

Experimental Study on Admixtures

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Abstract - Concrete has been used in various structures all over the world since last two decades. Most of the developments across the work have been supported by continuous improvement of these admixtures.

Hence varieties of admixtures such as fly ash, stone dust have been used so far. Hence, an attempt has been made in the present investigation to study the behavior of partial replacement of cement with fly ash and sand with bottom ash used in concrete.

To attain the setout objectives of the present investigation, Partial replacement of cement with fly ash, stone dust used in concrete by 15% to produce concrete.

Water cement ratio is kept constant for all mixtures.

Key Words: Compressive Strength, Admixtures, Flyash, Stone dust

1. INTRODUCTION

Concrete is the key material used in the construction of various types, from flooring of a hut to multi storied high rise Building (structure) from pathway to an airport runway, from an underground tunnel and deep sea platforms to high rise chimneys and Towers. In last millennium concrete had demanding countries is over 1200 Kgs per person per year. Therefore our present consumption rate is very much behind than that of the advanced countries.

1.2 OBJECTIVE

The objective of the present study is to know the suitability of fly ash, and stone dust, these results are compared with regular mixes, stone dust, fly ash, Especially compressive strength, slump cone test, compaction factor test

2. MATERIALS

1. Cement
2. Fine Aggregate
3. Coarse Aggregate
4. FlyAsh
5. Stone dust
6. Water

3. EXPERIMENTAL INVESTIGATION

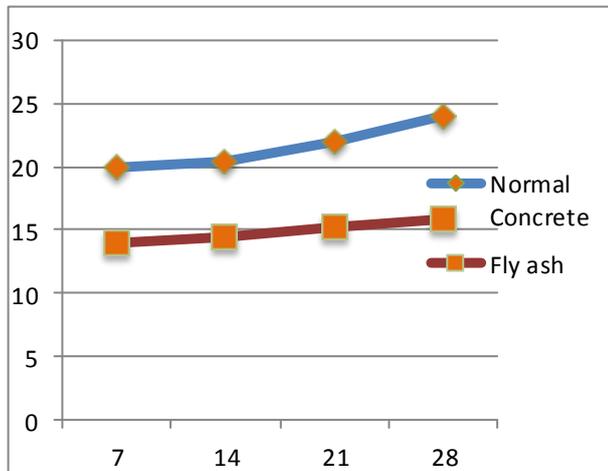
1. At first Individual tests have been done on Cement, Fine Aggregates, & Coarse Aggregates
2. In this study Fly Ash, Stone dust have been used to replace in cement in 20% percentage
3. For M15 grade Mix Design is done for the above mentioned percentages
4. M15 Concrete cubes have been prepared as per the mix design.
5. Workability tests have been done for Fresh Concrete
6. Cubes have casted to measure compressive strength on 7, 14, 21, & 28 days
7. Compressive strength test have been done for all the mix proportions of M25 grade concrete on 7, 14, 21, & 28 days
8. Equipment used for this tests are Sieves, Workability test apparatus, CTM, Cube Moulds, Pycnometer bottles, Specific gravity bottles.

4. RESULTS & DISCUSSIONS

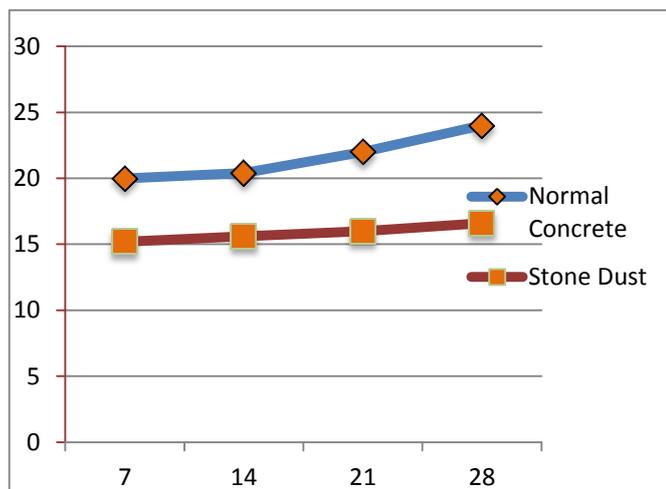
Table 1: Compressive strength

S. NO	Mix Designation	Compressive strength in N/mm ²			
		7 days	14 days	21 days	28 days
1	NORMAL CONCRETE	20	20.4	22	24
2	STONE DUST	15.2	15.6	16	16.6
3	FLY ASH	14	14.4	15.2	15.8

Graph 1: Compressive Strength For Normal Concrete and Flyash Concrete M15 Grade



Graph 2: Compressive Strength For Normal Concrete and Stone dust Concrete M15 Grade



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5. CONCLUSIONS

1. Cement can be replaced by stone dust in M15 grade, and there is not much variation in strength among normal concrete.
2. Replacement of cement by 10%stone dust resulted in more compressive strength
3. There are less chances for stone dust containing deletions substances as compared to natural river sand.
4. Admixtures partial replacement with cement for m15 grade is successful to use in construction.