



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8

Issue: III

Month of publication: March 2020

DOI:

www.ijraset.com

Call:  08813907089

E-mail ID: ijraset@gmail.com

Review Paper on Partial Replacement of Cement by Sugarcane Baggase Ash with Jaggery as a Admixture

Ankush Uprikar¹, Deepak Ram², Rahul Bhimte³, Ritesh Kale⁴, Tanmay Musale⁵, Vikky Chahvan⁶, Vaibhav Matala⁷,
Rahul Jichkar⁸

^{1, 2, 3, 4, 5, 6, 7}Student Of Department of Civil Engineering, DBACER, Nagpur, Maharastra, India

⁸Assistant Professor, Department of Civil Engineering, DBACER, Nagpur, Maharastra, India

Abstract: Concrete is used to construct the roads, buildings, dams, etc..Now the main focus of construction is to increase the strength of concrete. Sugarcane bagasse and its ash is one among the agro waste which may be a fibrous waste obtained from sugar mills as byproduct.

This paper deals with the replacement of cement by sugarcane baggase ash.The main purpose of this report is to suggest the locally available materials (Which are documented to people like, jaggery & sugar cane ash) to strengthen the properties of concrete & to scale back the price of construction.The admixtures (sugar & jaggery) are added into concrete to determine the properties improvements in concrete.

Keywords: Compressive strength, Sugarcane, Baggase Ash, Jaggery

I. INTRODUCTION

In today's scenario, the disposal and management of plastic waste is that the foremost serious issue. It's one among the foremost environmental, economical and social issue

Attempts to scale back the utilization of hydraulic cement in concrete are receiving much attention due to environment-related. because the industries waste is piling up every day, there's a pressure on industries to hunt out an answer for its disposal. the utilization of waste in concrete also can reduce the consumption of natural resources.

II. LITRETURE REVIEW

Ganesan et al., states the effect of Sugarcane ash content as replacement in concrete (0-30%) on physical and mechanical properties of solidified cement. The properties of cement were explored incorporate compressive quality, parting lastingness, water assimilation, porousness attributes, chloride dissemination and protection from chloride particle infiltration. All tests directed as per Indian Standards. The test outcomes showed that SCBA is a proficient mineral admixture up to twenty substitution was beneficial. the ascent in quality could even be somewhat due to the pozzolanic response [1]

Nunta chai et al., inspected the significance of bagasse debris for advancement as pozzolanic materials in concrete. The physical properties of cement containing ground bagasse debris (BA) including compressive quality, water porousness, and warmth advancement were examined and each one tests were depleted understanding with American Standards. At the point when bagasse debris is ground up into little particles, the compressive quality of cement containing this ground bagasse debris improves essentially. The low tide porousness estimations of cements containing ground bagasse debris at 90 days were generally brought about by the pozzolanic response. the upper the substitution part of water powered concrete by ground bagasse debris, the more drawn out the defer time to encourage totally the best temperature rise. Concrete containing up to 30% ground bagasse debris had a vastly improved compressive quality and a lower water porousness than the control concrete, both at ages of 28 and 90 days [2].

Kawade et al. contemplated the effect of utilization of baggase ash on quality of cement by halfway substitution of concrete at the proportion of 0%, 10%, 15%, 20%, 25% and 30% by weight for compressive quality. It had been discovered that the concrete may be profitably supplanted with SCBA up to most extreme constraint of 15%. Halfway substitution of concrete by SCBA expands functionality of new concrete; hence utilization of super plasticizer isn't basic. Tests were depleted agreement with American Standards [3].

Srinivasan et al., contemplated compound and physical portrayal of SCBA, and mostly supplanted inside the proportion of 0%, 5%, 15% and 25% by weight of concrete in concrete. Compressive quality, split lastingness, flexural quality and modulus of flexibility at seven

years old and 28 days was gotten according to Indian Standards. It had been discovered that the concrete may be profitably supplanted with SCBA up to a most extreme restriction of 10%. Hence it's conceivable to utilize sugarcane bagasse debris (SCBA) as concrete substitution material to reinforce quality and diminish the cost of development materials like cement [4].

Somna et al. contemplated the use of a pozzolanic material to improve the mechanical properties and sturdiness of reused total cement. SCBA used to supplant characteristic coarse total not over 25% by weight. When GBA was utilized to somewhat supplant concrete in reused total cement, the chloride entrance diminished and was lower than those of control concrete at the equivalent inundated time. Reused total cement by fusing SCBA has the modulus of flexibility, lower than that of the customary cement by around 25–26% [5].

Lavanya et al. analyzed the incomplete substitution for concrete in regular cement. The tests were led according to Bureau of Indian Standards (BIS), IS 516-1959 codes to gauge the appropriateness of SCBA for halfway substitutions up to 30% of concrete with differing water concrete (w/c) proportion. The physical properties of SCBA were examined. Compressive qualities (7, 14 and 28 days) were resolved as per Indian Standards. The outcomes demonstrated that the expansion of sugarcane bagasse debris improves the qualities through and through cases. The most extreme quality increment occurs at 15% with 0.35 w/c proportion [6].

Otuoze et al. reasoned that SCBA was a genuine pozzolana for solid cementation and fractional mixes of it with OPC could invigorate great advancement and other designing properties in concrete. An ideal of 10% SCBA with OPC could be utilized for ferroconcrete with thick total. The substitution of concrete by SCBA was 0-30% and as per American and Brazilian Standards all tests were managed [7]

III. CONCLUSIONS

Today we sleep within the earth full of development and enthusiastic for still more comfort and facilities. This results in innovations and revolutions in each and each field, but on contrary it's negative impact on environment as resources get depleted and pollution to different natural sources are occurred. Reduction or reuse of waste materials as partial replacement in field of concrete production can have a large impact environment which can lead to pollution free and soothing surrounding. Thus as concluded from above literature review more research are often done in the direction of partially replacing cement up to most optimum level by reusing or introducing waste as its option. By use of locally available wastes as partial substitution at place of concrete ingredients, it's going to prove more economical than traditional concrete and question of dumping of such waste produced and strength which one obtains by regular concrete ingredients.

REFERENCES

- [1] Aigbodion.V.S, Hassan.S.B, Olajide.S.O, Agunsoye.O.J, AbdulRahaman.A.S. and Okafor.G.E, "The use of rice husk ash as an aggregate for foundry sand production in Nigeria", Proceedings of The Nigerian Metallurgical Society (NMS), Annual Conference & Annual General Meeting, 2008 pp 16-22.
- [2] Mrs.U.R.Kawade, Mr.V.R.Rathi, Miss Vaishali and D. Girge, "Effect of use of Bagasse Ash on Strength of Concrete", ISSN: 23198753 Vol. 2, Issue 7, 4, Abdolkarim Abbasi and Amin Zargar, "Using Bagasse Ash in Concrete as Pozzolan", Middle-East Journal of scientific research 13 (6):2013 pp716-719.
- [3] Committee Board of sugar cane and sugar Summary of sugar cane and sugar industry in Thailand in 2003/2004, Division of sugar cane and sugar industry Policy, Ministry of Industry, Vol.2 (2004). Bangkok Thailand (in Thai). 4
- [4] Abdolkarim Abbasi and Amin Zargar, "Using bagasse ash in concrete as pozzolan," Middle-East Journal of scientific research ,vol.13(6), 2013. pp.716-719.
- [5] Ganesan, K., Rajagopal, K., and Thangavel, K. "Evaluation of bagasse ash as supplementary cementitious material" Cement and Concrete Composites, 2007.
- [6] Nuntachai Chusilp, Chai Jaturapitakkul, Kraiwood" Utilization of bagasse ash as a pozzolanic material in concrete" Construction and Building Materials 23 (2009) 3352–3358.
- [7] Mrs.U.R.Kawade, Mr.V.R.Rathi, Miss Vaishali and D. Girge, "Effect of use of Bagasse Ash on Strength of Concrete", ISSN: 23198753 Vol. 2, Issue 7, 2013.
- [8] R.Srinivasan, and K.Sathiy, "Experimental Study on Bagasse Ash in Concrete", International Journal for Service Learning in Engineering ,Vol. 5, No. 2, 2010, pp. 60-66.
- [9] Rattapon Somna , Chai Jaturapitakkul , Pokpong Rattanachu, and Wichian Chalee, "Effect of ground bagasse ash on mechanical and sturdiness properties of recycled aggregate concrete", Materials and elegance 36 (2012) 597–603.
- [10] H. S. Otuoze, y. D. Amartey, b. H. Sada, h. A. Ahmed, m. I. Sanni and m. A. Suleiman, "Characterization of sugar cane bagasse ash and ordinary Portland cement blends in concrete" procs 4th West Africa Built Environment Research (WABER) conference, 2012, pp 24-26.
- [11] Lavanya M.R, Sugumaran.B, Pradeep.T, "An Experimental study on the compressive strength of concrete by partial replacement of cement with sugarcane bagasse ash", ISSN: 2278-7461, ISBN: 2319-6491 Volume 1, Issue 11 ,2012, PP01-04.
- [12] IS: 12269-1987, Bureau of Indian standards, New Delhi, India, 53grade Ordinary Portland Cement-specification.
- [13] IS: 383-1970. Specification for coarse and fine Aggregates from natural sources for concrete. Bureau of Indian standards, New Delhi.
- [14] IS: 10262-2009 and SP 23:1982. Recommended Guidelines for concrete Mix. Bureau of Indian Standards, New Delhi. [15]. IS: 516-1959. Indian Standard Methods of Test for Strength of concrete. Bureau of Indian Standards, New Delhi.



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)