

**INVESTIGATION ON HARDNESS AND IMPACT PROPERTIES OF
DIFFERENT TYPE OF COMMERCIAL BRAKE PADS**


**NOR AZLINA ADNAN
(2006131633)**

A thesis submitted in partial fulfillment of the requirements for the award of
Bachelor Engineering Mechanical (Hons.)

**Faculty of Mechanical Engineering
Universiti Teknologi MARA (UiTM)**

MAY 2010

"I declared that this thesis is the result of my own work except the ideas and summaries which we have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

Signed: 
Date: 21.5.2010

Nor Azlina Adnan

UiTM No: 2006131633

ACKNOWLEDGEMENT

In the name of Allah, the most significant and merciful. I would like to gratitude to my honourable supervisor, Mr Zulkifli Bin Mohamed for the helps, guidance, advices and supports in making this project success.

I also like to acknowledge Mr. Mohd Tolha, Fabrication workshop attendant and his assistant Mr. Azerif, Mr. Rahimi, Material Science Laboratory attendant, Mr. Azrol, XRD laboratory attendant, Mr. Zafir, from the Applied Science Faculty and other people who have helped and gave full cooperation to me in order to finished my study.

Finally, I would like to extend my sincere and heartiest thank to each individual especially to my team mate Ruzanna Inani Zaharim, who has given assistance in terms of materials, efforts and ideas, directly or indirectly. I am also grateful to my family and colleagues for their support and understanding during the preparation of this project.

Thank you.

ABSTRACT

In spite of tremendous progress that has been made in the discipline of material science and engineering within the past few year, there still remain technological challenges, including the development of even more sophisticated and specialized materials in friction material or known as brake pad material. These materials have been used due to its desirable mechanical properties and in the mean time with economical consideration. For these reason the mechanical properties maybe considered the most important of all physical and chemical properties of friction material for most application. This project is about the investigation of the mechanical properties after subjected to the hardness and impact test. The main objectives of this study are to study the impact and hardness test on commercial brake pad and also determine the mechanical properties of the brake pad. All the samples used are the commercial brake pad available in market. The compounds of the samples were determined by using X-ray Diffractrometer. The hardenability of the commercial brake pad was investigated by using Rockwell test according to MS 474. While the Dynatub machine are used to get the data for the impact test.

Keywords: Commercial brake pad , Hardness test, Impact test, MS 474.

TABLE OF CONTENTS

CONTENTS	PAGE
PAGE TITLE	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
TABLE OF CONTENTS	iv
LIST OF FIGURES	vi
LIST OF TABLES	viii
CHAPTER I INTRODUCTION	
1.1 Overview on Brake Pad	1
1.2 Problem Statement	2
1.3 Significant Study	2
1.4 Objectives	3
CHAPTER II LITERATURE REVIEW	
2.1 Previous Reserch's	4
2.2 Automotive Brake Pad	6
2.3 Brake Pad Material and Functionality	7
2.4 History of Brake Material	8
2.4.1 Composition of Friction Material and their roles	10
2.5 Hardness Resistance	12
2.6 Impact Resistance	13
2.7 Type of Impact Test	17