

THERMOPLASTIC COMPOSITE FROM FLAKER WASTE

By

Nik Norhafizah Binti Daud

**Final Project Submitted in Partial Fulfillment For The Diploma In Wood Industries,
Faculty Applied Science, Universiti Teknologi MARA**

September 2003

ACKNOWLEDGEMENT.

Dengan nama Allah Yang Maha Pengasih lagi Maha Penyayang.....

Firstly, I would like to thank a lot to Almighty God because the most powerful and almighty is our own God, I can get a lot of ideas, and alternatives and the most essential thing is the healthiest. Without him, my project and this report will not able to finish successfully.

Furthermore, I would like to thank a lot of my advisor, Prof. Madya Dr. Jamaludin Kassim for being our challenger and psychology for finished this project. I can get many new experiences about this subject.

Beside that, thanks to En. Amran Syafie , Program Head of Diploma in Wood Industry, UiTM Pahang, for his guidance and cooperation given during the course of study.

I would like to express my deepest appreciation sincere gratitude o my lecturer in WTE 375 , Prof. Madya Dr. Suhaimi Mohamed for his encouragement and guidance in designing and implementing this project.Beside that, thanks for En.Sardey because helped me in laboratory.

Last but not least, thanks also to UiTM Shah Alam, Applied Science Faculty especially for En. Ismail b.Ramli (assistant laboratory of polymer) because giving information and teach me about to produced thermoplastic.

Lastly, a lot of thank to my classmates for giving there comments and criticizes for finished this project and report. For my family especially my parents because their commitment for my study. Thanks everything.

TABLE OF CONTENTS.

	PAGES
APPROVAL SHEET	i
DEDICATION	ii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	v
LIST OF FIGURE	vi
LIST OF PLATES	vii
LIST OF ABBREVIATIONS	viii
ABSTARCT	ix
ABSTRAK	x
1.0 INTRODUCTION	1-2
1.1 Problem statement	3
1.2 Objective	3
2.0 LITERATURE REVIEW	
2.1 Particle board	4
2.1.2 Waste	5
2.1.3 Waste Resources	6
2.1.4 The Wood-Based Composites Of Particle board	6
2.2 Composite	7
2.2.1 Plastic	8
2.2.2 Thermoplastic Composite	9
2.2.3 Polypropylene (PP)	10
2.2.4 Effect Coupling Agent (MAPP)	11
2.2.5 Potential of Thermoplastic Composite	12

2.3	Effect Filler Loading	13
3.0 MATERIAL AND METHODS		
3.1.1	Sawdust preparation	14
3.1.2	Blending With PP	17
3.1.3	Composite Thermoplastic Producing	20-21
3.2 Evaluation of Thermoplastic		
3.2.1	Tensile Strength Testing	24
3.2.2	Bending Strength Testing	27
3.2.3	Water Absorption and Thickness Swelling.	29
4.0 RESULTS AND DISCUSSION		
4.1	Bending Result	32-33
4.2	Tensile Result	34-36
4.3	Water Absorption and Thickness Swelling Result	37
5.0 CONCLUSION AND RECOMMENDATION		
REFERENCES		
APPENDICES		
VITA		

ABSTRACT

THERMOPLASTIC COMPOSITE FROM FLAKER WASTE

By

NIK NORHAFIZAH BINTI DAUD

SEPTEMBER 2003

In this study, particleboard flaker waste was used to produce thermoplastic composite. Tests such as bending, tensile, thickness swelling and water absorption were carried out. Filler loading of 10%, 30% and 50% was used. The result showed that 10% of flaker waste is most suitable giving high strength compared to the 30% and 50% filler loading. MAPP used as a coupling agent increases the strength of the thermoplastic. For thickness swelling and water absorption values composites with 10% filler loading showed better stability. Flaker waste was found to be suitable filler in the manufacture of thermoplastic composite using polypropylene as the matrix.