CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

This chapter explains the materials used and the test methods followed in the conducting of various experimental investigations. At the beginning, the collection of Palm Oil Fuel Ash and its preparation are presented in detail. Following, the other materials such as cement are presented. Then this is followed by the preparations of control concrete and other POFA concrete. The test procedures for evaluating properties are also presented. It is important to mention that the methodologies followed in the current research are based on fully experimental investigations.
3.2 EXPERIMENT PROGRAM

The experiment process flow for an effectiveness of the mechanical properties and performed by using palm oil fuel ash (POFA) reinforced concrete is outlines in Figure 3.1.

![Experiment Process Flow Diagram](image_url)

Figure 3.1: Experimental Flow Process
3.3 MATERIALS SELECTION

In this research, the raw material that has been used in this current study is as follows:

a) Cement
b) Fine aggregate
c) Course aggregate
d) Palm oil fuel ash (POFA)
e) Water
f) Limestone

3.3.1 Cement

Generally, cement can be described as a fine mineral powder manufactured with very precise processes. The powder transforms into a paste that binds and hardens when cements is mixed in water. In this study, the cement that was used is Ordinary Portland Cement (OPC). OPC is the basic ingredient of concrete, mortar and most non-specialty grout. Portland cement gets its strength from chemical reactions between the cement and water. It is commonly used in the construction materials when there are no requirement for the other special cement is needed. The cement used exceeds the quality requirements specified in the MS 552: Part 1: 1989 specifications for OPC. The typical compound compositions of OPC are shown in Table 3.1 below.