



WEAR ANALYSIS OF PISTON RING

MUHAMMAD RIDZUWAN BIN TUKIMIN

(98416925)

ZAIDI HAFIZI BIN ZAKARIA

(98511351)

NAZLI BIN MAHMOOD

(98476331)

**DIPLOMA IN ENGINEERING (MECHANICAL)
UNIVERSITI TEKNOLOGI MARA (UiTM)
APRIL 2002**

ACKNOWLEDGEMENT

We would like to express our sincere gratitude and appreciation to our supervisor En. Muhammad Hussain Ismail for his continue support, generous guidance, help, patience and encouragement in the duration of the thesis preparation until its completion.

We also would like to thank to the laboratory assistant En. Hayub for his kindness for helping and showing us how to use the equipment with properly and make sure our job goes smoothly.

Special thanks to faculty of mechanical engineering because giving information and co-operation to us in order to finish our final project.

And lastly special thanks to our course tutor Prof. Madya En. Zambri for motjvation and support to our group.

ABSTRACT

These projects were carrying out because we want to know the materials that were use to make a piston ring. In this project we also will know the type and the effect that happen to piston rings. From this project also, we will learn from metallurgical aspect how the microstructure and hardness changes when heat are applied to the materials.

After doing this project, we know that metallurgy and automotives are relevant to each other. This is because, all the materials that we want to use, we have to analyzed the microstructure for the suitable one or the part of the automotives did not have the characteristic of situation.

TABLE OF CONTENTS

CONTENTS	PAGE
PAGE TITLE	i
ACKNOWLEDGEMENT	ii
ABSTRACT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii

CHAPTER 1 INTRODUCTION

1.1 Background Of Project	1
1.2 Objective Of Project	3
1.3 Scope Of Project	4
1.4 Project Outline	4

CHAPTER 2 LITERATURE STUDY

2.1	Introduction	5
2.2	Automotive Piston Ring	5
2.2.1	Compression Ring	6
2.2.2	Compression Ring Operation	7
2.2.3	Compression Ring Design	9
2.2.4	Compression Ring Width	11
2.2.5	Compression Ring Tension	12
2.3	Piston Ring Material	12
2.3.1	Piston Ring For Two Stroke Engine	13
2.3.2	Ring Face Coating	14
2.4	Wear And Friction	16
2.4.1	Friction Between Surface	17
2.4.2	Friction As A Force	17
2.4.3	Ring Friction And Leakage	18
2.5	Piston Ring Classification	18
2.6	Suggestion For Proper Engine Break-In	19
2.7	Defects On Piston Ring	22

CHAPTER 3 METHODOLOGY

3.1	Introduction	26
3.2	Dimension Measurement	27
3.3	Data Specimen	28
3.4	Hardness Measurement	28
3.5	Microstructure Observation	30