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: 7.53
Volume 4, Issue 5, April 2024

Partial Replacement of Cement By Quarry Dust In Concrete

Miss. Jagdale Trupti Ramnath[1], Miss. Kale Suvarna Sanjay[2], Miss. Mhaske Ashvini Rangnath[3], Miss. Somvanshi Trupti Eknath[4], Prof. Sanp S. T.[5]
Department of Civil Engineering[1,2,3,4,5]
S.N.D College of Engineering & Research Center, Babhulgaon, Yeola, Nashik, Maharashtra, India

Abstract: *The utilization of quarry dust as a binding material in concrete has emerged as a promising alternative amidst the diminishing availability of natural river sand. Quarry dust, a byproduct of the crushing process in quarrying activities, presents itself as a readily available and cost-effective substitute for natural sand in concrete production. Its use not only addresses the scarcity of river sand but also contributes to cost reduction and environmental preservation by minimizing the demand for natural resources and reducing quarry waste. While concerns regarding potential air pollution and long-term durability exist, these can be effectively managed through appropriate dust suppression measures during crushing and the incorporation of suitable admixtures and curing methods. Thus, quarry dust stands as a viable option, offering both practical and environmental benefits in the construction industry.*

Keywords: Quarry dust, concrete, substitution, environmental impact, cost-efficiency

BIBLIOGRAPHY

[1]. Adesina, A. A., Raheem, A. A., & Ede, A. N. (2016). Influence of quarry dust on the properties of concrete. Leonardo Electronic Journal of Practices and Technologies, (29), 85-96.
[2]. Bilodeau, A., &Malhotra, V. M. (2000). High-volume fly ash system: Concrete solution for sustainable development. ACI Materials Journal, 97(1), 50-59.
[3]. Binici, H., Aksogan, O., & Shah, T. (2007). Investigation of the use of quarry dust as a substitute of river sand in concrete mixes. Applied Engineering in Agriculture, 23(6), 713-718.
[4]. Dehwah, H. A. F., & Al-Akhras, M. A. (2013). Green concrete: using industrial waste of marble powder, quarry dust and paper pulp in concrete. Journal of Engineering Science and Technology, 8(2), 202-205.
[5]. Dindorkar, N. V., &Dhamane, K. A. (2018). Experimental investigation on quarry dust concrete with chemical admixture. International Journal of Engineering Research & Technology, 7(10), 600-606.
[6]. Ganesan, N., &Rajagopal, K. (2008). Experimental investigation on quarry dust concrete with chemical admixture. Indian Journal of Science and Technology, 1(4), 1-4.
[7]. Ilangovana, R., &Mahendrana, N. (2008). Strength and durability properties of concrete containing quarry rock dust as fine aggregate. ARPN Journal of Engineering and Applied Sciences, 3(5), 20-26.
[8]. Khan, M. N., & Islam, M. A. (2015). Utilization of quarry dust in developing high-performance self-compacting concrete. In 2nd International Conference on Sustainable Construction Materials and Technologies (pp. 1-10).
[9]. Ling, T. C., Poon, C. S., & Lam, W. T. (2002). The effect of fly ash and recycled aggregates on the properties of recycled aggregate concrete. Waste Management & Research, 20(3), 237-246.
[10]. Mane, P. P., &Kolekar, V. M. (2019). Experimental study on partial replacement of cement with quarry dust in concrete. International Journal of Engineering Research and General Science, 7(4), 242-248.
[11]. Neville, A. M. (2011). Properties of concrete. Pearson Education India.
[12]. Okafor, F. O. (2018). Compressive strength and water absorption characteristics of concrete using quarry dust powder and polyethylene plastic pellets. International Journal of Engineering Research in Africa, 35, 85-93.

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: 7.53
Volume 4, Issue 5, April 2024

[13]. Ramana, M. V., &Rao, P. R. M. (2018). Strength characteristics of concrete with quarry dust as fine aggregate. IOP Conference Series: Materials Science and Engineering, 376(1), 012179.

[14]. Rashid, K., &Yousaf, M. (2017). Concrete mix design using quarry dust as fine aggregate. ARPN Journal of Engineering and Applied Sciences, 12(14), 4261-4267.

[15]. Safiuddin, M., West, J. S., &Hossain, M. U. (2017). Performance of structural concrete made with high volumes of fly ash and recycled coarse aggregate. Construction and Building Materials, 133, 223-234.

[16]. Samusa, M. M., &Ambursa, I. A. (2017). Performance evaluation of concrete using quarry dust as fine aggregate. International Journal of Scientific & Engineering Research, 8(10), 1495-1504.

[17]. Shetty, M. S. (2005). Concrete technology: theory and practice. S. Chand & Company Ltd.

[18]. Siddique, R. (2003). Effect of fine aggregate replacement with class-F fly ash on the mechanical properties of concrete. Cement and Concrete Research, 33(4), 539-547.

[19]. Sikiru, O. R., &Ogunbayo, B. F. (2016). Analysis of quarry dust for the use of structural concrete in construction. Journal of Scientific and Engineering Research, 3(8), 237-246.

[20]. Subramanian, N., &Nagarajan, R. (2016). Use of quarry dust to replace sand in concrete – An experimental study. International Journal of Engineering Research and Development, 11(3), 43-52.

[21]. Tayeh, B. A., & Al-Akhras, M. A. (2015). Mechanical properties of high-strength concrete incorporating quarry dust powder, silica fume and fly ash. International Journal of Engineering Research & Technology, 4(04), 82-88.