

# Comparative Study of Concrete with Partial Replacement by Saw Dust and Wheat Straw Ash from Cement

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**Abstract** - Modernistic progression of automation is against waste implementation and decline in construction industries. In today's industry concrete is leading and accomplished Building Material and in concrete, cement is expansive material and to spruce its cost Agricultural waste is introduced in concrete. Wheat Straw Ash (WSA) and Saw mud Ash (Ash) is given as a partial exchange of concrete. Wheat Straw Ash (WSA) and Saw dust Ash (Ash) is reintegrated by cement up to 32% in concrete and their provisional is study is managed on the bottom of their compressive strength. This wok assesses the compressive quality and workability of wheat straw ash and saw dust as a fractional substitution of cement in concrete

**Keywords**- Concrete, Wheat Straw Ash, Saw mud Ash, Cement, compressive strength, workability.

## I. INTRODUCTION

Concrete could be a most commonly used antiquity that could be a mixture of cement, sand, coarse mixture and water. It will be used for construction tanks, offshore structures, canal liner, he method of deciding pertinent ingredients of concrete and explanation their relative quantity with the ambition of delivery onward a concrete of the stated strength and workability as economically as achievable is termed the concrete combine style. The compressive strength of hardened concrete is particularly assumed to be an index of its different properties depends upon distinct factors e.g. Condition and amount of cement, water and mixture batching and combining, bring compaction and set, the value of concrete created from the value of materials, plant and labor the alterations within the value of fabric appear from the very fact that the cement is many times further pricey than the aggregates so the thing is to leading a mixture as achievable from the technological purpose of read the affluent mixes could cause a high shrinkage and checking within the structural concrete and to the deed of the high heat of alliances is that the mass concrete which can cause cracking. Saw dust and Wheat straw ash are one of the dominant wide on the market agricultural wastes in several wheat growing countries round the world, globally, some 600 million heaps of wheat pad square measure created annual. The employment of WSH as a porcelain material in cement and concrete provides many blessings, dedications proved adherence and strength properties, decrease materials value because of cement savings, and deficient advantages combine with the demolition of waste textiles. Sawdust is an organic waste ensuing from the mechanical brink or process of lumber (wood) into diverse shapes and sizes. The mud is

commonly used as domestic fuel. The assure ash called saw-dust ash (SDA) could be a agreement of ceramic ware. Dry wood concrete weighs completely half-hour as a accurate trade as conventional weight concrete and its buffer properties close to those of wood. With appropriate cement to wood ratios, its incombustible .As a essential construction material, wood concrete will so have its functions [3]. The increasing appeal for cement and concrete is clash by the partial restoration of cement. Concrete isn't any longer formulated from mixture Portland cement and water merely. Consistently however not continually it's to combine a minimum of one amongst the extra ingredients like admixture or building material to improve its strength and adherence. [1]

## II. MATERIAL

The various materials are used for casting the concrete cubes.

**CEMENT:** Cement is a binding substance that firm and hardens and can bind other materials together. Cements used in construction can be shown as being each of two hydraulic and non-hydraulic depending upon the competence of the cement to resolved in the presence of water. Cement grade taken here is 33.

**FINE-AGGREGATE:** Fine aggregate are essentially sands won from the land or the marine habitat. On an average the particle size taken here is 1mm.

**COARSE-AGGREGATE:** Coarse aggregates are particles greater than 4.75mm, but mostly range between 9.5mm to 37.5mm in diameter. On an average the 10mm aggregate is taken.

**WHEAT STRAW ASH:** Wheat straw ash is an agricultural commodity the dry trunk of wheat plants once the grain and crust are removed .It holds distinct control, as well as fuels, stock bedding and fodder, thatching and basket making.

**SAW DUST:** Wood dust could be an out -growth of cutting, grinding, sanding and pulverization of wood with a saw or other tool it will give conclusion as a fine part of wood.

**WATER:** Water that is worn here is free from salts, acids, bases, organic matters, toxic chemicals, explosive reactive gases and harmful ingredients.

III. MIX PROPORTION

Associate approach of concrete is taken as per approach from IS 10262: 2009 in step with IS code. Water that is blend here is free from acid bases, salts, sugars and organic materials or different amount of that will be harmful to concrete. Here we haul the mix proportions as 1:1.5:3. Similarly saw dust is taken as proportions of 1:2:3 wheat straws are taken as 1:2:3 and the mixed of saw dust and wheat straw as 1:2:3.

IV. CASTING AND CURING

Concrete cube of 15cm×15cm×15cm is casted as per IS 516:1959. For each result three cubes are appropriated within 3 days , 7 days, 28 days strength are noted down .And the compressive strength of the cube were measured.

V. TEST PERFORMED

We performed the compressive strength test as per IS 516:1959.

**COMPRESSIVE STRENGTH:** Compressive strength is that the competence of a fabric to face up to hundreds leaning to scale back size. It will be deliberated by plotting an enforced force against deformation during a testing machine. Compressive force are usually analyze in relation to a specific specialized usual material fracture at their compressive strength limit ,other contort permanently ,so a given duration of bias may be considered as the restriction for compressive load. The compressive strength of concrete was resolute using 150mm concrete cubes [2].

VI. RESULT AND DISCUSSIONS

TABLE 1: Compressive Strength

S.No.	Waste materials	Mix Percentage	Compressive strength(N/mm <sup>2</sup> )		
			3 days	7 days	24days
1.	SAW DUST ASH	1%	10	12	18
		2%	9	11	19
2.	WHEAT STRAW ASH	1%	10.9	13	18
		2%	8	11	17
3.	MIX-PROPORTIONS	1%	9	13	18
		1%	10.1	13	17.2

VII. CONCLUSION

The consequence of results showing that there are good anticipations of using Wheat straw ash (WSA), Saw dust ash(SWA) as a porcelain consolidation with ordinary Portland cement(OPC) in the concrete cube. The M-20 grade concrete is cast and its compressive strength is decisive and the combination of 1%, 1.5%, 2% cement replacement. Mix gives acceptable compressive strength by using all WSA and SWA for 0.45 water cement ratio and result is adequate.

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