



**TO STUDY THE EFFECT OF VARIABLE LOADING ON FATIGUE
PROPERTIES OF HEAT TREATED ALUMINIUM ALLOY (6063 T5)**

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ABSTRACT

The study of the behaviour of materials is quite important now days, it important especially for designer to make decision when selecting the material suitable to be used in their product. To study the materials, researcher must know the properties of the materials in term of yield strength, hardness, toughness and also the effect of the strengthen works. It also further testing must to be done such as hardness test, microstructure study, and the fracture of the failures.

A study on the effect of heat treatment to the fatigue behaviour of aluminium alloy (6063 T5) was conducted. The results showed some differences in behaviour of aluminium alloy especially under cyclic loading. Results were explained in term of microstructures and hardness. These results are shown in term of micrograph of fracture surfaces, hardness and S-N curves. The load levels do give some effect on the fatigue properties of aluminium alloy (6063 T5) especially after heat treatment.

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CHAPTER I

OVERVIEW OF THE FINAL PROJECT

1.1 Introduction

This project is the study on the effect of variable load of an aluminum alloy, 6063 – T5. It also covers the strengthening of alloy by heat treatment, microstructure study, hardness test and fatigue test using Wholer Machine where a rotating cantilever specimen is used.

1.2 Objectives of Project

The objectives of the project are:

- a) To study the effect of variable load on fatigue behavior of aluminum alloy.
- b) The role of heat treatment on fatigue behaviour.
- c) Fatigue failure under variable loading.
- d) To study the hardness of the material and the microstructure under heat treatment.