FINISHING PROPERTIES OF PLYWOOD USING SHELLAC

WAN MOHAMMAD FARID BIN WAN ABDUL MANAF

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

JANUARY 2013

ABSTRACT

FINISHING PROPERTIES OF PLYWOOD USING SHELLAC

Finishing is the final process in furniture manufacturing. It is an important process that evaluates the value of the furniture product and protects wood surfaces. Often, shellac is the most popular finishing material due to its economical price and function in giving the desired appearance and providing a cleanable surface. Plywood is the most popular material that is used in wood industry that includes furniture making, wall paneling, and flooring. The purpose of this study is to determine the finishing properties of plywood using shellac with different finishing method and different number of coating layer. Surface roughness test, hardness test, adhesion test and the household chemical test were used to determine the strength of the shellac coating into plywood. Spray finishing method has given an excellent result for the surface roughness and coating hardness. Meanwhile, brush finishing method has given an excellent result of the coating adhesion and resistance to household chemicals. However, the numbers of layer coating has either affects on coating adhesion and the household test by using brush has no effects on surface roughness.

TABLE OF CONTENTS

Page

ACKNOWLEDMENTS	*	iii
TABLE OF CONTENTS		iv
LIST OF TABLE		vi
LIST OF FIGURES		vii
LIST OF PLATES		viii
LIST OF ABBREVIATIONS		ix
ABSTRACT		х
ABSTRAK		xi

CHAPTER 1 INTRODUCTION

1.1	Background of the study	1
1.2	Significance of study	2
1.3	Problem statements	4
1.4	Justifications	4
1.5	Limitations of the study	5
1.6	Objectives of study	6

CHAPTER 2 LITERATURE REVIEW

2.1	Plywood	7
	2.1.1 Introduction to Plywood	7
	2.1.2 History of Plywood	8
	2.1.3 Characteristics of Plywood	9
	2.1.4 Types of Plywood	11
2.2	Finishing	12
	2.2.1 Introduction to Finishing	12
	2.2.2 Type of Wood Finishing	14
2.3	Shellac	21
	2.3.1 Introduction to Shellac	21
	2.3.2 Production of Shellac	22
	2.3.3 Colors and Availability of Shellac	23
	2.3.4 History of Shellac	24
	2.3.5 Properties of Shellac	24

CHAPTER 3 METHODOLOGY

26
28
38
30
30
31
32
33
36

CHAPTER 4 RESULTS AND DISCUSSION

4.1	Finishing Properties od Plywood Using Different Shellac Application	47
	and Coating Layer on Finishing Properties	
4.2	Surface Roughness Test	50
4.3	Hardness Test	54
4.4	Cross Hatch Test	57
4.5	Household Test	60

CHAPTER 5 CONCLUSION AND RECOMMENDATION	
REFERENCES	88

APPENDICES	71
CURRICULUM VITAE	83

LIST OF FIGURES

Figure	Caption	Page
2.1	Evaporative finishes	17
2.2	Reactive finishes	19
2.3	Coalescing finishes	21
2.4	Some of the many different colors of shellac	22
3.1	Experimental Design of the Study	28
4.1	Surface roughness of plywood by using different finishing method	51
4.2	Surface roughness of plywood by applying different coating layer	53
4.3	Hardness test of plywood by using different finishing method	55
4.4	Hardness test of plywood by using different coating layer	56
4.5	Classification of coating adhesion using different finishing method	58
4.6	Classification of coating adhesion using different coating layer	60
4.7	Household chemical effect using different finishing method	62
4.8	Household chemical effect using different coating layer	63

•