

Accepted Manuscript

Environmental assessment of green concretes for structural use

Snežana Marinković, Jelena Dragaš, Ivan Ignjatović, Nikola Tošić



PII: S0959-6526(17)30711-4

DOI: [10.1016/j.jclepro.2017.04.015](https://doi.org/10.1016/j.jclepro.2017.04.015)

Reference: JCLP 9366

To appear in: *Journal of Cleaner Production*

Received Date: 12 January 2017

Revised Date: 22 March 2017

Accepted Date: 3 April 2017

Please cite this article as: Marinković Snež, Dragaš J, Ignjatović I, Tošić N, Environmental assessment of green concretes for structural use, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.04.015.

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.

ENVIRONMENTAL ASSESSMENT OF GREEN CONCRETES FOR STRUCTURAL USE

Snežana Marinković¹, Jelena Dragaš¹, Ivan Ignjatović¹, Nikola Tošić^{1*}

¹ University of Belgrade, Faculty of Civil Engineering, Bulevar kralja Aleksandra 73, 11000
Belgrade, Serbia

* Corresponding author:

Nikola Tošić

E-mail address: ntosic@imk.grf.bg.ac.rs

Tel: +381 64 2034 193

Abstract

This paper presents a comparative environmental assessment of several different green **concrete mixes** for structural use. Four green **concrete mixes** were compared with a conventional **concrete mix**: recycled aggregate concrete with a cement binder, high-volume fly ash concrete with natural and recycled aggregates, and alkali activated fly ash concrete with natural aggregates. All five **concrete mixes** were designed and experimentally verified to have equal compressive strength and workability. An attributional life cycle assessment, **based on the scenario which included construction practice, transport distances, and materials available in Serbia**, was performed. When treating fly ash impacts, three allocation procedures were compared: ‘no allocation’, economic, and mass allocation, with mass allocation giving unreasonably high impacts of fly ash. Normalization and aggregation of indicators was performed and the impact of each **concrete mix** was expressed through a global sustainability indicator. A sensitivity analysis was also performed to evaluate the

Download English Version:

<https://daneshyari.com/en/article/5479770>

Download Persian Version:

<https://daneshyari.com/article/5479770>

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