

Accepted Manuscript

Feasibility assessment for partial replacement of fine aggregate to attain cleaner production perspective in concrete: A review

Anshuman Tiwari, Sarbjeet Singh, Ravindra Nagar



PII: S0959-6526(16)30807-1

DOI: [10.1016/j.jclepro.2016.06.130](https://doi.org/10.1016/j.jclepro.2016.06.130)

Reference: JCLP 7501

To appear in: *Journal of Cleaner Production*

Received Date: 22 September 2015

Revised Date: 21 June 2016

Accepted Date: 21 June 2016

Please cite this article as: Tiwari A, Singh S, Nagar R, Feasibility assessment for partial replacement of fine aggregate to attain cleaner production perspective in concrete: A review, *Journal of Cleaner Production* (2016), doi: 10.1016/j.jclepro.2016.06.130.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1

2 **Feasibility Assessment for Partial Replacement of Fine Aggregate to Attain**

3 **Cleaner Production Perspective in Concrete: A Review**

4 Anshuman Tiwari, Sarbjeet Singh*, Ravindra Nagar

5 *Department of Civil Engineering, Malaviya National Institute of Technology, Jaipur,*

6 *Rajasthan, India*

7 **Abstract**

8 The rapid rate of solid waste generation has led to a huge quantum of unattended wastes posing a major threat to
9 the ecosystem. Over the years, concrete industry has acquired the credentials of being one of the largest
10 consumers of some of the most vital natural resources. The cost of production of concrete has observed a
11 sustained rise over a period of time and there has been an increasing shortage of fine aggregates, thus
12 aggravating the situation further. Some serious concerns have been raised repeatedly over the detrimental effects
13 of reckless extraction of fine aggregate from river beds. Cleaner production, which is a completely sustainable
14 production process seems to be the calling of the hour, which on one hand aims at the eco-friendly disposal of
15 this huge quantum of industrial waste and on the other hand provides an economical and viable source of raw
16 material for concrete industry. The paper reviews the feasibility of a wide variety of industrial by-products such
17 as bottom ash, waste foundry sand, copper slag, plastic waste, recycled rubber waste, crushed glass aggregate
18 etc., as a potential replacement for fine aggregate in the concrete manufacturing process in terms of strength and
19 durability characteristics. A framework for further research has been proposed to attain reliable, robust, eco-
20 friendly and economic concrete as the end product.

21

22 **Keywords:** Concrete; Fine aggregate; Waste; Industrial by-product

23 =====

24 *Corresponding author, Address: Sarbjeet Singh, Department of Civil Engineering, Malaviya National Institute
25 of Technology, Jaipur, Rajasthan, India. Tel. +919460420420, E-mail address: sarbjeetsinghsaluja@gmail.com,
26 2013RCE9021@mmit.ac.in

Download English Version:

<https://daneshyari.com/en/article/8101200>

Download Persian Version:

<https://daneshyari.com/article/8101200>

[Daneshyari.com](https://daneshyari.com)