# An Experimental Study On Cement, Saw Dust Ash & Marble Powder

**Chetan Thakre[1], Tanmay Deogirkar[2], Saurabh Umredkar[3], Smita Wasnik[4]**
[1, 2, 3] Dept of Civil Engineering
[4]Assistant Professor, Dept of Civil Engineering
[1, 2, 3, 4] Smt. Radhikatai pandav college of engineering, Nagpur

***Abstract-*** *The use of the solid waste in cement producing company can facilitate in conservation of natural resources like sedimentary rock. the utilization of marble powder and wood ash as a partial replacement of Cement will scale back the assembly price of cement and will management the emission of harmful gases into the atmosphere and tried Eco friendly to the atmosphere. Earlier analysis additionally indicate that the consequences of marble powder and sawdust ash on the properties of cement like consistency, initial setting time, final setting and soundness stay inside the appropriate ranges of various standards. so this paper provides a scope for additional analysis that is needed to style economical and sturdy concrete with this solid waste (marble powder and sawdust ash).*

***Keywords***- Marble Powder , Sawdust ash, ordinary Portland cement (OPC), partial replacement, Concrete, Workability, Compressive Strength.

## I. INTRODUCTION

Concrete may be a wide used construction material for numerous kinds of structures because of its structural stability and strength. The usage, behavior moreover because the sturdiness of concrete structures, engineered throughout the last half of the century with standard cement (OPC) and plain spherical bars of steel, the benefit of procuring the constituent materials (whatever is also their qualities) of concrete and also the data that nearly any combination of the constituents results in a mass of concrete have bred contempt.

Unfortunately, production of cement involves emission of enormous amounts of carbon-dioxide gas into the atmosphere, a serious contributor for inexperienced house impact and also the warming, thus it's inevitable either to go looking for an additional material or part replace it by another material.

The look for any such material , which might be used as an alternate or as a supplementary for cement ought to result in world property development and lowest doable environmental impact. Substantial energy and value savings may result once industrial by merchandise are used as a partial replacement of cement. Fly ash, Saw dirt ash, Marble powder

## II. LITERATURE REVIEW

**JASHANDEEP SINGH**, ER. R. S. BANSAL The study of behavior of concrete, having partial replacement of cement with waste marble powder M25 grade that the marble powder is replaced by AN experimental study was distributed and also the impact on compressive strength and split strength characteristics (0%, 4%, 8%, 12%, 16%, 20%) was studied

**C. MARTHONG**: the chance of victimization wood Ash (SDA) as a construction material was by experimentation investigated. Saw dirt was burnt and also the ash sieved employing a ninety micrometer sieve. 3 grades of standard cement (OPC) namely; thirty three, forty three and fifty three as classified by Bureau of Indian customary (BIS) are normally employed in industry. A comparative study on effects of concrete properties once OPC of variable grades was part replaced by SDA is mentioned during this paper.

**Vaidevi C (2013):** have done their analysis on Study on the marble dirt as part replacement of cement in concrete. They found that the marble dirt from marble process may be a waste utilised. the utilization of this waste was projected in several percentages each as AN addition to and rather than cement, for the assembly of concrete mixtures. during this study, the utilization of marble dirt collected throughout the shaping method of marble blocks has been investigated within the concrete mixtures as building material material. The study showed that marble wastes, that ar within the dirt type, might be used as building material material in concrete mixtures wherever they're on the market and also the price of construction is less than standard concrete materials.

**V. M. Sounthararajan (2013**): have done their analysis on impact of the Lime Content in Marble Powder for manufacturing High Strength Concrete. They found that the waste marble powder up to 100 percent by weight of cement was investigated for hardened concrete properties. moreover, the impact of various proportion replacement of marble dirt on

the compressive strength, rending strength and flexural strength was evaluated

## III. MATERIALS

**Cement:** Cement may be a binder, a substance used for construction that sets, hardens, and adheres to alternative materials to bind them along. Cement is rarely used on its own, however rather to bind sand and gravel along. Cement mixed with fine mixture produces mortar for masonry, or with sand and gravel, manufacture concrete.

Fig. 1- cement powder

**Saw dust ash** : Saw dust may be a waste from the timber business. it's created as timber is sawn into planks at saw mills placed in just about all major cities within the country. This method may be a daily activity inflicting tons of saw dirt to be generated when day after day. the requirement to convert this waste material into a helpful by-product is that the focus of the study. Saw dirt ought to be burn at 6000C in chamber for getting needed chemical properties of ash

Fig. 2- saw dust ash

**Marble powder**: Marble powder is obtained by Crushing and Grinding of the marble chips or marble stone. It is additionally obtained from marble suspension. Marble may be a stone ensuing from the transformation of the pure sedimentary rock. The purity of marble is depends upon its color and look.

.

Fig. 3- marble powder

## IV. METHODOLOGY

The aim of the testing of materials is to match the properties of concrete created with and while not marble powder and saw dirt ash used as cementious material. the essential tests distributed on ingredients of concrete.

**Ordinary cement (43 Grade)** is employed Cement may be a fine, gray powder. it's mixed with water and materials like sand to form concrete. The cement and water type a paste that binds the opposite materials along because the concrete hardens. the standard cement contains 2 basic ingredients specifically clayey and carbonate.

1 Field testing
2 Laboratory testing
(a) Fineness take a look at.
(b) customary consistency take a look at.
(c) Soundness take a look at
(d) Strength take a look at.

**Marble powder** is obtained by Crushing and Grinding of the marble chips or marble stone. It is additionally obtained from marble suspension. Marble may be a stone ensuing from the transformation of the pure sedimentary rock.

**Sawdust ash** may be a waste from the timber business. it's created as timber is sawn into planks at saw mills placed in just about all major cities within the country. This method may be a daily activity inflicting tons of saw dirt to be generated

when day after day. the requirement to convert this waste material into a helpful by-product is that the focus of the study

## V. RESULT AND DISCUSSION

- Experimental study is shown that marble powder and saw dust ash have similar properties which will with success replace the specific amount of cement
- Use of Marble powder and saw dirt ash additionally facilitate in property development that is want of hour.
- The investigation is distributed to form marble powder and saw dirt ash price effective.

.

## VI. CONCLUSION

The greatest environmental issues in industry is that the production of cement that emits quantity great of CO2 gas to the atmosphere however saw dust ash and marble powder have ability to effectively replace the ample amount of cement .Use of such material additionally facilitate in endeavor totally different pollution drawback that occurred thanks to cement business

## REFERENCES

[1] V. M. Sounthararajan and A. Sivakumar "Effect Of The Lime Content In Marble Powder For manufacturing High Strength Concrete" ARPN Journal of Engineering and Applied Sciences, ISSN 1819-6608, Volume-8, No. 4, April 2013.
[2] Rohan RoshanRai,Dr.BhavaniShankar,Akshay NK, "Influence of Marble dirt as Partial Replacement of Cement in traditional hardening Concrete" Journal of rising Technologies and Innovative analysis ISSN-2349-5162, Volume 2, Issue 4, April 2015.
[3] Hassan A. Mohamadien, "The impact of marble powder and silicon dioxide fume as partial replacement for cement on mortar" International Journal Of Civil And Structural Engineering, Volume 3, No 2, 2012
[4] C.Marthong "Sawdust ash as partial replacement for cement "International journal of analysis and applications ISSN-9622 vol-2 Gregorian calendar month 2012.
[5] Sanjay Chugh & Rahul Bansal "Study on wood ash as partial replacement" IJETSR vol-3 2016.
[6] IS code 456-2000 and 10262-2009.
[7] K. Samanta Rajesh Kumar, Amiya and D. K. Singha Roy "characterization and development of eco-friendly concrete victimisation industrial waste" –a review Journal of Urban and Environmental Engineering, v.8, n.1 p. 98-108, 07 might 2014.
[8] Indian customary code IS 383 - 1959 for coarse and fine mixture from natural sources for concrete
[9] Indian customary code IS 2386 - 1963 for technique of take a look at for mixture for concrete.