

EXPERIMENTAL INVESTIGATION ON PARTIAL REPLACEMENT OF CEMENT BY MARBLE POWDER AND QUARRY DUST

R.MAHADEVI¹, BINOY MATHEW SAM², ILAVARASAN.K³, MOHAN KUMAR .P⁴

RAMACHANDRAN.M⁵

Asst. Professor¹ Dept .of civil Engineering, The Kavery Engineering College, Salem, Tamil Nadu, India.

UG Student^{2,3,4,5} Dept .of civil Engineering, The Kavery Engineering College, Salem, Tamil Nadu, India.

Anna University, Chennai, Tamil Nadu, India .

Abstract: This paper present the study of concrete mix design using marble powder and quarry dust . This disposal of marble powder from the marble industry is of environmental problem today. Then the used for replacement process 25 grade concrete . The partial replacement of mix design of concrete . As percentage replacement of 20% , 25% , 30% are used in marble powder and quarry dust increases for workability reduce.

KEYWORDS: CEMENT , MARBLE POWDER , QUARRY DUST ,COARSE AGGREGATES .

1.INTRODUCTION

This project deals with the advanced construction technique by concrete technology replaced by different waste materials. Wastes marble powder and quarry dust is generated as a by product cutting marble powder and quarry dust. The waste generated every year is in tones which dumped open space. The environmental problems attributed by waste marble powder and quarry dust imposes to physical, chemical, biological components of environments. It is therefore very important to reuse the marble powder and quarry dust which solve most of problem . This report describes the feasibility of using the waste of marble powder and dust as a partial replacement of cement.

2. MATERIAL PROPERTIES:

2.1 MARBLE POWDER

2.2 QUARRY DUST

2.1 MARBLE POWDER :

Marble is a metamorphic rock composed of recrystallized carbonate minerals most commonly calcite or dolomite. Marble may be foliated. Geoygists use the term marble to refer to metamorphosed limestone. Marble is commonly used for sculpture and as a building material. marble powder was collected from the dressing and processing unit . It was initially in wet from after that it is dried by exposing in the sun and finally sieved by IS -90 micron sieve before mixing in concrete .



FIG(1). MARBLE POWDER

4. CURING OF CONCRETE:

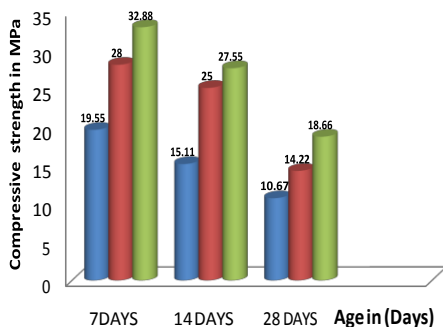
Casting of concrete after the completion of 24 hours mould will be removed then cured by using portable water. The specimen is fully immersed in portable water for specific age of 7, 14, 28 days. After the completion of curing it will be tested.

6. Results and Tables:

TABLE-1 TESTING ON COMPRESSIVE STRENGTH

S.NO	MIX	AVG. COMPRESSIVE STRENGTH (N/mm ²)		
		7 days	14 days	28days
1	0%	19.40	23.59	31.70
2	20%	19.55	28.00	32.88
3	25%	15.11	25.77	27.55
4	30%	10.67	14.22	18.66

CHART(1) COMPRESSIVE STRENGTH TEST



5. TESTING ON HARDERED CONCRETE

1. Compressive strength test
2. Split tensile strength test
3. Flexural Strength Test

TABLE (2) SPLIT TENSILE STRENGTH

S.NO	MIX	AVG SPLIT TENSILE STRENGTH (N/mm ²)		
		7 days	14 days	28days
1	0%	2.02	2.58	3.20
2	20%	4.58	5.72	4.58
3	25%	5.44	4.29	5.44
4	30%	4.80	5.15	5.15

CHART(2) SPLIT TENSILE TEST

