

**THE STUDY OF EARLY STRENGTH DEVELOPMENT OF
FOAMED CONCRETE**

NURUL IZZA BT HUSSIN

**B. Eng (Hons) (Civil)
UNIVERSITI TEKNOLOGI MARA
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FOAMED CONCRETE**

By

NURUL IZZA BT HUSSIN

Report is submitted as
the requirement for the degree of
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DECLARATION

I, Nurul Izza binti Hussin, 2003358962, confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

(.....)

Nurul Izza binti Hussin
1st December, 2006

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ABSTRACT

Foamed concrete is the latest technology in construction industries in Malaysia. Normal concrete used cement, aggregate, sand and water as materials in order to produce concrete. As for the foamed concrete, it uses same materials except replace aggregate with foaming agent which consists of synthetics and protein based. Foamed concrete has low density which is approximately $400 \text{ kg/m}^3 - 1800 \text{ kg/m}^3$. Although the weight is small, it is a highly workable, self-leveling, self-compacting and good thermal insulation. It gives benefit to the construction industries as an alternative method for replacing aggregate in concrete in order to prevent from using aggregates continuously that may decrease the volume of natural aggregates besides producing better quality of the concrete. The objectives of this project is to determine the early strength for foamed concrete of density $1200 \text{ kg/m}^3 - 1400 \text{ kg/m}^3$ and to conduct the study on the effect to the early strength of foamed concrete added with admixtures which is Glenium C380 and Calcium Nitrate. The scope of this project is to focus on compressive strength at early age of concrete and the effect of admixtures. There are 5 different types of cement-sand ratio; 1:1, 1:2, 1:3, 2:1 and 3:1 with density between $1200 \text{ kg/m}^3 - 1400 \text{ kg/m}^3$. All work was carried out at heavy laboratory by using cube mould $100 \times 100 \times 100 \text{ mm}$. All data for the compressive strength were recorded at age 1, 7 and 28 days. Based on the results, the strength of foamed concrete with 3:1 mix proportion is the highest compressive strength meanwhile 1:3 mix proportions is the lowest one. Whilst, foamed concrete added with admixtures (Glenium C380 and Calcium Nitrate) give highest values for the compressive strength compared to the normal foamed concrete. However, among these admixtures, Glenium C380 gives highest values compared to the Calcium Nitrate.