CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The experiments and test discussed the materials used in this research. Material used for concrete such as sand, aggregate, water, cement and one of research material which is eggshells. Test is carried out in laboratory which is slump test, compressive test and flexural test.

3.2 MATERIALS

Based on the aim of the study is to identify the use of eggshell as partial replacement in concrete, the main material used for the experiments was eggshells (chicken eggshell) and the composition of concrete include Composite Portland Cement, fine aggregate, coarse aggregate and water. Eggshell will be replaced with sand in the concrete production. Sand will be used as the fine aggregate.
3.2.1 Eggshell

Figure 3.1:  Chicken Eggshell

Figure 3.1 shown the eggshells were used for this research. Eggshell was use as sand replacement in concrete G30 mixtures. As eggshell is one of the food industry wastes, it can be obtained from the restaurant or any food plant before it is disposed. In this research, chicken eggshells will be collect from the food industry waste. The eggshells also obtained from Eggtech factories which are export the egg to international country lines. After collected the eggshells, the eggshells were cleaned by water in order to remove the egg stick on the eggshells. Then, it allowed drying under the sunlight for 3days.
3.2.2 Composite Portland Cement

Figure 3.2: YTL Portland Cement

Figure 3.2 shown YTL Portland cement which is used in this research. YTL Portland composite cement will used as part of the concrete G30. The YTL Portland composite cement is quality assured by the SIRIM certification of BS EN 197-1:2000 CEM II/B-M cement as shown in Figure 3.2. Portland composite cement is generally used in construction industry because it can produced high early strength.