# POLYMER BLENDS (POLYPROPYLENE) FILLED RICE HUSK ASH

**MOHD NOORWADI MAT LAZIM**

**Final Year Project Report Submitted**
**in Partial Fulfillment of the Requirements for the**
**Degree of Bachelor of Science (Hons.) Polymer Technology**
**in the Faculty of Applied Sciences**
**Universiti Teknologi MARA**

**MAY 2008**

This Final Year Project Report entitled **"Polymer Blends (Polypropylene) filled rice husk ash"** was submitted by Mohd Noorwadi Mat Lazim, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Polymer Technology, in the Faculty of Applied Science, and was approved by

Prof. Madya Dr Siti Zaleha Saad
Supervisor
B. Sc.(Hons.) Polymer Technology
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Prof Madya Mohammad Kamal Haji Harun
Dean
Faculty of Applied Science
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Prof. Madya Dr Siti Zaleha Saad
Project Coordinator
B.Sc.(Hons.) Polymer Technology
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Prof. Madya Dr. Azemi Samsuri
Head of Programme
B.Sc (Hons.) Polymer Technology
Faculty of Applied Sciences
Universiti Teknologi MARA
40450 Shah Alam
Selangor

Date:_____

**ACKNOWLEGEMENT**

First at all I would like to thanks Allah SWT The Most Gracious and The most Merciful because providing me an easy way to complete my final year project. I'm gratefully acknowledging my parents, Mr Mat Lazim bin Yusoh and Mrs Zaimah binti Ahmad for their support and encouragement.

My special appreciation goes to my supervisor, Assoc. Prof Dr Siti Zaleha Saad for his advice and helpful comments through comments through out the preparation of this project. He has perpetually gives professional guidance and up dates me with the latest information and knowledge to complete this project.

My special thanks also dedicated to my elder brother, Mohd Fadhli Mat Lazim who helping me collecting rice husk ash at local rice mill in Sekinchan, Selangor without his help this project may unable to complete.

Special thanks also go to Associate Prof Dr Azemi Samsuri, Head of Polymer Program of Bachelor Sciences (Hons) of Polymer Technology and all lecturers of polymer Technology Programme. I also would like to take this opportunity to express deepest appreciation and thank to master laboratory assistance. Especially to Mr Mohd Shofi bin Khalid and Miss Nurul Hayanti binti Musa for his sincere help and assistance during testing of sample and discussion details.

To my colleagues, thanks for all the moments and joy that we had share together.

Thank You,

May Allah SWT bless us.

wassalam.

## TABLE OF CONTENT


| | | Page |
|---|---|---|
| **ACKNOWLEDGEMENTS** | | iii |
| **TABLE OF CONTENTS** | | iv |
| **LIST OF TABLES** | | vi |
| **LIST OF FIGURES** | | vii |
| **LIST OF ABBREVIATIONS** | | vii |
| **ABSTRACT** | | ix |
| **ABSTRAK** | | x |
| **CHAPTER 1 INTRODUCTION** | | 1 |
| 1.1 | Background and problem statement | 1 |
| 1.2 | Significant of study | 2 |
| 1.3 | objectives of study | 2 |
| **CHAPTER 2 LITERATURE REVIEW** | | 4 |
| 2.1 | The properties of rice husk ash (RHA) | 4 |
| 2.2 | The properties of Polypropylene (PP) | 5 |
| 2.3 | Characterization of rice husk ash | 5 |
| 2.4 | Mechanical Testing of PP/rice husk blends | 14 |
| **CHAPTER 3 METHODOLOGY** | | 16 |
| 3.1 | Materials | 16 |
| 3.2 | Methods | 16 |
| **CHAPTER 4 RESULT AND DISCUSSION** | | 18 |

## ABSTRACT

### Polymer Blends (Polypropylene) with Rice Husk Ash

This research concerned with the use of rice husk ash (RHA) as filler for polypropylene (PP) and its performance ability in PP matrix. Rice husk ash by weight (0, 5, 10 and 15%) and polypropylene were compounded in a twin screw extruder and injection moulding technique was applied in order to obtain testing specimen. It was found that tensile properties of PP/RHA blends were slightly increased upon increased filler loading meanwhile the MFI value is decreased as increased filler loading (5-15%). In addition, SEM micrograph revealed the homogeneity of RHA decreased as increased filler loading. More over, the FTIR spectroscopy, DSC and TGA technique were performed for characterization the filled specimen.