

A Review And Taxonomy on Different Grades of Concrete on Partial Replacement of Cement By Marble Dust Powder (MDP)

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Abstract- Marble dust powder (MDP) is a composite material obtained from subsequent quarrying and processing and further dumped at agricultural land or anywhere which may reduce the productivity of land, marble waste make emission of carbon dioxide in a quantitative manner, this waste product make vigorous role in global warming, to make a proper disposal of this waste byproduct we brought it in concrete production as filler or replacement of one or in combination of any ingredients to reduce the adverse effect on environment and our surrounding atmosphere, this process also allow the concrete industry to optimize the use of conventional materials, result in economic benefits and build structures that will sensitive to environment.

I. INTRODUCTION

Concrete is widely used manufacturing material which is a composed of cement, sand, jelly & water. Nowadays we can see the continuous development at everywhere at each corner of world for civilization. The endless growth of population is not a mainline problem; issue arises when it seems the necessity of shelter for public and connectivity between them for in phase of urbanization. The daily operation of such material rising huge issue among intellectuals, to resolve this something innovative thing are required, to bypass the conventional additive of this item we opted for some newly introduced particulars which are appropriate fit the processing criteria of concrete, few different kind objects are silica fume, fly ash micro silica etc. in this context here marble dust powder being experimented and further observation arises. It's obtained primarily as a waste substantial material and the proper disposal is dilemma so we can handle it in the creation of concrete. Scrutinize and approach to a decision that this has to be use replacement to cement at some extent.

II. LITERATURE SURVEY

- A. **M. Naveen Kumar¹, M.Mujahid² [8] 2017** - Ahmed, Leaving the waste materials to the environment directly can cause environmental problem. Hence the reuse of waste material has been emphasized. Waste can be used to produce new products or can be used as admixtures so that natural resources are used more efficiently and the environment is protected from waste deposits. Marble stone industry generates both solid wastes and stone slurry. This paper focus on the utilization of waste of Marble dust powder in concrete and enhancement of strength of concrete more economically. The Marble dust powder was added in M20 grade of concrete at (0%, 5%, 10%, 15%, 20%, 25% & 30%) with partial replacement by weight of cement. Water/Cement ratio (0.50) was kept constant, in all the concrete mixes. The concrete samples (cube & cylinder) were tested for compressive strength and split tensile strength after 7 & 28 days of proper curing. The results of the laboratory work showed that replacement of cement with Marble dust powder increases up to 10% for both compressive strength and split tensile strength of concrete.
- B. **Vijaya Kumar YM¹, Shruti D², Tharan SN³, Sanjay SR⁴, Sricharan PM⁵ [7] 2016** - Leaving the waste materials to the environment directly can cause environmental problem. Hence the reuse of waste material has been emphasized. Partial replacement of cement by varying percentage of marble dust Powder powder reveals that increased waste marble dust powder ratio result in increased workability and compressive strengths of the concrete Marble Dust Powder is settled by sedimentation and then dumped away, which results in environmental contamination, in addition to forming dust in summer and threatening both agriculture and public wellness.. In this research work, Marble Dust Powder has replaced the (OPC & PPC) cement accordingly in the reach of 0%, 5%, 10%, 15% 20%, & 25% by weight of M-20 grade

concrete. Concrete mixtures were developed, tested and compared in terms of compressive strength to the conventional concrete. The purpose of the investigation is to analyze the behaviour of concrete while replacing the Marble Dust Powder with Different proportions in concrete.

C. Dr. B. Krishna Rao [6] 2016 - Along the rapid growth of human needs in many sectors, a significant decrease in the availability and viability of the natural resources was always faced. Neither the less, the high volume production is always associated with considerable amount of waste materials, which may adversely impacts the surrounding environment. Efforts on bypassing such dilemma were recently intensified in many countries and international establishments looking for new regulations and legislations to minimize and reuse the generated waste. One of the major waste generating industries is the marble quarry and production industry by 70% of this precious mineral resource is wasted in the mining processing and polishing procedures. 40% of marble waste is generated worldwide during quarrying operations in the form of rock fragments and 30% waste generated during processing. It is being dumped either in nearby empty pits, roads, riverbeds, pasturelands, agricultural fields or landfill leading to wide spreading environmental pollution. Marble powder contains high calcium oxide content of more than 50%. The potential use of marble dust can be an ideal choice for substituting in a cementitious binder as the reactivity efficiency increases due to the presence of lime. A total of five concrete mixes, containing 0%, 5%, 10%, 15% and 20% partial replacement of cement with marble powder are investigated in the laboratory. These mixes were tested to determine compressive strength, split tensile strength and flexural strength for 7, 28 and 56days.

D. Rabah Chaid¹, Arnaud Perrot² and Youcef Ghernouti³ [5] 2015 - The aim of this study is to examine the valorisation of mineral residues as addition in building materials with cementitious matrix, and contributes to sustainable development. The study is based on experimental work carried out at the Civil Engineering and Mechanical Engineering Laboratory (INSARennes, France) and at the Mineral and Composite Materials Laboratory (University of Boumerdès, Algeria). The use of recyclable industrial waste as a partial replacement of Portland cement in concrete allows reduction of greenhouse gas emissions (GGE) and results in the manufacturing of a concrete with less environmental impact. Applying various experimental techniques, the behaviour of finely crushed marble

powder addition with Portland cement, with limestone addition, is studied. This study confirmed the improvement of the physical and chemical properties of concretes with marble powder addition; this indicates the potential advantage of using this supplementary cementitious materials.

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