Experimental Analysis on Fractional Substitution of Bond by Utilizing Rice Husk Cinder

K.Sathish Kumar, K.Kiruthiga, S.Thendral

Abstract: *This exploration was tentatively do to research the impacts of presenting rice husk slag RHA as a halfway substitution of common Portland bond on the auxiliary properties of cement. In the present examination , plausibility study is made t utilized slag as an admixture in cement and an endeavor has been made to research the quality parameter of cement (compressive and elastic). IS technique for blended structure is embraced. Four diverse substitution level of 0%, 10%, 20%,30%,are picked for the examination. To think about the usefulness of cement and properties of RHA supplanting as bond and contrasting it and the customary mixed.Large scope of relieving time of 28 days are considered in the present examination*

Keywords : *Cement mortar, Rice Husk, bond, Additive*

I. INTRODUCTION

Cement is one of the most expended substance on earth, through time distinctive material have been added to concrete so as to improve its properties. The expansion of RHA to new cement so as to improve explicit trademark, for example, compressive quality, rigidity, flexural quality, has gotten more consideration from scientists and the solid business recently. [8],[10] ,[12]

(i) To acquired blended extent of control concrete by IS technique

(i) To play out the particular gravity test, Sieve investigation and droop test under IS strategy

(ii) To direct pressure test and split elasticity on RHA and control concrete on standard IS. [19],[21],[23]

A Parameter Study

MATERIALS	% OF RHA	CUBE	CYLINDER
OPC	0%	3	3
OPC+RHA	10%	3	3
OPC+RHA	20%	3	3
OPC+RHA	30%	3	3

II. EXPERIMENTAL INVESTIGATIONS

To decide the properties of concrete trial of Specific gravity and starting setting time are led and to decide the properties of fine total, trial of explicit gravity and degree are discovered and to decide the properties of coarse total trial of Specific gravity, Impact worth are discovered and to decide the properties of Rice Husk Ash (RHA) trial of Specific gravity are discovered and the outcomes are organized. [20],[22], [24]

Preliminary test conducted on cement, Fine Aggregate and Coarse Aggregate

Table 1 – Preliminary Test

Materials	Properties	Values
Cement	Normal consistency, %	35
	Initial setting time, min	32
	Specific gravity	3.15
Fine Aggregate	Specific gravity	2.30
	Gradation	Zone II
Coarse Aggregate	Specific Gravity	2.74
	Impact Value, %	18.51
(RHA)	Specific gravity	2.2

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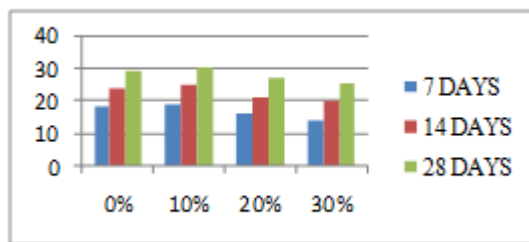
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A. Mix Proportions

Table 2 – Mix Proportions

Water (lit)	Cement (kg)	Fine aggregate (kg)	Coarse aggregate (kg)
186	372	608	1182
0.50	1	1.63	3.17

Mix Design for M30 Concrete = 1:1.63:3.17

B. Actual quantity of material required per percentage Cube

Table 3 – Quantity Required for Percentage Cube

MATERIALS	0% RHA	10% RHA	20% RHA	30% RHA	Total Quantity
RHA	0	0.08	0.174	0.262 kg	0.516 kg
Cement	0.874 kg	0.786 kg	0.699 kg	0.611 kg	2.97 kg
Fine aggregate	1.424 kg	1.28 kg	1.39 kg	0.955 kg	5.04 kg
Coarse aggregate	2.77 kg	2.49 kg	2.21 kg	1.93 kg`	9.4 kg
Water	0.437 lt	0.393 lt	0.349 lt	0.305 lt	1.48 lt

III. RESULT AND DISCUSSION

A. Compressive strength for 7, 14 & 28 days cubes

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Table 4 -Compression Test Value

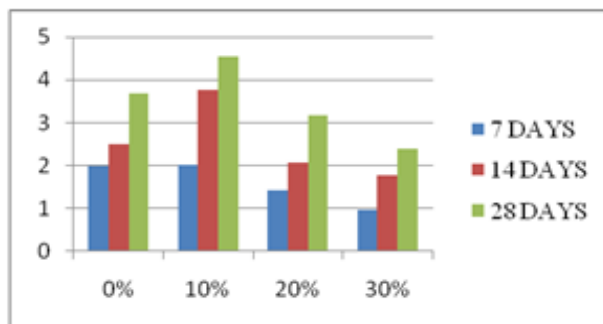| Sl.no	%of RHA	Compressive strength of cube N/mm^2		
		7 DAYS	14 DAYS	28 DAYS
1	0	18.68	24.18	29.52
2	10	19.12	25.04	30.45
3	20	16.52	21.58	27.65
4	30	14.48	20.42	25.97

GRAPH RESULT FOR COMPRESSIVE STRENGTH

Figure 1 – Compressive Strength for 7, 14, 28 days

C Tensile Strength Test Value

Table 5 – Tensile Strength Test VAlue

Sl.no	%of RHA	Tensile strength of cylinder N/mm^2		
		7 DAYS	14 DAYS	28 DAYS
1	0	1.98	2.49	3.67
2	10	2.01	3.76	4.55
3	20	1.42	2.06	3.18
4	30	0.98	1.78	2.38

D GRAPH RESULT FOR TENSILE STRENGTH

Figure 2 – Tensile Strength for 7, 14, 28 days

IV. CONCLUSION

In this experiment study the cube and cylinder where cast with different percentage by partial replacement of cement by using rice husk ash (RHA) with 10%, 20% and 30%.[32],[34]

1. The workability of concrete decreases when the percentage of rice hush ask is added to the concrete
2. The specimens casted with OPC + RHA, (10%). Shows, more compressive strength when compare to conventional concrete
3. The specimens casted with OPC + RHA (10%).Shows more tensile strength when compare to all other specimens. [25],[27],[29]

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