iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** IX **Month of publication:** September 2022

DOI: https://doi.org/10.22214/ijraset.2022.46757

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue IX Sep 2022- Available at www.ijraset.com

Compressive Strength of Blocks Made of Hollow Sandcrete Using Portland Limestone Cement and Rabbish

Dhiraj Kumar[1], Mr. Rajneesh[2]
[1]*M. Tech Student (civil egg), Lucknow Institute of Technology, Lucknow, UP*
[2]*Head of Department, Lucknow Institute of Technology, Lucknow, UP*

Abstract: ***As we know that construction is a very important and basic part of development. In today's scenario, every developing country is more focused on developing its infrastructure. we should be aesthetically beautiful, durable and Economical also. especially, India which is a developing nation is going through lots of infrastructure development and needs durable and also economical construction materials especially sand, cement, and concrete. so, in this project, more focus is on making the construction cheaper and more affordable to all classes of society. so, in this, we have used rabbish as an alternate in cement concrete to check its effect on its durability and effectiveness. Sandcrete hollow blocks are used in place of traditional bricks and stones when building a structure.***

They save cost on foundation costs and mortar usage, are lighter than bricks, and are simpler to install. When compared to traditional bricks, they have the advantages of uniform quality, quicker building speed, lower labour participation, and longer durability. Hollow sandcrete stones are becoming increasingly widely used in construction projects as a result of these advantages.

The most often used material for highway drainages, fences and retaining wall, among other sandcrete block-based engineering infrastructures, is hollow aggregate concrete blocks, also known as hollow sandcrete blocks. It can be reused to manufacture modern products.

Keyword: sandcrete, hollow block, Rabbish, brick

I. INRODUCTION

For the manufacturing of concrete, the building activity relies on traditional resources such as cement, sand, and aggregates. The rise and high cost of materials has delayed the construction of infrastructural facilities significantly. As a result, engineering considerations to employ less expensive and readily available materials to lower construction costs for sustainable development are required.

Waste can be re-utilized in a best way by substituting it to conventional material. Various researches have been done in the field of construction to reduce the cost of construction. Some of the wastes such as sawdust, slag, rabbish and fly ash are used with the addition of cement, so that the cost of project minimizes and the strength of concrete is also increases. An assessment was found out on the performance of "RABBISH" as the partial addition of cement. Rabbish is a waste generated by the brick in a brick kilns, brick masonry construction sites.

The experiment was carried out by the partial addition of rabbish in concrete mix. The addition of rabbish is done in various percentages such as 5%, 10%, and 15%.

II. OBJECTIVE

To find the impact of Ordinary Portland Cement grade on the compressive strength of hollow sandcrete blocks using Rabbish. Rabbish is a waste material of the bricks and reddish brown in color. it is generally found anywhere at the place of manufacturing bricks. It is found in fine-powdered form and used as a additional ingredient with portland limestone cement. It plays very crucial role in inhance the compressive strength of the sandcrete blocks and although we use waste material irrespective of waste it. Hence, its partial addition is done with cement which makes the construction economical as rabbish is waste of brick masonry construction sites obtaining free of cost.

©IJRASET: All Rights are Reserved

III. METHODOLOGY

1.	Collection of RAW materials	Cement, Sand, Rabbish.
2.	Preparation of modified Concrete	Mixing of above materials at different proportions of Material.
3.	Testing of prepared concrete in cubes of size 15*15*15 cm3.	Checking of compressive strength of hollow sandcrete block
4.	Comparing the modified concrete specimen with the standard specimen by comparing their compressive strength	

A. Materials Used

The various types of materials are used in this project, their detailed description is given below. The required materials are-

1) Rabbish
2) Limestone
3) Fine aggregate
4) Coarse aggregate
5) Cement

IV. TEST CONDUCTED ON MATERIAL

1) Sieve analysis
2) Specific gravity
3) Water content
4) Fineness test
5) Consistency test
6) Flakiness and elongation test
7) Water Absorption Test

A. Test On Limestone

1) Specific gravity
2) Water content
3) Fineness test
4) Coonsistency

B. Test On Rabbish

1) Seive analysis
2) Specific gravity
3) Water content

C. Test On Cement

1) Fineness test
2) Consistency test

D. Test On Coarse Aggregate

1) Water absorption
2) Flakiness & elongation test
3) Sieve analysis
4) Finesnes modulus

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

V. TEST RESULT

A. *Compressive Strength of Blocks at 7 days*

S. No.	% Of Rabbish	Load (KN)	Area(mm^2)	Compressive Strength(N/mm^2)
1.	5%	265	18082	14.65
2.	10%	245	18082	13.54
3.	15%	235	18082	12.99

B. *Compressive Strength of Blocks at 14 days*

S. No.	% of Rabbish	Load (KN)	Area(mm^2)	Compressive Strength(N/mm^2)
1.	5%	355	18082	19.63
2.	10%	290	18082	16.03
3	15%	265	18082	14.65

C. *Compressive Strength of Blocks at 28 days*

S. No	% of Rabbish	Load (KN)	Area(mm^2)	Compressive Strength(N/mm^2)
1.	5%	395	18082	21.84
2.	10%	325	18082	17.97
3	15%	305	18082	16.86

- ***Results:*** In this test we found that addition of 5% rabbish is higher compressive strength value than 10% & 15%.

VI. CONCLUSION

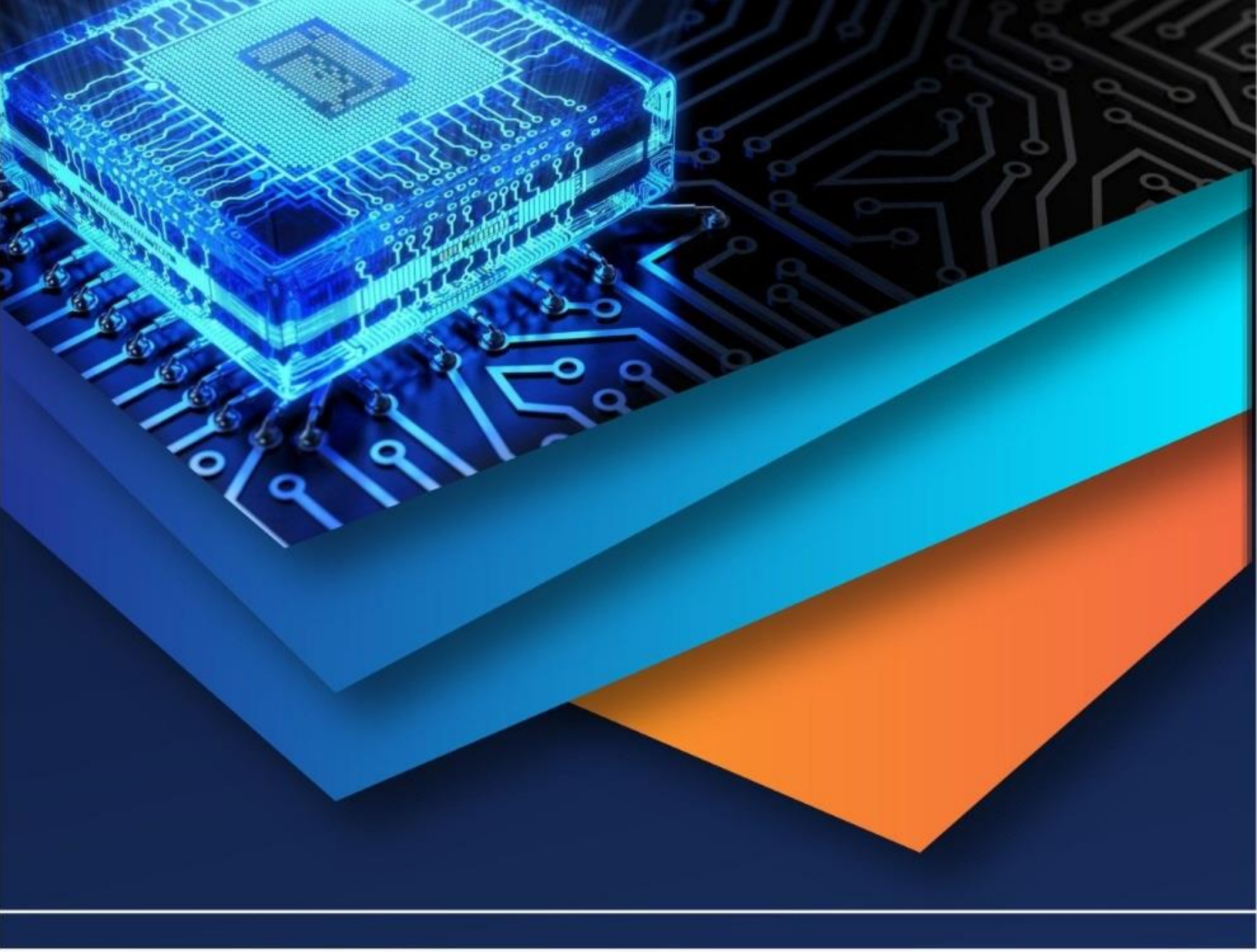
In this project, we added specific amount of rabbish in M25 (1:1:2) and tried to determine the effect of this mix on compressive strength of the hollow sandcrete blocks. After the completion of the project, we came to a conclusion that addition of up to 5% of rabbish in the concrete mix results in the improvement of the strength and is beneficial in the construction work but beyond 5%, say 10% or 15% the strength of the mix decreases in comparison to conventionally prepared mix.

©IJRASET: All Rights are Reserved

REFERENCES

[1] A.O. Adeyeye, "Impact of Vibration Time on Compressive Strength of Hardened Sandcrete Buildings Blocks. Building 2012, vol.2, pp. 153-172, 2012.
[2] Adagba T, Tyagher S.T. and Utsev J.T., "Suitability of sawdust ash-lime mixture for the Production of Sandcrete Hollow Blocks", Nigeria Journal of Technology, vol. 30 No 1 pp. 79-84, 2011.
[3] Andam, K.A., "Enhancing the Compressive Strength of Concrete Blocks", University of Science and Technology, Kumasi, Ghana, vol. 1, pp. 282, 2002.
[4] Anya, U.C., Arimanwa J.I. Okpara S.O, "Variation of OPC-Rice Husk Ash-Saw Dust Ash Composite Strength with Water-Cement Ratio", International Journal of Engineering Research and Development vol. 8 pp. 26-30, 2013.
[5] D.E. Ewa and J.O. Ukpata, "Investigation of the Compressive Strength of Commercials Sandcrete Blocks in Collabra Nigeria", vol. 3, pp. 447-482, 2013.
[6] Ezeokonkwo, J.C., "Unaxial Compressive Strength of Sandcrete Hollow Blocks and its Dependence on Geometry", M. Enger, Thesis, University of Nigeria, Nsukka, 1988.
[7] H. Mahmoud, H.A. Hamma and H.A. Abba, "Compressive Strength of marketed sandcrete blocks produced in Yola, Nigeria". Journal of engineering and applied sciences, vol. 2, pp. 72-81, 2010.
[8] J.O. Afolayan, C. Arum, C.M. Daramola, "Characterization of the Compressive Strength of Sandcrete Blocks InOndo State, Nigeria", EACE Journal, vol.4, 2008.
[9] M. Abdullahi, "Compressive Strength of Sandcrete Blocks in Bosso and Shiroro area of Minna Nigeria", vol. 9, pp. 126-132, 2005.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)