

CHEMICAL PULPING FROM KARAS (*Aquilaria malaccensis*)

By

SHAHRUL RIZAL BIN BAHARUDDIN

Final project submitted in partial fulfillment for the Diploma in Wood Industry,
Faculty of Applied Science,
Universiti Teknologi MARA, Pahang

October 2004

ACKNOWLEDGEMENT

First of all, I would to take this opportunity to express my special thanks to Allah S.W.T for his blessing to me to complete my final project without any problem during throughout the process. I would also like to thanks to my beloved parent for giving me full support in completing my program at UiTM Jengka for 3 years. They are always reminding me that knowledge is very important to survive and success in this era.

Special thanks to my partner Norline bt. Zarnudin because of her cooperation and help in completing the paper making. She is the best partner I ever had and the most understanding person for me. For my sincerely friends, thank you so much for your kindness and I will remember it.

I also wish to express my gratitude to my advisor, Mr. Amran Bin Shafie whose willingness to contribute his knowledge, time and effort till a completed my final project. His contribution is to mean for me. I would also like to thank all lecturers in Department In Wood Industry, UiTM which help me to finish this final project especially to Prof. Madya Hj. Abdul Jalil Bin Hj Ahmad fro guiding either directly or indirectly and also to DIP staff especially Mr. Sardi.

Lastly, to those who are involved either directly or indirectly in accomplished this project. This project will not finish without your support.

TABLE OF CONTENTS

TITLE	PAGE
PROJECT TITLE.....	i
APPROVAL SHEET.....	ii
DEDICATION.....	iii
ACKNOWLEDGMENT.....	iv
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
LIST OF PLATES.....	ix
ABSTRACT.....	x
ABSTRAK.....	xi

CHAPTER

I	INTRODUCTION.....	1
	1.1 Problem statement.....	3
	1.2 Objectives.....	3
II	LITERATURE REVIEW.....	4
	2.1 Karas (<i>Aquilaria malaccensis</i>).....	4
	2.1.1 Karas distribution.....	4
	2.1.2 Population status and trend.....	5
	2.1.3 Physical properties.....	6
	2.1.4 Uses.....	7
	2.2 Chemical pulping.....	9
	2.3 Kraft pulping.....	10
	2.4 Fiber source.....	11
	2.4.1 Wood.....	12
	2.5 Fiber separation.....	14
	2.6 Yield.....	15
III	MATERIAL AND METHOD.....	16
	3.1 Sampling.....	16
	3.2 Stock preparation.....	16
	3.3 Kraft cooking.....	19
	3.4 Disintegration of pulp.....	21
	3.5 Beating process.....	23
	3.6 Trial papermaking.....	25
	3.7 Actual papermaking.....	25
	3.8 Paper testing.....	28

3.8.1 Paper cutting.....	29
3.8.2 Tearing testing.....	30
3.8.3 Tensile testing.....	32
3.8.4 Bursting testing.....	34
3.8.5 Folding endurance testing.....	35
3.8.6 Freeness.....	37
IV RESULT AND DISCUSSION.....	39
4.1 Yield.....	39
4.2 Tearing resistance.....	40
4.3 Tensile strength.....	42
4.4 Bursting strength.....	43
4.5 Folding endurance.....	45
4.6 Freeness.....	46
4.7 Bulk.....	48
V CONCLUSION.....	49
REFERENCES.....	50
APPENDICES.....	51
VITA.....	58

CHEMICAL PULPING FROM KARAS (*Aquilaria malaccensis*)

BY

SHAHRUL RIZAL B. BAHARUDDIN

October 2004

ABSTRACT

Studied of *Aquilaria malaccensis* from thymelaeacea family is purpose to determine the strength properties and the suitability of paper using Kraft pulping. Beating was set up 5000 r.p.m revolution of each Active Alkali. The strength properties of paper measured using TAPPI standard. Followed the results, all the mechanical properties is decreased. Tearing strength decreased 40.37%, Tensile strength decreased 18.36%, burst index decreased 20.23%, folding endurance decreased 92.03% and freeness decreased 73.91%. The result is affected by the increasing in active alkali used.