

EXPERIMENTAL ANALYSIS ON EFFECTIVE UTILIZATION OF INDUSTRIAL WASTE MATERIALS OF EGG SHELL, GGBS AND SAW DUST ASH

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ABSTRACT

The aim of the work is to study the suitability of egg-shell powder, Ground Granulated Blast Furnace slag and sawdust ash as a partial replacement of cement. The chemical compositions of these Industrial wastes taken under study are almost similar to that of Ordinary Portland cement. In this experimental work, egg shell plays a major role, as it is used in all the combination of the concrete cubes. The industrial wastes are grounded to the fineness of cement, and the properties of cement such as initial setting time, final setting time, fineness test, soundness of cement, water absorption, etc. are conducted on the replaced sample. The tests revealed encouraging results for the study. The sample of blended cement consists of 20% of egg shell powder, 50% of GGBS and 10% of Sawdust ash. The proportion of the mineral admixtures is applied in testing cubes for their compressive strength. The compression test is conducted for finding the strength of the concrete in 7 days and 28 days strength. Using the results from the compression test, the optimum percentage of the mineral admixtures is finalized and it is used for casting beam specimens. The beams are cured normally for 28 days in normal potable water, and tested for their flexural strength. Usage of these industrial wastes reduces the production of cement, which in-turn reduces the environmental pollution.

KEYWORDS: Egg Shell Powder, Industrial Waste, GGBS, Sawdust Ash, Cementitious Material