

Effects on Strength of Concrete with Partial Replacement of Cement by Sugarcane Bagasse and Brick Dust

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Abstract: In the current scenario, concrete structures are mostly used in the construction purpose. The term concrete is a mixture of cement fine aggregate coarse aggregate and water. For the construction to reduce cost we will replace silica fume in place of cement and iron slag in place of fine aggregate. Number of both private and public vehicles utilizing bitumen roads increments extensively step by step, which not only demand good pavement surface but also desirable roads which can provide safe and economical journey. SCBA is a result of sugarcane manufacturing plants in the wake of consuming the sinewy sugarcane Bagasse, the buildup abandoned is known as sugarcane bagasse it is great beneficial establishing mater wealthy in silica. It is additionally utilized as fertilizers. Powder of broken bricks or bricks privately called surkhi.. It is the most seasoned and commonest pozzolanic material in India. By its tendency, it is an extremely perplexing material contrasting broadly in its characteristics and exhibitions. Presently the phrasing "calcined dirt pozzolana" is utilized rather than word Surkhi, giving detail property and structure to this development material

Key Word: *Workability, Compressive, Flexural and Split Tensile strength*

1. INTRODUCTION

Concrete is an important cost-effective building material made from a mixture of aggregates, cement powder, water, and sometimes mixed. Cement is the glue that holds everything together. The strength of cement paste pulling to control the strength of concrete and is a function of water to strengthen ratio. Concrete is one of the most important and used in synthetic materials. In particular fact and mixed construction, composed of cement (Portland cement and flexible

materials To satisfy the necessity of present day time, ventures come in presence all the more quickly. In the present current world ventures assume a virtual job in satisfying the requests of ceaselessly developing populace, however creates a more risks impact on the regular habitat, as expansive amount of squanders (wastes) and unsafe gases are produced by enterprises on day by day bases and their transfer is a major issue This is because of the way that the harmful gas delivered by the concrete hydration responds with the pozzolan. Appropriately, there are numerous specialists who are keen on the pozzolans

2. METHODOLOGY AND EXPERIMENTAL PROCEDURE

2.1 MATERIAL USED:

(1) Quarry dust: A quarry dust selected from crushing plant with well graded size less than 4.75 mm which is already having approximately 1-2 percentage of moisture. The sand belongs from grade zone III with water absorption 1.78.

(2) Coarse Aggregate: Local available course aggregate used for concrete paver block with passing through 12mm sieve and retained on 10mm sieve. There is no separate tests were performed for aggregate

A sieve analysis test performed for aggregate

Table 01 Sieve Analysis Test

Sr.No	I.S sieve size(mm)	Weight retained(kg)	% of weight retained(kg)	Cumulative % retained	% of finer
1	80	0	-	-	100
2	20	2.25	2.25	45	55
3	16	2.217	4.467	89.34	10.66
4	12.5	.5	4.967	99.34	0.66
5	10	.031	4.998	99.96	0.04
6	Pan	.002	5	100	0

(3) SURARCANE BAGASSE: Sugarcane sticks is smashing utilizing substantial rollers to separate the juice .the buildup left after the extraction of juice is called Bagasse.

(4) Cement: A OPC cement with 43 grade used with following test

- (i) Fineness test
- (ii) Consistency test
- (iii) Initial and final setting time of cement

(iv) Soundness of cement

Table 02 consistency table

Percentage of water	Weight of water	Initial reading	final reading
25%	75 grm	37mm	34 mm
28%	84 grm	37mm	16mm
29%	87 grm	37mm	10mm
29.5%	88.5 grm	37mm	7mm



Figure 01 Sugar cane

(5) Brick dust: The underlying phases of preparing calcined earth pozzolanas are indistinguishable to the embellishment and terminating process for mud bricks, tiles or stoneware, and generally the rejects from these businesses have been utilized as pozzolanas.

3. RESULTS AND DISCUSSION

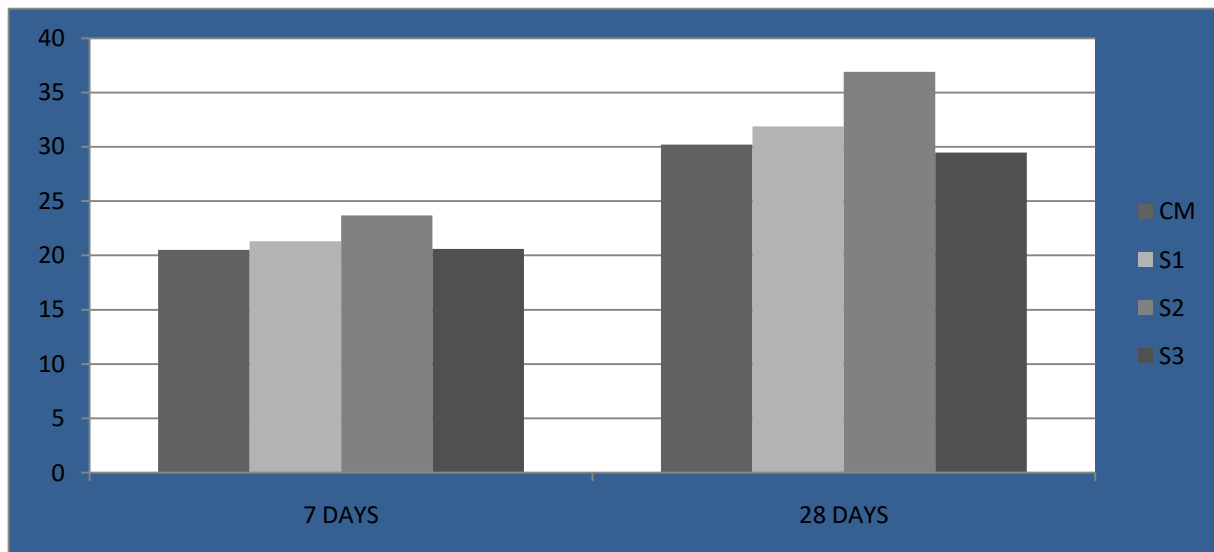
Test consequences of fresh properties, and harden properties M25 OPC grade 43concrete with bagasse ash and surkhi are displayed in this section

it is observed form the tests conducted on fresh concrete that slump values goes on decrement with increase in utilization of bagasse ash and surkhi in concrete. This decrement is due to high water absorption of surkhi in the mix

3.1 Workability: Slump test performed as per is 116-1959

Mix	Tested slump value (mm)
OPC CM	110
S1 (4% SCBBA & 6% SURKHI)	110
S2 (8% SCBA & 12 % SURKHI)	104
S3 (12% SCBA & 18% SURKHI)	92

3.2 Compressive Strength: In given results S1 is the ratio vary from 4 to 6 %, S2 is vary 8to 12 % and S-3 above than 12



4. CONCLUSION

Compressive, split tensile and flexural parameters of sample 2 (8% SCBA and 12% SURKHI) demonstrates the most astounding quality, both at 7 and 28 days, among all different blends.

Sample 3 (12% SCBA and 18% SURKHI) shows a slight decrements in quality parameters than the other blend. (at both 7 and 28 days).

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