

Study of Fly Ash as a Partial Replacement of Cement in Concrete

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ABSTRACT

For a variety of reasons, the concrete construction industry is not sustainable. First, it consumes huge quantities of virgin materials. Second, the principal binder in concrete is portland cement, the production of which is a major contributor to greenhouse gas emissions that are implicated in global warming and climate change. Third, many concrete structures suffer from lack of durability which has an adverse effect on the resource productivity of the industry. Because fly ash concrete addresses all three sustainability issues, its adoption will enable the concrete construction industry to become more sustainable.

To study the effect of partial replacement of cement by fly ash, laboratory studies was done and tests conducted on concrete that was incorporated with varying percentage of fly ash. These percentages were 0%-40% in the interval of every 10%. The concrete samples were cured for a period of 7days, 14days, 21days, 28days and 56 days. Three main tests were conducted namely:- compression test, flexural test and slump test. Based on the results of the tests, graphs were drawn and analyzed.