

PLANING PROCESS OF 40 AND 8 YEARS OLD SENTANG

(Azadiractha excelsa)

NORANI ABD. KARIM

97013204

BACHELOR OF SCIENCE (HONOURS) IN FURNITURE TECHNOLOGY

INSTITUT TEKNOLOGI MARA

A THESIS PROJECT IN PARTIAL FULFILLMENT OF REQUIREMENT FOR

BACHELOR OF SCIENCE (HONOURS) IN FURNITURE TECHNOLOGY

INSTITUT TEKNOLOGI MARA

FACULTY OF APPLIED SCIENCE

INSTITUT TEKNOLOGI MARA

OCTOBER 1998

TABLE OF CONTENTS

ACKNOWLEDGMENT	I
LIST OF TABLES	II
LIST OF PLATES	III
LIST OF FIGURES	IV
LIST OF APPENDICES	V
ABSTRACT	VI

CHAPTER I

1.0	INTRODUCTION	1
1.1	Justification	1
1.2	Problem Statement	4
1.3	Objective of the study	5

CHAPTER II

2.0	LITERATURE REVIEW	6
2.1	Growth of Sentang	6
2.2	General characteristics of sentang	7
2.3	Anatomical characteristics	
2.3.1	Macroscopic characters	7
2.3.2	Microscopic characters	8
2.4	Mechanical properties of sentang	9
2.5	Working properties of sentang	10
2.6	Durability	10

2.7	Utilization and Economic Importance	10
2.8	Planing Effects	11
2.9	Machining factors and their effect on finish quality	14
2.9.1	Knife cuts per inch and effect on finish quality	14
2.9.2	Feed rate-cutterhead speed and effect on finish quality.	16
2.9.3	Planer knives and their effect on finish quality.	16
2.9.4	Wood moisture content and finish quality	17
2.9.5	The effect of depth of cut on quality of finish	18
2.9.6	Cutting angles and their influence of finish quality	19
2.9.7	Quality of finish and Specific gravity.	20

CHAPTER III

3.0	METHODOLOGY	21
3.1	Field Method	
3.1.1	8 years old Sentang.	21
3.1.2	40 years old Sentang	21
3.2	Laboratory method	
3.2.1	Moisture content test and Density test	22
3.2.2	Planing test	22
3.2.3	Equipment used for Planing test determination	23
3.3	Analysis Method	24
3.3.1	Experimental design	24
3.3.2.	Analysis of Observation of machining defects	28

ACKNOWLEDGEMENT

Alhamdulillah, I would like to express my highest gratitude to Allah S.W.T for giving me this guidance and strength in completing this thesis.

Firstly, I would like to express my deep gratitude to my advisor Mr. Said Ahmad and Mr. Roslan Ali for willingness to spend the time and share the ideas to make the projects more survival. Thanks for the cooperation's, comments and ideas.

I also would like to thank my advisor, Mr. Mohd.Tamizi b. Mustafa and staff of FRIM for the cooperation's, criticism, constructive comments and ideas. Before proceeding, I would like to forward my sincere appreciation to the Course Tutor B.Sc. (Hon.) in Furniture Technology, Dr.Suhaimi Muhammad, lecturers and my entire friend.

Thank you very much for your courageous and supports.

ABSTRACT

Planing is one part of the machining properties. It's refers to the peripheral milling of wood to smooth one or more surfaces of the work piece and at time bring the work piece to some predetermined dimension in thickness, width or profile pattern. Normally this operation is carried out with the grain direction and feed direction arranged in such a way that the knives cut parallel to the grain in up – milling orientation. Objective of the study are; to compare the planing properties and 2 ages of Sentang, to determine the planing character geometry on Sentang and to study the effect of various defects such as Chipped grain, Fuzzy grain and Woolly grain are influent on finishing. In this study the material used are 8 and 40 years old of Sentang (*Azadirachta excelsa*) which is a Light Hardwoods derived from family of Meliaceae. 8 years old samples come from Felda Kampung Kerayong, Kuala Selangor and 40 years old samples came from FRIM Plantations (Bukit Lagong Forest Reserve Selangor). This study is regarding to the moisture content, density, cutting angle, pitch of knife marks, depth of cut and age of samples. Planing test was determined by using the Six heads high speed moulding machine. The results was determined by observation which is used the suitable apparatus. ANOVA (Analysis of variance procedure) are the statistical method to analyze on planing test results. From the results and discussions, show that 40 years old samples had a highest ratio of Chipped, fuzzy and woolly grain defects compared to 8 years old samples. The ratio of chipped grain defects was only reduced when the cutting angle and pitch of knife marks were reduced. The ratio of fuzzy defect more prone on the test samples compared to another two types of machining defects. Sample condition is also influent the results, where the 40 years old samples had more knots, pin holes and the fraction of the work piece. To ensure that results more practical a few recommedation