IJARCCE ISSN (O) 2278-1021, ISSN (P) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

ISO 3297:2007 Certified ⁜ Impact Factor 8.102 ⁜ Peer-reviewed / Refereed journal ⁜ Vol. 12, Issue 6, June 2023

DOI: 10.17148/IJARCCE.2023.12638

CRRa-FA AS PARTIAL REPLACEMENT OF CEMENT IN CONCRETE

Mahale Shiva[1], Bhoye Devidas[2], Patil Amit[3], Mali Nitin[4], Salunke Akshay[5],

Prof. Gawali N.B[6]

Student of Department of Civil Engineering, S.N.D College of Engineering & Research Center, Yeola[1-5]

Professor, Department of Civil Engineering, S.N.D College of Engineering & Research Center, Yeola[6]

Abstract: The impact of carbide waste,CW on the strength of concrete made with cement partially replaced with Rice Husk Ash,RHA for use in rigid pavement was investigated. Oxide composition analysis of CW and RHA confirm their status as non pozzolanic material rich in CaO component and pozzolanic materials, respectively. The large amount of space taken on landfills by waste, the constant release of environmental polluting gases like CO_2 into the atmosphere and the high cost involved in cement production has led to the search for alternative binding materials that are cheap, ecofriendly and will help contribute to waste management.

Keywords: Calcium Carbide Residue; Wood ash; Supplementary Cementitious Materials; Pozzolanic reaction; CO2 emission.

INTRODUCTION

Concrete has been one of the most important construction materials over the years as it offers a low cost, durable, aesthetic advantage over other materials like wood, bamboo, and steel. One of the constituents of concrete is cement, a material that provides the binding property needed for the solidification of other constituents. The vast use of concrete has directly led to the extensively demand for cement. Presently, a huge number of industrial by-products, agricultural wastes, and unprocessed materials like calcium carbide residues, slags, rice husk, wood ash, fly ash, animal bones, paper waste etc., litter and take an enormous space on landfills and waterways across the world. These indiscriminate disposal leads to pollution, and some could pose potential hazards to the environment. Much research has been going on the utilization of these materials in construction, an innovation which will help reduce indiscriminate disposal of such waste and reduce the usage of some constituent of concrete. In all the cases reported above, it is only the use of BPA that resulted in strength increase above the control (use of only cement), decline in strength was reported with the use of the remaining agro waste materials.

LITERATURE SURVEY

Sr.no	Paper	Author	Description
1	Effect Of Carbide Waste On The Properties Of Rice Husk Ash Concrete.	JOEL MANASSEH	Particle size distribution curves of, fine and coarse aggregate used in concrete production.

DOI: 10.17148/IJARCCE.2023.12638

2	The Influence of Calcium Carbide Residue and Wood Ash on the Properties of Concrete.	Olaoyenikan Olajide A.1 , Olajide Olusola D.2 , Adese Akorede J. 3.	Several tests were carried out in the laboratory on the materials used for this test to determine the engineering properties of the materials to be evaluated, some of which was on the aggregates, cement, concrete; both fresh and hardened.

METHODOLOGY

Ordinary Portland cement (OPC) is the popular cementing material used in concrete, but OPC concrete is not an environmental friendly material because the cement manufacturing processes lead to the release of a significant quantity of CO2 and other greenhouse gases and reducing OPC usage by using pozzolanic materials to replace part of OPC or to use other binders as a substitution of all of the cementitious materials. Calcium carbide residue (CCR), which consists mainly of Ca (OH)2 , obtained by the reaction of calcium carbide and water.

RESULT

Chemical Analysis of RHA/OPC/CW Oxide composition analysis of RHA, OPC and CW shown in Table 2 confirmed the status of RHA as a pozzolanic material with low calcium oxide composition. The workability and setting times of the concrete incorporating CCR/WA increases when compared with the conventional concrete. The compressive and tensile strength of the concrete mixes increased as the age of curing increased

CONCLUSION

Oxide composition analysis of CW shows that CW is a non pozzolanic material with high CaO content, and low SiO2 content, while RHA is a pozzolanic material rich in SiO2 component. Setting times of RHA-cement combination increased with CW content in paste made with cement partially replaced with RHA.Incorporating CCR and WA in concrete helps improves the workability and setting time of concrete and can attain comparable strength to conventional concrete over time. The use of these materials can help reduce the use of cement and its accompanying environmental challenges.

REFFRENCES

[1] Students of S.N.D College Of Engineering & Research Center, Yeola 2022.
[2] Replaceing Of Coarse Aggregate And Cement By Coconut Shells And Flyash In Concrete, DHANAVATH RANGA M.Tech Student, Dept of Civil, Priyadarshini Institute of Technology and Management, Pulladigunta, Guntur, A.P, India SK.SUBHANI Assistant Professor, Dept of Civil, Priyadarshini Institute of Technology and Management, Pulladigunta, Guntur, A.P, India
[3] USE OF COCONUT SHELLS AS A PARTIAL REPLACEMENT OF COARSE AGGREGATES Ubair Mukhtyar1 , Chitranjan Kumar2 1M.Tech Student, Construction Technology & Management, Al-Falah University,Haryana, India 2Assistant Professor, Civil Engineering Department, Al-Falah University, Haryana, India

