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International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

An Assessment of Suitability of Single Used Plastic in a Concrete for Improving Flexural Strength

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ABSTRACT

This paper investigates the effects of addition of normal plastic on flexural properties of fiber reinforced concrete. The properties include flexural strengths. The paper deals with the effects of adding normal plastic proportions on the properties of strength concrete (M25). An experimental program is being carried out to find out the effect of different curing conditions on flexural strength. The main objective of the investigation program is to study the influence of normal plastic composites by materials. Normal plastic concrete was graded and tested for flexural strength at 7 and 28 days. Repeat the same mix using three different water cement ratios to see its effect on flexural strength. Also plot increasing/decreasing flexural strength by adding normal plastic.

Keywords: - *Normal Plastic, M25 Concrete Beam, Flexural Strength, Reinforced Concrete\.*

1. INTRODUCTION

Concrete is world's most widely used construction material. Due to its low tensile and flexural strength and a low flexural strain limit it results in the development of microcracks in it. So in order reduce this effects Normal Plastic can be used. In many of the cases this cracking is so significant that it may lead to failure of the structure. The deterioration of such structures is of great concern since the repairing and rehabilitation of these structures are time consuming and costly. By adding normal plastic into the concrete, the plastic shrinkage cracks of concrete at the early age reduced and it can also reduce the surface bleeding and settlement of aggregate of fresh concrete, which can prevent the formation of settling cracks.

In this study various mixtures of of normal plastic volume fractions of 1%, 5%, 10%, was used for concrete mixes. Each series consists of beam as per IS standard. A series of tests were carried out to find out the flexural strength at the age of 28 days. At the age of 28 days each mixture were tested and analysed in order to find out the best efficient mixture in favourite of strength characteristics of concrete mix. Normal plastic are easily available anywhere.

1.1 OBJECTIVES

- To compute the effect on flexural strength of concrete due to normal plastic by varying it's percentage.
- Study the mix design aspects of normal plastic.
- Perform laboratory tests that are related to flexural and tensile by use of normal plastic in the concrete pour.

1.2 Problem Statement

- Concrete production is responsible for significant energy consumption.
- CO2 production.
- It is necessary to look for new solutions in which components are replaced by other materials, preferably recycled.

- A positive way is to use normal plastic, in order to determine the effect of a significant content on the properties of concrete.

2. LITERATURE SURVEY:

- Strenght and behavior of concrete contains waste plastic, Manhal A Jibrael,Farah Peter,Journal of ecosystem and ecography, Strength and Behavior of Concrete Contains Waste Plastic. Almost 126 samples of concrete are prepared, the concrete Strength (compressive, splitting tensile and flexural strength) are investigated along a time interval of 7 to 28 days using 1%, 3% and 5% from fine aggregate recycled waste plastic. It is found that when waste plastic bottles increased from zero to 5% of the sand in the mix, the compressive, tensile and flexural strength of concrete decreased by the ratios of 12. 1% respectively at 7 days age and also these concrete strength decrease by the ratios 7.
- Use and assessment of “e-plastics” as recycled aggregates in cement mortar, Use and assessment of “e-plastics” as recycled aggregates in cement mortar, Journal of hazardous materials science direct vol.379, Use and evaluation of "electronic plastics" as recycled aggregates in cement mortar. Acrylonitrile-butadiene-styrene, the most common polymer in WEEE, is used as an aggregate in cement weathering. The main properties of the formed samples (elastic modulus, density, porosity and water absorption) were investigated. 5% and 10%) samples showed an increase in CS up to 15.
- Utilization of waste plastic in concrete, Chrysanthi Makri a, John N. Hahladakis b, Evangelos Gidarakos. International research journal of engineering and technology,Use and evaluation of "electronic plastics" as recycled aggregates in cement mortar. Acrylonitrile-butadiene-styrene, the most common polymer in WEEE, is used as an aggregate in cement weathering. The main properties of the formed samples (elastic modulus, density, porosity and water absorption) were investigated. 5% and 10%) samples showed an increase in CS up to 15.
- A review on plastic waste as sustainable resource in civil engineering application, T O Ogundairo 1, D O Olukanni1, I I Akinwumi1 and D Adegoke, IOP conference series materials science and engineering, The use of plastic, waste for construction applications in the engineering industry holds a high Researchers generally are interested in discovering materials that can cut the budget of construction stabilization additives, and other construction resources obtained from plastic waste was examined.The examination demonstrated that the engineering properties of the construction materials improved.construction materials made from plastic waste.
- Assessment of the Flexural Strength of No Fines Recycled Aggregate Concrete Prisms, Ishan Ali Rahu, Bashir Ahmad Menon, Abdul Raqeeb Memon, Mahboob Oad, Engineering, Technology & Applied Science Research Journal, The flexural strength of no-fines recycled aggregate concrete decreases with increasing replacement level of coarse aggregates. Central point deflection increases with increasing replacement level of coarse aggregates. The 20% replacement specimens, cured for 28 days, had maximum residual strength. All recorded deflections for both 7- and 28-day cured samples were less than the allowable deflection for simply supported beams as per ACI-318. All prisms failed in flexure mode at the center.
- An experimental study and sustainability assessment of plastic waste as a binding material for producing economical cement-less paver blocks, Karma Tempa a, Nimesh Chettri a, Gautam Thapa b, Phurba a, Cheki Gyeltshen c, Dawa Norbu a, Dikshika Gurung a, Ugyen Wangchuk d, Engineering Science and Technology, an International Journal, All mixed and HDPE PW samples shows compressive strength equivalent to M20 and M30 concrete respectively with lower values for PP/PS. The cost of construction using P40 to P70 per square meter for cement-less paver block resulted 29.39 to 32.15% lower than the conventional concrete paver blocks respectively. Cement-less paver blocks ranked third sustainability score, indicating environmental performance better than concrete blocks and burnt clay bricks.

3. Methodology:

3.1 Material selection:

- Cement:-

The cement used is Pozzolana Portland Cement (PPC). gravity 3.11. The initial and final setting time of cement is 69 min and 195 min.

- Amount:-

Fine artificial sand is used as fine aggregate. material The particles are said to be of the size retained in the I.S sieve (4.75mm). coarse aggregate. The size of the coarse aggregate depends on the nature of the work. Rude The aggregate used in this test was crushed to a size of 20 mm angle Aggregates are free of dust before use in concrete.

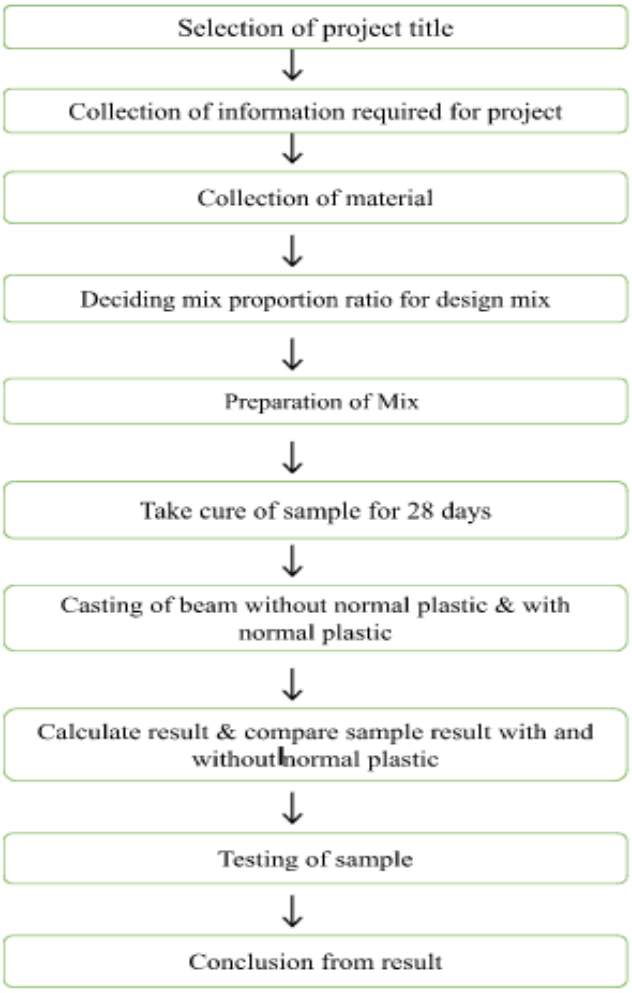

Fig 1. System Architecture

Once we are ready to eat, we will proceed with the following:

1. Collection:-

We go through the process of measuring different concrete material. This includes cement, course aggregate (bluestone, etc.), sand and water This process is known as melting.

2. Mixture:-

In the mixing process, the selected ingredients are thoroughly mixed comparison is required. It is done until the resulting concrete paste is a uniform consistency and color.

3. Treatment:-

Then we keep the concrete at a certain optimum moisture level The time period depends on the atmospheric conditions. This is necessary complete the hydration process of concrete resulting in high quality and long-term concrete work, then enter the water tank for healing purposes.

4. CONCLUSIONS

This paper investigates the effects of addition of normal plastic on flexural properties of fiber reinforced concrete. Normal plastic concrete was graded and tested for flexural strength at 7 and 28 days. Due to its low tensile and flexural strength and a low flexural strain limit it results in the development of microcracks in it. So in order reduce this effects Normal Plastic can be used. Each series consists of beam as per IS standard. A series of tests were carried out

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