

**VARIATION OF EXTRACTIVES WITH HEIGHT LEVELS IN
RUBBERWOOD (*Hevea brasiliensis*)**

By:

FADHIL BIN ROSLAN

**Final Project Paper Submitted in Partial Fulfillment for the
Diploma in Wood Industry, Faculty of Applied Science
Universiti Teknologi MARA
Jengka, Pahang**

ACKNOWLEDGEMENT

Alhamdulillah, thanks to the Almighty ALLAH S.W.T for His Blessing and Favour towards the completion of this project.

Special thanks to my project advisor, Professor Dr. Suhaimi Bin Muhammed, for his support, guidance and advices throughout this project. I would like to thank Assoc. Professor Abdul Jalil, lecturer of WTE 375 subject, who was kind enough to share his knowledge and experiences in completing this project paper. Without them, I will be helpless from the beginning.

I would also like to express my gratitude to the wood laboratory staff, Mr. Rudaini for his precious technical help, my friends who are willing to lend their hands when I needed and most importantly, my parent for their moral and financial support.

Finally, my thank is dedicated to Malaysian Timber Industry Board for their willingness in giving me information required for the write-up of this project.

TABLE OF CONTENTS

APPROVAL SHEET	i
ACKNOWLEDGEMENT	ii
LIST OF PLATES	v
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	viii
ABSTRACT	ix
ABSTRAK	x

CHAPTER ONE

1.0 Introduction	1
-------------------------------	----------

CHAPTER TWO

2.0 Literature Review	2
2.1 CHARACTERISTICS OF RUBBERWOOD	2
2.1.1 General Characteristics	2
2.1.2 Wood Structure	2
2.1.3 Density and Morphological Properties	3
2.1.4 Chemical Composition	4
2.1.5 Mechanical Properties	4
2.1.6 Treatment	5

2.2	CHEMICAL COMPOSITION OF WOOD	6
2.2.1	Cellulose	6
2.2.2	Lignin	6
2.2.3	Hemicellulose	7
2.2.4	Extractives	8
2.2.5	Ash	8

CHAPTER THREE

3.0	Materials and Methods	9
3.1	MATERIALS PREPARATION	9
3.2	METHODOLOGY	12
3.2.1	Determination of Moisture Content	12
3.2.2	Determination of Hot Water Solubility of Wood	14
3.2.3	Determination of Alcohol Solubility of Wood	15
3.2.4	Determination of 1% NaOH Solubility of Wood	17

CHAPTER FOUR

4.0	Results and Discussion	19
-----	------------------------------	----

CHAPTER FIVE

5.0	Conclusions	21
-----	-------------------	----

REFERENCES	22
------------------	----

ABSTRACT

VARIATION OF EXTRACTIVES WITH HEIGHT LEVELS IN RUBBERWOOD (*Hevea brasiliensis*)

By

FADHIL BIN ROSLAN

NOVEMBER 2005

Hevea brasiliensis or Rubberwood was subjected to a series of solubility analysis involving alcohol-benzene, natrium hydroxide (NaOH), and hot water to estimate the percentage of extractives contained in a Rubberwood tree. Three samples were taken from three height levels; top, bottom, and DBH. This study reveals that extractive in Rubberwood was highest at the top portion and lowest at the bottom. This trend is similar for all the three type of extractives – hot water soluble, 1% NaOH soluble and alcohol-benzene soluble.