

**REINFORCEMENT OF PLASTIC COMPOSITE  
WITH BAMBOO FIBERS**

**By**

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**A Thesis Presented in Partial Fulfillment of the Requirements for the  
Award of the Bachelor in Furniture Technology (Honours)**

**OCTOBER 1998**

## ABSTRACT

Thermoplastic composite were produced using *Gigantochloa scortechinii* fibers in combination with polypropylene at various plastic to fiber ratio (90 : 10, 70 : 30 and 50 : 50), fiber size (2.00mm and 0.35mm) and maleated anhydride polypropylene as compatibilizer. The bamboo fibers were produced using a Sprout Waldron Defibrator. The plastic was blended with the bamboo fibers in a Dispersion Mixer at 175<sup>0</sup>C. A 3% MAPP was added as compatibilizer. The blended mixture was then rolled into thin sheet and crushed in a crusher machine to produce pellets. The pellet (in measured quantity) was than placed in a chromed-plated mould and hot pressing to thermoplastic composite at 180<sup>0</sup>C. The pressed board was than cooled, trimmed and cut into test specimens before being tested according to British Standard.

From the statistical analysis, it was observed that the boards produce from 0.35mm fiber size had greater values in bending strength compared with board from 2.0mm fiber size. Whereas for tensile strength and water absorption test, board containing 0.35mm fiber had lower value than those containing 2.0mm fiber. It was also shown that MOR and MOE decreases while TEN, TMOE and WA increases insignificantly with a change in fiber size. The addition of MAPP to the board increases all the mechanical properties (except for ELONG) and improved the dimensional stability of the composite. MAPP was observed to significantly increase the TEN and TMOE, MOR and MOE increased insignificantly while WA and ELONG decreased insignificantly. Based on overall result, it is economical and preferable to add only 10% of bamboo fiber in producing thermoplastic composite using *Gigantochloa scortechinii* as filler in order to obtain the maximum desirable strength and dimensional properties.

# ACKNOWLEDGMENT

*I would like to take this opportunity to express my special thanks to Allah for his Blessing and Strength rendered to me to complete my thesis entitle **Reinforcement of Plastic Composite with Bamboo Fibers** and also to my family for their strong and continuous support. Also special thanks to Furniture Technology Department and Rubber Plastic Department in allowing me to use their facilities to complete the study.*

*I would also like to offer my special thanks to my supervisors for the project, Encik Jamaludin Kasim and Dr. Suhaimi Muhammed, for helping me at every phase of the study. To those who are so generous in lending me their helping hands and showing me the correct ways of performing my tasks, I would like to express my most sincere thanks to them. Special mention goes to Encik Roslan Ali and Encik Said Ahmad who have shown their hospitality and patience in sharing their knowledge, skills, and experience with me to complete my work.*

*I also to extend my appreciation to those who are involved either directly or indirectly in completing this project. I believe, without their helps, I would not be able to complete this task.*

# TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENT	ii
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF PLATES	viii
<b>CHAPTER 1</b>	
1.0 INTRODUCTION	1
1.1 Objectives if this project	2
<b>CHAPTER 2</b>	
2.0 LITERATURE REVIEW	3
2.1 BAMBOO	3
2.1.1 Introduction	3
2.1.2 The characteristic of Malaysian Bamboo	4
2.2 <i>Gigantochloa scortechinii</i> (Buluh Semantan)	5

2.3 Utilization of bamboo	6
2.3.1 Introduction	6
2.3.2 Types of bamboo for industrial use	7
2.3.3 Uses of bamboo (Buluh Semantan)	8
2.4 Thermoplastic composite	9
2.4.1 Introduction to the Thermoplastic Composite	9
2.4.2 The Utilization of Thermoplastic Composite	9
2.5 Thermoplastic Material Characteristics	10
2.6 The Compatibilizer	11

## **CHAPTER 3**

3.0 MATERIALS AND METHODS	12
3.1 Materials	12
3.2 Methods	12
3.2.1 Fiber preparation	13
3.2.2 Thermoplastic composite making process	16
3.2.3 Composite Evaluation	20
3.2.3.1 Flexural Strength Test	22
3.2.3.2 Tensile Strength Test	24
3.2.3.3 Water Absorption Test	26