

TABLE OF CONTENTS

CHAPTER 1	GENERAL INTRODUCTION	1
1	Introduction	1
1.1	Wood protection	1
1.2	Wood modification	2
1.2.1	DMDHEU	3
1.2.2	Silanes	5
1.2.3	Water glass	6
1.3	Infestation of wood by fungi	7
1.3.1	Wood degrading fungi	8
1.3.2	Protection mechanisms of modified wood against decay fungi	9
1.3.3	Staining fungi	10
1.4	Discoloration of wood surfaces by photodegradation	11
1.4.1	Photodegradation of outside exposed wood	12
1.5	Objectives	12
1.6	References	15
CHAPTER 2	MOISTURE PROPERTIES	23
	Sorption behaviours of modified wood	23
2	Introduction	23
3	Material and methods	25
3.1	Treatment of wood	25
3.2	Determination of WPG	26
3.3	Determination of EMC	26
4	Results and discussion	27
5	References	35
	Moisture conditions on the surface of outside weathered modified wood	37
6	Introduction	37
7	Material and Methods	38
7.1	Treatment of wood	38
7.2	Calibration of the electric measurement system	39

7.3	Data logger and electrodes	40
7.4	Outside exposure	41
8	Results and Discussion	42
8.1	Calibration of the measurement system	42
8.2	Outside exposure	44
9	References	52
CHAPTER 3 Publications		55
10	Overview	55
11	Laboratory tests of the performance of DMDHEU, siloxane and water glass modified wood against blue stain fungi	56
12	Effects of Water glass and DMDHEU treatment on the colonisation of wood by Aureobasidium pullulans	69
13	Weathering characteristics of wood treated with water glass, siloxane or DMDHEU	83
14	Fungal colonization of outside weathered modified wood	103
CHAPTER 4 GENERAL DISCUSSION AND CONCLUSION		117
15	General Discussion and Conclusions	117
15.1	General	117
15.2	DMDHEU	118
15.3	Water glass	121
15.4	Siloxane	123
16	Conclusions	124
17	References	126
CHAPTER 5 LIST OF PUBLICATIONS		129
CURRICULUM VITAE - LEBENSLAUF		131