A Study of Compressive Strength of Concrete for Replacement of Fine Aggregate by Polystyrene

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ABSTRACT

The title of this project is 'A study of compressive strength of concrete for replacement of fine aggregate by polystyrene'. The objective of this project is objective to investigate the effect of polystyrene grain used as a partial substitution of fine aggregate. To accommodate this objective, 7 different types of concrete mixture proportions were made. The first one is the normal concrete mixture without the addition of polystyrene. While the other 6 types of mixture were made with the additional 2%, 5%, 10%, 15%, 20% and 25% polystyrene. The concrete mixture then cast in a standard 150mm x 150mm x 150mm cube mould, and each of the specimens will undergo a compressive strength test and density measurement at the age of 7th , 14th ,21th and 28th days.

Polystyrene is made from petroleum, a non-sustainable, non-renewable, heavily polluting and fast-disappearing commodity. The environmental impacts of polystyrene production in the categories of energy consumption, greenhouse gas effect, and total environmental effect ranks second highest, behind aluminium. In 2012, some 135 tonnes of polystyrene waste were disposed of at Malaysia landfills every day. So this project using of waste polystyrene is to reduce the amount of pollution.

This project is attributed as a subject for the undergraduate students to complete their Diploma in Civil Engineering (DCEI) program. The main objective of doing this final project is to let students know how to handle a project in a proper way and proportional skills and knowledge that learnt throughout the DCEI program. Student should conduct, plan and schedule a project with the knowledge that learned during the program. Besides that, students have to solve problems independently and learn how to communicate with others rather than occurrence a dispute among each other.