Wood Plastic Composites	13
2.3.5 Uses	14
2.4 Factor effecting wood plastic composite properties	15

2.4.1 Particle size	15
3 MATERIALS AND METHODS	17
3.1 Source of Raw Material	17
3.2 Sawdust Preparation	17
3.3 Procedure of Wood Plastic Composites	19
3.3.1 Blending in Dispersion Mixture	20
3.3.2 Crusher	21
3.3.3 Cold and Hot Pressing	22
3.4 Cutting Board	23
3.4.1 Tensile Board	23
3.4.2 Bending Board	24
3.4.3 Impact Board	24
3.5 Testing Method	25
3.5.1 Determination of Water Absorption (WA)	25
3.5.2 Determination of Thickness Swelling (TS)	25
3.5.3 Determination of Bending Strength (MOR & MOE)	26
3.5.4 Determination of Tensile Strength (MOR & MOE)	26
3.5.5 Determination of Impact Strength	27
4 RESULTS AND DISCUSSIONS	28
4.1 Mechanical Properties	28
4.1.1 Bending Strength (MOR)	28
4.1.2 Bending Strength (MOE)	29
4.1.3 Tensile Strength (MOR)	31
4.1.4 Tensile Strength (MOE)	32
4.1.5 Impact Strength	33
4.2 Physical Properties	35
4.2.1 Thickness Swelling	35
4.2.2 Water Absorption	36

PROPERTIES OF WOOD PLASTIC COMPOSITES MADE FROM SESENDOK

ABSTRACT

This research was aimed to investigate the mechanical and physical properties of the thermoplastic composite from the sesendok species. The strength properties were tested for water absorption rates, thickness swelling, bending, and impact tests based on ASTM standards. In this study, two variables as the ratio of wood particles (10%, 30%, 50%) and size of wood particles (40 mesh, 60 mesh, 80 mesh) was performed. From the study, smaller size of wood particle and 10% of wood ratio exhibited the higher strength of wood plastic composite. From this study also, the higher filler loading, will decrease the strength of wood plastic composite.