



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 12, December 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com



Greening of Concrete Industry

Omkar S Kondvilkar, K.H.Ghorpade

Dept. of Civil Engineering, Trinity Academy of Engineering, Pune, Maharashtra, India

ABSTRACT: Green concrete is nothing but concrete made with eco friendly wastes. In concrete industries green concrete is a revolutionary topic. Green Concrete is an environmental friendly material. Normal concrete is responsible for release of carbon dioxide to some extent. To reduce such emissions, various types of concrete were developed by various researchers by using some waste products from industries and agriculture. It depicts the convenience of the usage of various by products such as dust, marble, fly ash, plastic waste, marble granules, silica fumes, blast furnace, slag, etc. which requires less amount of energy and it is also less harmful to environment. Green Concrete is capable for sustainable development by the application of industrial waste to reduce the consumption of natural resources and energy etc. Use of such materials saves approximately 20% of cements. Thus, green concrete is an excellent substitute of cement as it is cheaper, due to which it is made up of waste products, saving energy. Green Concrete has greater strength and durability compared to normal concrete.

KEYWORDS: Concrete, Sustainability, durability, supplementary cementitious material, waste, carbon dioxide.

I. INTRODUCTION

Green concrete is nothing but using greener materials concrete to make a infrastructure more sustainable. Green Concrete is cheap to produce because it is prepared by waste materials which lowers the energy consumption, increases its strength and durability. Green Concrete was first developed by Dr.W.G in 1998.He made green concrete by including various aspects such as mechanical properties, fire resistance, durability, strength, thermodynamic properties, environmental properties, etc. to prepare green concrete. At recent century India has taken a major initiative in developing the infrastructure such as express highway, bridges, power projects, airports, industries, etc. to cope up with the requirements of globalization. In the construction of any infrastructure, concrete plays an important role. Concrete is an affordable material which is used for the infrastructure of any thing such as industries, bridges, highways, roads, residences, etc. In the present century, India produces more than 170 million cubic meters of concrete annually. In all over the world more than 7% emission of carbon dioxide takes place due to concrete industries. There is alternative technique to produce green concrete. Green Concrete has no relation with its colour(i.e. it is doesn't have affordable material which is used for the infrastructure of anything such as industries, bridges, highways, roads, residence, etc. in the present century, India produces more than 170 million cubic meters of concrete annually. In all over the world more than 7% emission of carbon dioxide takes place due to concrete industries. There is alternative technique to produce green concrete. Green Concrete has no relation with its colour (i.e. it is doesn't have green colour). At recent time according to

Various researchers the production of one ton cement produces approximately one ton of carbon dioxide from concrete by replacing resource manufacturing process, refurbished or reusable and durability

II. MATERIAL SELCTION

A. Efficiency of Resources: It mainly includes properties like natural recycled content/renewable recycled content, efficient.

B. Energy Efficiency:The energy required to make this concrete is known as energy efficiency. The materials which require the amount of energy during the construction period of the concrete is mostly preferred.

C. Conservation of Water:Water is mainly conserved by using materials that help us and conserve water in landscape areas or even help to reduce the consumption of water in building materials.



Fig:- Recycle.

III. PROPERTIES OF GREEN CONCRETE

1. It improves Mechanical properties like strength, shrinkage, static behavior.
2. Fire resistance (i.e. heat transfer), etc.
3. It improves the workability.
4. It improves strength development.
5. It improves the curing properties
6. It improves durability.
7. It improves corrosion protection.
8. It improves frost.
9. It improves new deterioration mechanism.
10. It improves environmental impact.



Fig:- Fresh Local Aggregate



Fig:- Fly Ash



Fig:- Recycled Glass Aggregate

IV. MATERIAL REPLACE TO GREEN CONCRETE

ADVANTAGES OF GREEN CONCRTE

1. It has Good Thermal Resistance.
2. It has good acid resistance.
3. It increases compressive strength.
4. It increases compressive strength.
5. Reduce consumption of the cement.
6. Reduce the environmental pollution.
7. It is Cheaper.

Sr.	Component of Concrete	Replaced Material For Green Concrete
01	Cement	Sludge ash, fly ash
02	Coarse Aggregate	Silica fume, waste glass
03	Fine Aggregate	Demolish bricks, Micro silica, Marble, etc

DISADVANTAGE OF GREEN CONCRETE

1. It has less structure construction.
2. It has less flexural strength.
3. Water absorption is high.



4. Shrinkage is high.
5. Creep is high.

V. CONCLUSION

In this article, we have studied about the green concrete like properties, preparation, advantages, disadvantages, etc. With the help of Green Concrete we can save the natural materials for future generations. Green Concrete Technology is one major step in construction industry to achieve sustainable construction. It is cost effective. This paper deals with the use of Portland cement. With the waste materials we can help to reduce the environmental problems. In this article, we conclude that one ton of conventional cement approximately produce a one ton of carbon dioxide. To over come from this factor Green Concrete is best material. In future, green concrete will not reduce environmental problems but it also reduces the cost of concrete. Water absorption is slightly greater that the conventional concrete. Permeability of green concrete is less than conventional concrete.

REFERENCES

- [1]Dr.PulkitGupta, AniktLaddha 2018 “Green Concrete- A Review Study” IOSR Journal of Engg. Vol.08, Issue 10, October-2018
- [2]PriyanshuShekhar,RudaliNagpurkar,BhagyashreeSelore,PrashantSonekar,RahulSonarhare,Mratulgautam 2017 “Green Concrete For better Sustainable Environment” International Research Journal of Engg. Vol.04, Issue 03, March-2017
- [3]NiharKhalatkar 2017 “Study on Green Concrete “International Research of Vol.04, Issue 02, April-2017
- [4] Prof.AshokAdmure, VardhanNagarkar, Mr.SanketPadalkar, Ms.SamruddhiBhamre, AkshayTupe 2017 “Experimental Study on Green Concrete” International Research Journal Of Engg and Tech. Vol.04, Issue.04, April-2017
- [5] BambangSuhendro 2014 “Towards Green Concrete For Better Sustainable Environment” International Research Journal of Vol.03, Issue.09, Jan-2014
- [6] Ms. Monica C. Dhoka 2013 “Green Concrete: Using Industrial Waste of Marbal Powder, Quarry Dust And Paper Pulp” International Journal Of Engineering Science Invention Vol.02, Issue.10, October-2013
- [7] Karma Wangchuk, KelzangTsheten, KingaYezer, Loday 2013 “Green Concrete for Sustainable Construction” International Journal of Engg. Civil Department, K.L University, A.P., Indiaof Vol.02, Issue.11, Nov-2013
- [8]Dr.Ing Carola Edvardsen ,M.Sc.Karsten Tollose 2001 “Environmentally Green Concrete Structure” International Journal of Vol.04, Issue.02, October-2001



**Impact Factor:
7.569**



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 9940 572 462  6381 907 438  ijirset@gmail.com



www.ijirset.com

Scan to save the contact details