

AN EXPERIMENTAL INVESTIGATION OF ECO-FRIENDLY CONCRETE USING RICE HUSK ASH & EGG SHELL PARTIALLY REPLACEMENT WITH CEMENT & FINE AGGREGATE

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Abstract

Concrete has been accepted for its long-lasting and dependable nature. In addition to durability and dependability, concrete also has superior energy performance, is flexible in design, affordable, and relatively environmentally friendly. It is being expected that concrete will be need to increase industrialization and urbanization. Concrete can also be produced in ways that are environmentally friendly and architecturally moldable in esthetically pleasing forms. Unfortunately, India is not self-sufficient in the production of cement; the main ingredient of concrete and the demand for exceeds the supply which makes the construction activities very costlier. Hence the entire construction industry is in search of an effective the waste product that would considerably minimize the use of cements and ultimately reduces the construction cost. Therefore, studies have been carried out on the uses of Rise Husk Ash and Egg Shell partially replaced in place cement & fine aggregate. This project aimed to determine the level of rice husk ash & eggshell replacement resulting in optimal compressive strength test. Where concrete specimen tested at 7, 14 and 28 days. OPC and F.A was replaced with R.H.A & E.S by weight at 0%, 5%, 10%, and 15%.

Keywords: Concrete; Rise Husk Ash, Egg Shell powder. Replacement

INTRODUCTION

Concrete is the most widely used material on earth after water. Many aspects of our daily life depend directly or indirectly on concrete. Concrete is prepared by mixing various constituents like cement, water, aggregate, etc. In rice mill during the milling of paddy near about 78% of weight is received as rice, broken rice and bran. The rest 22 % of the weight of paddy is received as husk. This husk is also used as fuel in the rice mills for the boilers for processing paddy and also used in a small power plant for producing energy. Rice husk Contains about 75 % organic volatile matter which burns up and the balance 25 % of the weight of this husk is converted into ash during the firing process, which is known as rice husk ash (RHA). This RHA is a great environment threat causing damage to the land and the surrounding area in which it is dumped. Lots of ways are being thought of for disposing it by making commercial use of this RHA. It is estimated that roughly 90 million tons of hen egg are generated throughout the world every year. In India 77.7 billion eggs are produced in the year 2010-2011. Tamil Nadu having share of around 20 %, is ranked second with almost 2,000 core eggs created in the state every year. The next in the list of prominent egg producing states in India comprise Maharashtra, Haryana, Punjab and West Bengal. Eggshell is generally thrown away as a waste. The egg shell also creates some allergies when kept for a longer time in garbage. Disposal is a problem. It creates undesirable smell which can cause irritation. Rice husk and eggshell partially replacement in cement and fine aggregate at 5%, 10% & 15% replacement grade of M20.

REVIEW OF LITERATURE

Ashif M. Qureshi et al., [2010] (1) An Experimental investigation to check the effect of Egg shell powder and Rice husk ash on property of concrete in this paper investigate entire construction industry is in search of an effective the waste product that would considerably minimize the use of cements and ultimately reduces the construction cost. The use of waste -products is an environmental friendly, method of disposal of large quantities of materials that would otherwise pollute land, water and air. In this investigation we use some cementing materials like Rice husk ash (RHA) and Egg shell powder (ESP) as a replacement of cement and found that the strength parameters of concrete (Compressive and Flexural) at different replacement levels at 7, 14 and 28 days of curing for M-25 grade is greater as compare to control concrete.

Ashif M et al., [2015] Innovative use of Rice Husk Ash Fly Ash and Egg Shell Powder in Concrete (5) Throughout the world, concrete is being widely used for the construction of most of the buildings, bridges etc. Hence, it has been properly labeled as the backbone to the infrastructure development of a nation. Currently, our country is taking major initiatives to improve and develop its infrastructure by constructing express highways, power projects and industrial structures to emerge as a major economic power and it has been estimated that the infrastructure segment in our country is expected to see investments to the tune of Rs.4356 billion by the year 2009. To meet out this rapid infrastructure development a huge quantity of concrete is required.