

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Concretes are a widely used construction and building material around the world. High quality concrete that meets specification requires a new standard of process control and materials optimization. Overly dependent on river sand as fine aggregates plus with cement and hard aggregates to produce concrete in construction industry has lead the effort of reuse waste foamed concrete material in concrete production as alternative to partial sand replacement. This is also can approach to avoid the rejected foamed concrete end up as waste products. In Malaysia, the average amount of municipal solid waste generated was approximately 1.2 kg/day in 2000 (Agamuthu, 2001). The sources and quantities of municipal solid waste vary among local authorities in Malaysia depending on the township size and level of economic standards. The amount generated may range from 45 tonnes/day of municipal solid waste (MSW) in Kluang, which is a small town in a southern part of Peninsular Malaysia, to 3000 tonnes/day in Kuala Lumpur (Agamuthu et al., 2004).

For thousands of years, sand has been used in the construction of buildings. Today, the demand for sand continues to increase and lead to sand mining which is a practice that used to extract sand. Mining landscapes covered more than a half million hectares worldwide in 1990 (Young, 1992), and are responsible for more sediment production than paved road construction, house construction, and agriculture, which, in combination, produce more sediment than natural processes (Hooke, 1994). Excessive sand mining can make destruction of natural habitat, land degradation due to inadequate rehabilitation after closure and create sediment runoff from mining sites. Mining-related removal of vegetation and surface sediments, blasting, creation of stock piles and gangue, and increasing slopes make landscapes more vulnerable to failures, erosion,

floods, subsidence, and other geomorphic hazards and have been the subject of a number of studies (Mossa, 2013). Water quality impacts are caused by sand mining and dredging activities, reducing water quality for downstream users.

Recycling or use of solid waste generated from most agricultural and manufacturing industries is very profitable. The anxiety about enormous waste production, resource preservation, and material cost has focused attention for the reuse of solid waste. Material recovery from the conversion of agricultural wastes and industrial wastes into useful materials has not only environmental gains, but may also preserve natural resources. It is desirable that a study on the use of various types of solid waste effective has received greater attention in the last few decades.

The concept of sustainable development finds its place not only in various types of human activity, but also in different forms of social organization such as the city whose development relies on upon ecological and normal circumstances. Urbanisation has become a major issue in the sustainable development debate, mainly because of the problems concerning the intelligent planning and development (McCormick et al 2013). Therefore, for environmental protection and sustainable development, a research has to be done on production of concrete from rejected foamed concrete. Using rejected foamed concrete or solid waste from construction as a partial sand replacement can preserve the environment and also reduce the sand dredging that give negative impact to our environment. This document is a template created to ease the thesis writing process.

1.2 PROBLEM STATEMENT

Sand mining caused bad effect to the environment. Overly dependence on river sand as construction material resulted in river channel degradation and erosion, head cutting, increased turbidity, stream bank erosion and sedimentation of riffle areas. Besides, there is already a shortage of natural source material for production of the conventional concrete. The numerous rejected foamed concrete have effect ecological response to environmental. It is essential for construction companies to reduce waste in order to minimise environmental damage and conserve natural resources. Therefore, concerning the environment as a result of sand dredging has lead researcher to approach rejected foamed concrete as partial sand replacement in production of concrete hence will produce a green concrete production.

1.3 OBJECTIVE

This study is conducted to achieve the following objective:

- i) To determine the workability of concrete containing rejected foamed concrete as partial sand replacement in concrete.
- ii) To investigate the effect of rejected foamed concrete as partial sand replacement on compressive strength of concrete.
- iii) To investigate the effect of rejected foamed concrete as partial sand replacement on flexural strength of concrete.