

Literature Review: Experimental Study on the Properties of sustainable concrete

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Abstract: Concrete is today the largest consumable material in the world that utilizes the natural resources such as sand, crushed stone and water. Due to the depletion of these natural resources for concreting, research is being carried out nowadays to reduce the consumption of these resources. In our project, we tend to utilize egg shell and rice husk by partially replacing it in concrete. The egg shell is equally replaced for fine aggregate in percentages of 5%, 7.5%, 10%, 12.5% and 15% during the manufacture of concrete. The concrete is cast in cubes and cylinders and it is tested for compressive strength to find the optimum percentage of their replacement.

The suitability of rice husk as an alternative to sand in concrete production was studied here. Rice husk is an agricultural waste obtained from the rice. For this, various properties of concrete mainly workability, bulk density, water absorption, compressive strength and flexural strength were experimentally determined with the partial replacement of sand by rice husk at 0, 10, 20, 30, 40 and 50 percent respectively. M20 grade of concrete was prepared at 0.60 water cement ratio considering weight batching. The experimental results showed that the workability of the concrete increased with the increase in percent replacement of sand by rice husk. Similarly, the water absorption also increased while the bulk density, compressive strength and flexural strength of the samples decreased with the increasing amount of rice husk content in the mixtures. The research suggested that up to 10 percent replacement of sand by rice husk, the concrete so produced could be used for building compressive and flexural members of the structure.

Keywords: concrete – rice husk – egg shell –compressive strength

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