



EXPERIMENTAL INVESTIGATION ON WASTE FOUNDRY SAND WITH RECRONFIBRE IN REINFORCED CEMENT CONCRETE

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ABSTRACT

The consumption of natural resources in construction has increased from decades, which is the result of high cost. , construction industries have already identified alternatives like manufactured sand, robo sand, rock dust etc. Another alternative to this can be use of waste material in concrete to overcome the use of natural resources use of waste material like foundry sand in concrete could be make possible to achieve the low cost construction. This paper is based on the Experimental investigation on waste foundry sand with recron fibre in Reinforced Cement Concrete. The detail study about the waste foundry sand is a waste material obtained from ferrous and non-ferrous metal casting industries. and properties of the materials are determined by various tests and the mix proportion standard specimens will be casted and cured for 28 days to get the compressive strength, flexural strength and split tensile strength. In this process Recron fibre is comonomer special for(improved holding of cement aggregates ,Tensile strength :4000- 6000 kg/cm² , Melting point > 250oC) also fibres are uniformly dispersed which has better properties to resist internal stress due to shrinkage. Also reduces segregation and bleeding Then the final result is evaluated by comparing the above strengths of reinforced concrete filled with waste foundry sand and Recron fibre.

Keyword:waste foundry sand and Recron fibre.



,Compressive strength

INTRODUCTION

The utilization of sand as fine aggregate in the construction industry has increased by an alarming rate construction industries have identified alternatives like manufactured sand, robo sand, rock dust etc. Another alternative to this can be use of waste material in concrete. Waste foundry sand is a waste material obtained from ferrous and non-ferrous metal casting industries. In foundry industries sand is recycled and reused many times for the purpose of casting .The incorporation of such material in concrete can help to reduce the disposal concerns of waste foundry sand, and also makes concrete production economical .The raw sand is normally of a higher quality than the typical bank run or natural sands used in fill construction sites fibres are uniformly dispersed which has better properties to resist internal stress due to shrinkage. Also reduces segregation and bleeding . This leads to better strength and reduced permeability which improves durability.

LITERATURE REVIEW

Basil Kanneth et.al. (2018), “Go-Recron fibre Reinforced concrete with foundry sand as a partial replacement of fine aggregate”. This paper deals with the study of a new combination of GO-Recron fibre and foundry sand based on the parameters such as compressive strength, flexural strength, split tensile strength and durability of M25 grade concrete.The value of compressive strength obtained maximum on the addition 50% replacement of foundry sand and Recron fibre in 1% the strength obtained on 7 days was 33mpa and 28 days 46.2mPa.While in 100% replacement the strength couldn’t meet because of the fineness of the foundry sand excess water absorption properties. In replacement of 50% foundry sand and recronfibre in 1% the split tensile strength obtained 7.24N/mm² for 28 days and 2.24N/mm² for 7days.In replacement of 50%



foundry sand and recronfibre in 1% the flexural strength obtained for 28days 9N/mm² and 6.2N/mm² for 7days.

P.PendhariAnush et.al.(2017), “Partial replacement of sand by waste foundry sand”. The paper represents the current utilization of fine sand in the construction industry. The amount of waste foundry sand generated also encrypted in this paper. The paper also gives the remark on the utilization of waste foundry sand in the construction industry. The paper mostly focuses on the amount of foundry sand can be used as a cementitious material. Replacement of fine aggregate with foundry sand gives optimum strength at 30% of replacement then there was a marginal decrease in the strength. At 30% replacement of sand gives maximum strength at the age of 28 days, the flexural strength also gives the maximum result at 30% and at the age of 28 days. After which it shows decrease in the strength. Thus the foundry sand is the good replacement of fine aggregate. Achieved economy, strength with the use of foundry sand.

PHYSICAL PROPERTIES

S.NO	MATERIALS USED	SPECIFIC GRAVITY
1	Fine Agregate	2.6
2	Coarse Aggregate	2.7
3	Waste foundry sand	2.58
4	Cement	3.15

EXPERIMENTAL AND TESTING

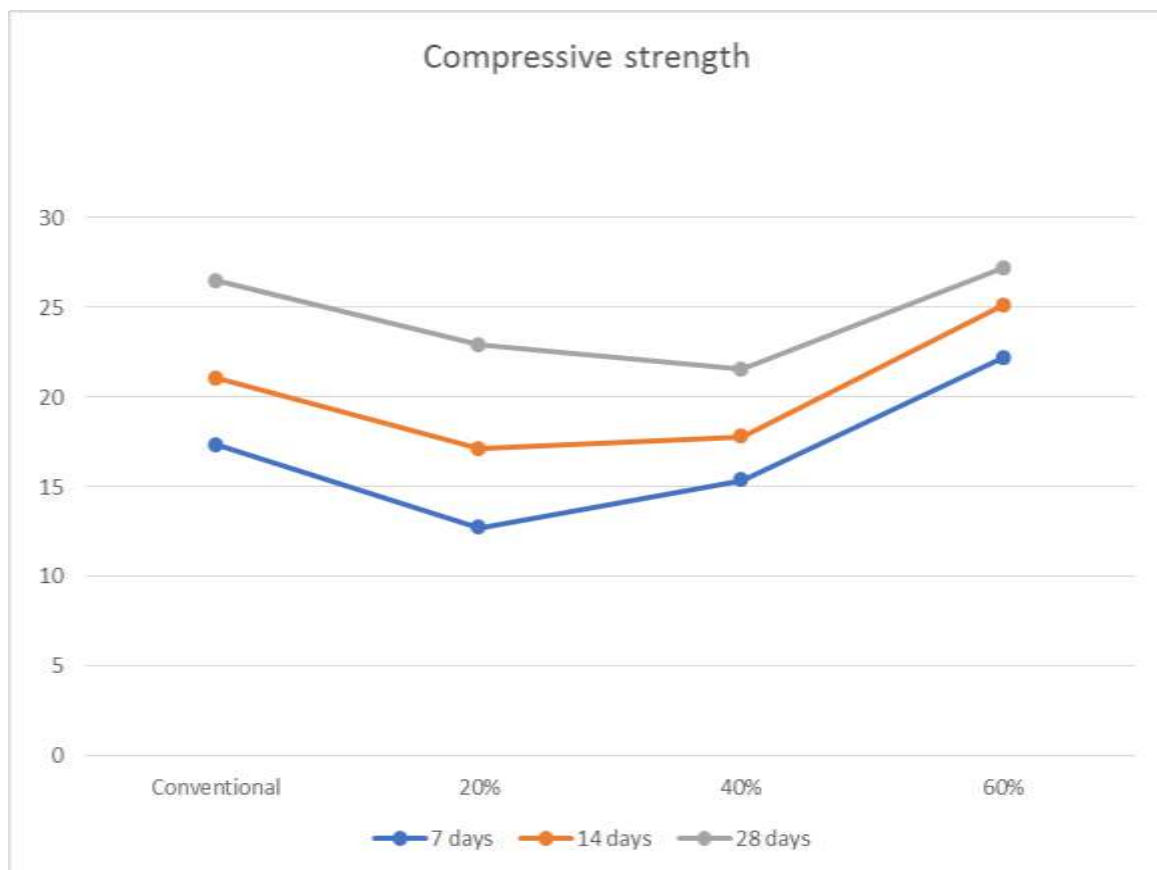
- Compressive strength test
- Split tensile test
- Flexural test



COMPRESSIVE STRENGTH ON CUBE TEST

There are four proportions used in the mixing of concrete. Compressive test is carried out on specimen cubical in shape. The cube specimen is of size 150mm *150mm*150mm is used.

Comparison b/w 7 days, 14 days & 28 days & Graphical Representation



SPLIT TENSILE TEST

There are four proportions used in the mixing of concrete. Split tensile is carried out on specimen cylindrical in shape. The cylindrical specimen is



of size 150mm *300mm is used.

CONCLUSIONS

From the above test results it is concluded that the Compressive strength, Split tensile strength and Flexural strength of the Conventional concrete with waste improved holding of cement aggregates, Tensile strength . . Hence in future it is advised to use 60% replacement of wastefoundry sand and 1% of Recron fibre for M30 grade concrete to get good results also reduce environmental disposal problems of waste foundry sand.

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