

# TEMPERATURE REDUCING CONCRETE USING CERAMIC WASTE

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**Abstract** - This project about the suitable replacements of cement as to reduce problems of global warming and to create sustainable environment. In India, 285 distilleries use sugarcane Spent wash. The initial setting time of cement paste was longest at 0.6% sugar content. Spent wash as a partial replacement of Retarders. Cement manufacturing industry is one of the major source of CO<sub>2</sub> emission resulting in global warning. In order to reduce these effects on environment, there is need for substitution of other waste material having same major constituents. In this paper cement has been replaced by ceramic waste powder in the range of 5%, 10% by weight for M-25 grade concrete and the compressive strength is calculated. While waste minimization refers to reducing the volume or toxicity of hazardous wastes by water recycling and reuse. The land application of distillery spent wash leads for water pollution control and utilization for agricultural production. Hence, controlled application of spent wash to the land as irrigation water helps in restoring and maintaining soil fertility, increasing soil microflora, improving physical and chemical properties of soil leading to better water retaining capacity of the soil.

**Key Words:** Ceramic powder, Spent wash, Replacement, Utilization, Waste management.

## 1.INTRODUCTION

Every year heat of global which increase due to the heat emitting materials. Among that, cement concrete is a heat emitting material in the form of CO<sub>2</sub> in these conditions ordinary concrete may fail to prevent the heat emission. In such cases, admixture is used to modify the properties of ordinary concrete so as to make it more suitable for any situation. Ceramic tile powder is one such admixture. Ceramic waste from factories producing construction industry materials has been accumulating on frequently, creating increasingly large piles. In the present investigation, we made an attempt to use this distillery waste as water reducing admixture in concrete. We also use a spent wash as a Retarders. Spent wash is a waste obtained from sugar industries. Spent wash is anon used liquid waste. It is disposal in various waste resources and it pollute the environment. It is also a type of retarders. Retarders generally slow down the hardening of the cement paste by stopping the rapid set. Retarders can be useful when concreting in hot weather.

## 1.1 MATERIAL USED

### A Ceramic waste

Marble is a metamorphic rock. It has more amount of lime stone hence it has a bonding properties same as a cement property. So we decided to partially replace ceramic powder as a Cement Marble is generally used to improve the aesthetic view of structures.

### A. Ceramic powder

Marble is a metamorphic rock. It has more amount of lime stone hence it has a bonding properties same as a cement property, so we decided to partially replace ceramic powder as a cement. Marble is generally used to improve the aesthetic view of structures. Ceramic waste may come from two sources. The first source is the ceramics industry, and this waste is classified as non-hazardous industrial waste.

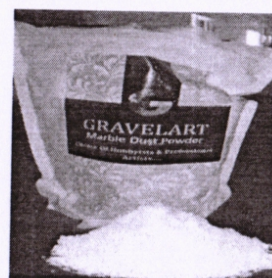


Fig -1: Marble dust

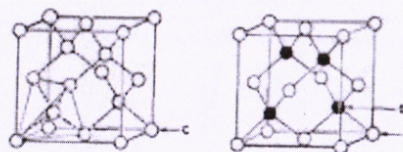


Fig -2: Structure of ceramic

Table -1: Chemical Properties of ceramics

S.no	Oxide compounds(mass)	Cement	Marble power
1	SiO <sub>2</sub>	21.12	28.35
2	Al <sub>2</sub> O <sub>3</sub>	5.62	0.42
3	Fe <sub>2</sub> O <sub>3</sub>	3.24	9.70
4	CaO	62.94	40.45
5	MgO	2.73	16.25
6	Density	3.10	2.80