WWW.IJRPR.COM

**International Journal of Research Publication and Reviews**

Journal homepage: www.ijrpr.com ISSN 2582-7421

# GREEN CONCRETE – Experimental study of green concrete

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ABSTRACT

In the concrete business, green concrete is a revolutionary development. The research and development of "Green Concrete," a sustainable and eco-friendly material made from locally sourced agricultural and industrial waste such fly ash, slag, and sawdust, is the main topic of this article. It is often known that among the materials used in civil engineering, steel and cement require a lot of energy during production and greatly increase CO2 emissions. Green Concrete is made by partially replacing cement with a variety of easily accessible industrial and agricultural waste materials. It has several uses in civil engineering constructions.

Keywords – Green Concrete, Environment friendly, Waste construction materials, Agricultural waste, Energy conservation.

## [1] INTRODUCTION

An imaginative thought in the logs of the concrete firm is green concrete. In1998, Dr.WG made it for the to begin with time in Denmark. There is a no connection between green concrete and its hue of green. It is an thought that takes the environment into thought whereas taking into account everything from the generation of crude materials to blend plan, auxiliary plan, development, and benefit life. Since squander things are in part substituted for concrete components, squander transfer expenses are dodged, generation vitality utilization is decreased, and toughness is expanded, green concrete can be created at a exceptionally moo fetched. Green concrete is made from a assortment of mechanical and rural squander materials, counting slag, control plant squanders, Reused concrete, squander glass, ruddy mud, burnt clay, sawdust, combustor cinder, and foundry sand. A sort of concrete known as "green concrete" is comparable to standard concrete but employments less vitality amid generation and doesn't harmed the environment as much. Concrete that emanates less carbon emanations and requires less vitality to produce. Green concrete has about break even with quality and solidness than the typical concrete. It is reasonable to accept that the innovation can be created, which can decrease the CO2 outflow related to Concrete generation. For the most part, the development industry accounts for a gigantic natural affect due to its tall request of vitality. As a result of the mindfulness built amid the past few a long time around green house impact and harm to the nature, more individuals and nations got to be cognizant around their future.

## [2] METHODOLOGY

The full procedure involved in this study is described below. These works have been finished after a series of work way done in their consecutive manner. This sequence of procedure to negotiate the design work is given below as, This chapter gives the preposition and expression procedures involved in the study. The point by point methodology included in this ponder is portrayed below.
These workshop have been completed after a series of work way done in their successional manner.
This sequence of procedure to negotiate the design work is given below as:

- Study of research and review papers to build up the bottomless knowledge on the motive.
- Material collection and knowing the parcels of accoutrements to be used.
- Calculation of mix proportions for designing of green concrete.
- Casting of concrete cubes for testing of dimensions 150 mm x 150 mm x 150 mm.
- After casting Curing and testing of concrete cubes are to be done.

The distinct waste essentials are used as aggregate and cement exchange and are flashed in Figures 1, 2 and 3.


Fig. 1: Waste materials as aggregate replacement


Fig. 2: Waste materials as aggregate replacement


Fig. 3: waste ingredients as Cement Replacements

## [4] RESULTS AND DISCUSSIONS

### *A) COMPRESSION TEST*

The compressive quality of solidified cement is the most imperative of all the properties. Subsequently, it is not astounding that the cement is continuously tried for its quality at the research facility some time recently the cement is utilized in critical works. Quality tests are not made on neat cement glue since of challenges of intemperate shrinkage and ensuing breaking of slick cement.

**a. TEST ON NORMAL CONCRETE**

| Sr. No. | Age of cube | C/S area ( $mm^2$ ) l x b | Weight 0f cube (Kg.) | Density (3days) Kg/ | Failure Load ( $KN/m^3$ ) | Compressive Strength ( $N/mm^2$ ) |
|---|---|---|---|---|---|---|
| 1. | 7 Days | 22500 | 7.253 | 2149.03 | 460 | 20.44 |
| 2. | 14 Days | 25500 | 7.050 | 2088.89 | 430 | 19.11 |
| 3. | 28 Days | 25500 | 7.479 | 2216 | 450 | 20 |

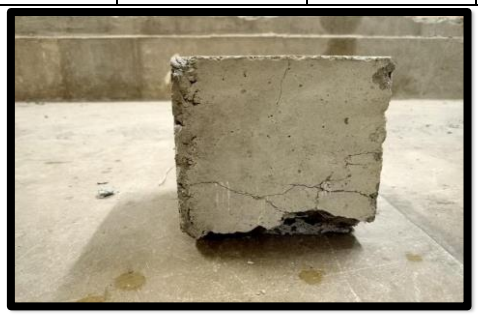

Fig. No. 04 Normal concrete cube specimen

**b. TEST ON GREEN CONCRETE**

| Sr. No. | Age of cube | C/S area ( $mm^2$ ) l x b | Weight 0f cube (Kg.) | Density (3days) Kg/ | Failure Load ( $KN/m^3$ ) | Compressive Strength ( $N/mm^2$ ) |
|---|---|---|---|---|---|---|
| 1. | 7 Days | 22500 | 7.430 | 2201.48 | 223 | 9.92 |
| 2. | 21 Days | 22500 | 7.363 | 2181.62 | 180 | 8 |
| 3. | 28 Days | 22500 | 7.680 | 2275.56 | 235 | 10.45 |

Fig. No. 05 Green concrete cube specimen

## [5] CONCLUSIONS

The compressive strength of green concrete is quite less ( 50 % ) as compared to normal concrete, this shows that more experimentation and further study is require to establish the effectiveness of green concrete and proportioning of various ingredients used in green concrete. But the advantages of green concrete have been study by various researchers. The major advantage is over its environmental friendliness as it reduces the CO2 emission and the energy required for its production as compared to normal concrete. So Surely use of concrete product like green concrete in future won't only reduce the emigration of co2 in terrain and environmental impact but also provident to produce.

## [6] ACKNOWLEDGEMENT

It gives us extraordinary joy to show our extend report on "Experimental Study on Green Concrete". We would like to take this opportunity express pleased nature of appreciation to our Guide Asst. Prof. Nikita Radake beneath whose direction and supervision this extend work was carried and completed. We have to record my profound sense of obligation Prof. Parag P. Koche (HOD, Civil Engineering Dept.) in my institute for giving me facilities and for their invigorating direction and ceaseless engagement. It is fundamental here to affirmation the profitable back to a circumstance proposal given by the staff individual of civil engineering department.

[7] REFERENCES

1. IS code:456(2000). Indian standard plain and strengthened concrete code of practice .
2. IS:383(1970). Indian standard detail of course and fine aggregates form natural sources for concrete
3. Indian standard code (IS-10262:2009)
4. https://www.researchgate.net/publication/342882377_IS_10262__2019_Concrete_Mix_Proportioning_-_Guidelines_Second_Revision
5. https://www.civilclick.com/green-concrete/