

Replacing Of Coarse Aggregate And Cement By Coconut Shells And Flyash In Concrete

DHANAVATH RANGA

M.Tech Student, Dept of Civil, Priyadarshini
Institute of Technology and Management,
Pulladigunta, Guntur, A.P, India

SK.SUBHANI

Assistant Professor, Dept of Civil, Priyadarshini
Institute of Technology and Management,
Pulladigunta, Guntur, A.P, India

Abstract: In this work we will discuss about the replacement of coarse aggregate and cement with coconut shells and fly ash in this project, we know that the strength of both coarse aggregate and cement mixture now we will check the concrete, then we will add the coconut shells and the 15% fly ash and prepare the concrete. We will use this mixture to make cubes, columns and beams, and we will check the strength of the concrete for 7 days, 14 days and 28 days, and then we will use it to prepare concrete blocks and others. With these elements we obtain similar results and the cost will also be reduced. Concrete is the number one widely used base material on the planet today. The enthusiasm for creating a lightweight material has been the subject of a study tested by both researchers and specialists. Testing in creating lightweight concrete reduces density while maintaining quality and without negatively impacting cost. Combining new aggregates with a general mixing scheme is a typical way to reduce the thickness of concrete.

Keywords: Coconut Shell; Fly Ash; Compressive Strength; Split Tensile Strength; Flexural Strength;

INTRODUCTION:

Concrete is a synthetic compound, consisting of stabilizers, for example, cement and water. Today, due to advances in foundations in both home and home countries, the use of cement has expanded at a faster rate [1]. The cost of development materials systematically increases due to the popularity and scarcity of raw materials. The increased interest in concrete is causing a depletion of aggregate reserves, environmental corruption and natural imbalance. Leading analysts have examined the use of coconut husk and backups in the improvement of ancillary buildings. Coconut husk is a highly accessible agricultural residue from neighbouring coconut trading companies, so its transportation is a major problem for the surrounding environment. In this way, these dispersants can be used as alternative materials as part of development work. This will reduce the cost of development materials and pay attention to the issue of waste transportation. The impact resistance, moisture knot and water absorption limit of coconut shells are in contrast to ordinary aggregate. Thickening of coconut shells inside as possible for lightweight aggregates and increasingly improving the strength properties of coconut shell aggregate similar to other traditional lightweight concrete, so that lightweight concrete can be adjusted using coconut shell as coarse aggregate [2]. This optional lightweight material accommodates non-load-bearing partitions and non-core floors in the building.

RELATED STUDY:

In this they emphasized that the aggregates give volume easily, including 66% to 78% of concrete. The usual coarse aggregate in rocks and fine

aggregate is sand in the cement to be used as a control. While the normal material is coconut shell, the coarse aggregate will be tested to replace the aggregate in concrete. In this study, three different cement mixes with a different mix of ordinary material in particular 10%, 20%, and 30%. Three examples arranged all cement mixes [3]. The quality of replacing coconut shells and studying the characteristics of the vehicle with coconut shells as an alternative to coarse aggregates. They hypothesized that by expanding the coconut shell rate; they reduced the density of the concrete and with C.S% and expanded the 7-day catch quality in addition to a 28-day cure quality comparison. Coconut shell can be used as a complete substitute for crushed granite or regular aggregate in cement development. Coconut shell was found to indicate 65% compression quality compared to normal concrete. A prior CS test is not required to use aggregates, except for water absorption. The coconut shell exhibits more confrontation along with crushing. This is an evaluation of C.S. As a total, of course, in the cement block, the compression quality of the cement decreases with the rate of C.S. In two proportions the mixture. In one case, the concrete obtained from CCS showed a higher compression quality than the palm kernel veneer. Likewise, the results also showed that the cost of concrete was reduced by 30-40% for concrete created from CS and what is more, palm kernel veneer individually [4]. (Coconut husk makes more sense) when used as a substitute for regular aggregate to generate concrete.

METHODOLOGY AND MATERIALS:

If a lightweight concrete core could be built from coconut shells and it was locally open in wealth, it

would be a progressive feat for nearby development projects. Therefore, the main objective of this exploration is to select the potential to use coconut shells from strong tailings as coarse aggregate for additional lightweight concrete. Study the properties of coconut shells, the similarity of coconut shells to cement and create a total coconut shell with a pressure quality greater than 20 N / mm² Study the properties of the quality of cement in the substitution of aggregates thick. Study the characteristics of cement quality when replacing coarse aggregate and replacing fly ash with concrete [5]. Study the concept of tensile strength by compression and division. Finding an effective solution for high cost development materials. To plan lightweight concrete using coconut shell as an aggregate, of course.

EXPERIMENTAL ANALYSIS:

Various samples were poured according to the mix design calculated in the previous chapter and various tests were performed. Specimens for concrete M20, M25 and M25 were cast with fly ash (20% fixed replaced by cement by weight). In these samples coconut shell was added in different proportions, that is, 10% and 20% as coarse aggregate by weight. They were kept in a pre-treatment tank for 7 days and 28 days. The results were obtained when the cubes were tested to determine their strength properties in CTM and UTM.

Specimen No. 1: M20 +Coconut shell

Below is a graph showing the result of M20 concrete with different coconut shell ratios [6]. Three samples were poured and processed for 7 days and 28 days. The following diagram shows the flexural strength properties of M20 concrete with 10% coconut shell (CS) and 20% coconut shell (CS). 7 days and 28 days for normal M20 concrete are 5.4 MPa and 5.9 MPa, respectively. Likewise, the resistance of 7 days and 28 days for M20 concrete with 10% coconut shell (CS) is 6 MPa and 6.3 MPa. Also, 7 days and 28 days for M20 concrete with 20% coconut shell (CS) is 6.2 MPa and 6.4 MPa. Here we note that flexural strength increases with increasing percentage of coconut shell for M20 concrete.

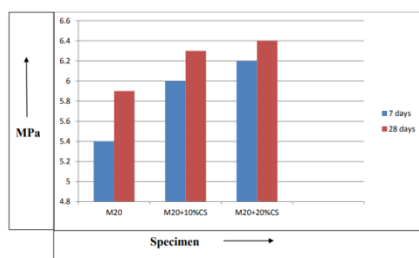


Fig. 4.1 Flexural strength of M20 with coconut shell for 7 days & 28 days

CONCLUSION:

We replace the coarse aggregate with the coconut shell for the weight and the fly ash with cement. Samples were cast by replacing 10%, 20% coarse aggregate with coconut shells with M20, M25 concrete and 20% fixed fly ash with 10%, 20% coconut shell on M25 concrete. The tests were performed on cast specimens after 7 days and 28 days as established by the IS code. Flexibility and compressive strength tests were performed and the results were obtained, and a specific gravity test was performed and the results were obtained. The coconut shell has better workability due to the smooth surface on one side of the shells and due to the smaller size of the coconut shells. Therefore, we can use coconut shell concrete in concrete where high workability is desired. From the above results we can see that in a CSC where 10% of the coarse aggregate is replaced, it shows similar properties to the nominal mix and 20% has been replaced by the CSC and the fly ash shows properties similar to the lightweight concrete that can be used. As a filler in framed structures. The result of this test showed that the dispersion of the coconut shell and the fly ash in the concrete was perfect. In the case of coconut shell, the flexural strength of the fly ash and the compressive strength decrease.

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