

**CONDUCTIVE HEAT TRANSFER FOR GLAZED ROOFING MATERIAL AT  
DIFFERENT PITCH ANGLE IN MALAYSIA**

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**Final Year Project Report Submitted in  
Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science (Hons.) Physics  
in the Faculty of Applied Sciences  
Universiti Teknologi MARA**

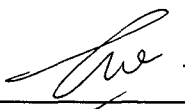
**JULY 2009**

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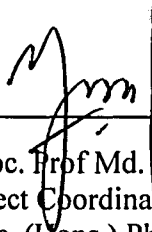
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## ACKNOWLEDGEMENT

In the name of Allah, The Most Merciful and The Most Gracious. I am very grateful to Allah for giving me the strength and determination to accomplish my final year project “Conductive Heat Transfer for Glazed Roofing Material at Different Pitch Angle in Tropical Climate of Malaysia”.

First, I would like to thank all individual that involved in my project directly or indirectly. I am taking this opportunity to thank those who have helped me especially my supervisor Dr Nor Zaini for her guidance and support during the experimental phase. Not forgotten, my co-supervisor, Miss Nurul Nazuha who has helped and encouraged to complete this project successfully.

Last but not least, I would like to thank all my associate members, Freda Morris, Hafizah Halim, Norzita Jaafar and also my project’s partner Nur Amira for giving me cooperation, and continuous moral support. Finally, thank you to Universiti Teknologi MARA for giving me the opportunity to do such a challenging project.

Noor Najia Lodz

## TABLE OF CONTENTS

	<b>Page</b>
<b>ACKNOWLEDGEMENT</b>	<b>iii</b>
<b>TABLE OF CONTENTS</b>	<b>iv</b>
<b>LIST OF TABLES</b>	<b>vi</b>
<b>LIST OF FIGURES</b>	<b>vii</b>
<b>LIST OF EQUATIONS</b>	<b>ix</b>
<b>LIST OF ABBREVIATIONS</b>	<b>x</b>
<b>ABSTRACT</b>	<b>xi</b>
<b>ABSTRAK</b>	<b>xii</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
<b>CHAPTER 2 LITERATURE REVIEW</b>	<b>3</b>
2.1 Climate	3
2.1.1 World Climate	3
2.1.2 Climate of Malaysia	4
2.2 Heat Transfer	7
2.3 Thermophysical Properties	10
2.4 Temperature Sensor	13
2.4.1 Types of Temperature Sensor	13
2.4.2 Types and Specification of Thermocouples	13
2.5 Roofing Material	15
2.5.1 Opaque Roofing Material	15
a) Types of Opaque Roofing Material	15
2.5.2 Glazed Material	16
a) Types of Glazing Material	18
b) Properties of Glazing Material	22
2.6 Previous Study	23
<b>CHAPTER 3 METHODOLOGY</b>	<b>29</b>
3.1 Sample	29
3.2 Equipments	30

## ABSTRACT

### CONDUCTIVE HEAT TRANSFER FOR GLAZED ROOFING MATERIAL AT DIFFERENT ANGLE IN MALAYSIA

This is an empirical study on conductive heat transfer. The objectives are to measure surface temperature for roof angle of  $0^\circ$ ,  $25^\circ$  and  $45^\circ$ , to calculate the conductive heat transfer at different angle of slope and to evaluate the relation for conductive heat transfer of glazed building between surfaces. Data were obtained via field experiment done in the campus of UiTM Shah Alam. In the experiment, two types of glazed roofing materials were used, one is a commercially available polycarbonate and the other one is a newly developed polyfilled. The sample materials were assembled at three pitch angles of  $0^\circ$ ,  $25^\circ$  and  $45^\circ$ . Data were simultaneously collected for three pitch angles for material 1 and it was then repeated for material 2. Temperatures of the upper and lower surfaces of the sample materials were measured using thermocouple type T and logged on a data logger DT80. Data were recorded at an interval of ten minutes for duration of three days. The conductive heat transfer was calculated using Fourier's Law. The conductive heat transfer for material 1 are 469.39W, 439.92W, and 350.18W for pitch angle of  $0^\circ$ ,  $25^\circ$  and  $45^\circ$  respectively that for material 2 are 5.22W, 4.41W, and 4.45W for  $0^\circ$ ,  $25^\circ$  and  $45^\circ$  respectively. The conductive heat flux for material 1 are  $1303.86\text{W/m}^2$ ,  $1222.0\text{W/m}^2$ , and  $972.72\text{W/m}^2$  for pitch angle of  $0^\circ$ ,  $25^\circ$  and  $45^\circ$  respectively that for material 2 are  $0.899\text{W/m}^2$ ,  $0.76\text{W/m}^2$ , and  $0.77\text{W/m}^2$  for  $0^\circ$ ,  $25^\circ$  and  $45^\circ$  respectively. It is concluded that higher roof pitch angles gives better heat transfer for polycarbonate material whereas lower roof pitch angles gives better heat transfer for polyfilled materials.