IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 5, June 2023

Utilizing Red Mud as a Partial Replacement for Cement in High- Performance Concrete: Assessing Mechanical and Durability Properties

Aditya V. Kale[1], Amar V. Kharmate[2], Manish Kumar[3], Mrunmayee N. Deshpande[4]
UG Students, Department of Civil Engineering[1,2,3]
Professor (Guide), Department of Civil Engineering[4]
Sinhgad College of Engineering Pune, India

Abstract: *Bauxite residue (Red mud) is one of the industrial caustic waste materials obtained from alumina production. Because of high annual production, it requires high costs and vast landfills to dispose it. In addition, due to high alkalinity, disposal of red mud (RM) may cause serious environmental problems. Considering use of concrete beside economic and environmental issues of cement production, replacing cement by industrial waste seems inevitable. In this study, RM has been used as high as 10% replacement of cement mass in order to study the performance of this waste material in high performance concrete (HPC) in terms of their mechanical properties, 5-10% of the cement in concrete was replaced with red mud, in increments of 2.5%. In addition, to enhance the pozzolanic reaction. A slump cone test was conducted to evaluate the workability. Compressive, flexural, and split tensile strength tests were conducted to observe the mechanical properties. A rapid chloride penetration test and water absorption tests were conducted to determine the durability properties of the concrete.*

Keywords: Bauxite residue

REFERENCES

[1]. Vaibhav Shirodkar, G S Institute Technology Karwar, Karnataka, India
[2]. Jaspal Singh, Professor, Department of Civil Engineering Punjab Agricultural University, Ludhiana, Punjab, India
[3]. Rakesh Patel, Research Scholar, Department of Civil Engineering, MPU, Bhopal
[4]. Meral Oltulu, Ibrahim Alameri Ataturk University, Faculty of Engineering, Department of Civil Engineering, Erzurum, Turkey
[5]. D. Linora Metilda , C. Selvamony, R. Anandakumar & A. Seeni, Anna University, Chennai, Tamilnadu, India
[6]. K. Viyasun a , R. Anuradha a , K. Thangapandi b, , D. Santhosh Kumar a , A. Sivakrishna c , R. Gobinath c aDept. of Civil Engineering, SNS College of Technology, Coimbatore 641035, India Dept. of Civil Engineering, V V College of Engineering, Tisaiyanvilai 627657, Tamilnadu, India c Civil Engineering, S R Engineering College, Warangal 506371, Telangana, India