

Author's Accepted Manuscript

Comparative study on open air burnt low- and high-carbon rice husk ash as partial cement replacement in cement block production

Selvaraja Mayooran, Singarajah Ragavan,
Navaratnarajah Sathiparan



PII: S2352-7102(17)30276-0
DOI: <http://dx.doi.org/10.1016/j.job.2017.07.011>
Reference: JOBE305

To appear in: *Journal of Building Engineering*

Received date: 14 May 2017
Revised date: 15 July 2017
Accepted date: 28 July 2017

Cite this article as: Selvaraja Mayooran, Singarajah Ragavan and Navaratnarajah Sathiparan, Comparative study on open air burnt low- and high-carbon rice husk ash as partial cement replacement in cement block production, *Journal of Building Engineering*, <http://dx.doi.org/10.1016/j.job.2017.07.011>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Comparative study on open air burnt low- and high-carbon rice husk ash as partial cement replacement in cement block production

Selvaraja Mayooran, Singarajah Ragavan, Navaratnarajah Sathiparan*

Department of Civil Engineering, Faculty of Engineering, University of Jaffna, Ariviyal Nagar, Killinochchi, Srilanka.

*Corresponding author: Tel.: +94-77-4929868. nsakthiparan@yahoo.com.

Abstract

This study analyzes the feasibility of using high-carbon content rice husk ash waste generated from open air burning of rice husk, as secondary raw materials in the manufacture of cement blocks. Solid masonry blocks having the size of 215mm x 105mm x 65 mm, were cast with the mix proportion of 1:5 cement and sand. Blocks were manufactured with two types of rice husk ash (RHA); low-carbon content RHA and high-carbon content RHA. Cement blocks, at four different RHA replacement levels of 5%, 10%, 15% and 20% were prepared for low and high-carbon RHA as partial cement replacement. Testing was included for workability (water/binder ratio and setting time), strength (compressive, flexural bending and splitting tensile) and durability (water absorption, sorption, acid attack resistance and alkaline attack resistance). Results from this test results indicate that the workability, mechanical and durability characteristics of low-carbon RHA cement blocks slightly better than that of high-carbon RHA cement blocks. However, both RHA replacement cement blocks satisfy the limit recommended by standards. Even, high-carbon RHA replacement cement block does not vastly improve the strength or durability properties, the economic and environmental benefits encourage to use high-carbon RHA in cement block production.

Keywords: Cement block, Rice husk ash, open air burning, Low-carbon, High-carbon

Download English Version:

<https://daneshyari.com/en/article/4923063>

Download Persian Version:

<https://daneshyari.com/article/4923063>

[Daneshyari.com](https://daneshyari.com)