

Experimental Study on Partial Replacement of Aggregate by using Plastic Waste

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Abstract: *Safe disposal of waste plastic is a serious environmental concern which needs to be mitigate. Being a non-biodegradable material, it does not decay over time and even if dumped in landfills, finds its way back in the environment through air and water erosion, can choke the drains and drainage channels, can be eaten by unsuspecting grazing animals causing them illness and death, can contaminate the construction fill, etc. The use of plastic shall be refused as much as possible. This paper investigates the effect to fusing waste plastic materials on the concrete. Waste plastic used in this study were collected from home which are almost available in our homes. The plastic can be used as filler material in concrete as well as it can be used to improve the mechanical properties of concrete. Concrete is a composite material which comprises Cement, Coarse Aggregate, Fine Aggregate, Water and Admixtures. In this project, M25 grade of concrete with W/C 0.46 is adopted and the percentage of waste plastic added as 0%, 2%, 4%, 6%, 8% and 10% to study the strength of concrete. High compressive strength was found with 8% of waste plastic added in the concrete.*

Keywords: Waste plastic, Concrete, OPC, Aggregate

REFERENCES

- [1]. Elango A and Ashok Kumar A “Study on Partial Replacement of plastic waste as fine aggregate in concrete” International Journal of Current Engineering And Scientific Research, Volume 5, Issue 5, 2018, ISSN (Print):2393-8374, ISSN (Online): 2394-0697
- [2]. Lhakpa Wangmo Thing Tamang, Tshering Wangmo, Karma Tshering Darjay, Karma Sangay Phuntsho, Phuntsho Namgyal, Ugyen Wangchuk “Use of Plastics in Concrete as Coarse Aggregate” International Journal of Education and Applied Research, Volume 7, Issue 5, 2017, ISSN (Print) 2249-4944, ISSN(Online) 2348-0033.
- [3]. Amula.R.G, Azeef Ashraf, Muhammad Hussain, Rejith.K.U, Vijitha.V. “ use of waste plastic as aggregates in Concrete” Panda, B.; Paul, S.C.; Lim, J.H.; Tay, Y.W.D.; Tan, M.J. Additive manufacturing of geopolymer for sustainable built environment. J. Clean. Prod. 2017, 167, 281–288. [CrossRef]
- [4]. Paul, S.C.; van Zijl, G.P.A.G.; Tan, M.J.; Gibson, I. A review of 3D concrete printing systems and materials properties: Current status and future research prospects. Rapid Prototype. J. 2018, 24, 784–798. [CrossRef] 5. Baboo Rai, S. Tabin Rushad, Bhavesh Kr, and S.k. Duggal, “Study of Waste Plastic Mix Concrete with Plasticizer”, International Scholarly Research Network, ISRN Civil Engineering, Volume 2012, Article ID 469272
- [5]. T. Bragadeeshwaran, A.S. Kiruthika Devi, D. Manju Shree, R. Pakya Sree, “Partial Replacement of Coarse Aggregate with Waste Plastic in Concrete”, ISSN: 2348-4098. Arivalagan. S, “Experimental Investigation on Partial Replacement of Waste Plastic in Concrete”, International Journal of Engineering Sciences & Research Technology, ISSN: 2277- 9655, November 2016