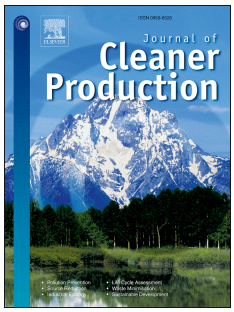
Accepted Manuscript



The properties of the self-compacting concrete with fly ash and ground granulated blast furnace slag mineral admixtures

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PII: S0959-6526(15)00163-8

DOI: 10.1016/j.jclepro.2015.02.050

Reference: JCLP 5219

To appear in: *Journal of Cleaner Production*

Received Date: 28 April 2014

Revised Date: 6 February 2015

Accepted Date: 18 February 2015

Please cite this article as: Zhao H, Sun W, Wu X, Gao B, The properties of the self-compacting concrete with fly ash and ground granulated blast furnace slag mineral admixtures, *Journal of Cleaner Production* (2015), doi: 10.1016/j.jclepro.2015.02.050.

The properties of the self-compacting concrete with fly ash and ground granulated blast furnace slag mineral admixtures

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Abstract: Nowadays, the industrial by-products, i.e. Fly ash(FA), Ground granulated blast furnace slag (GGBFS), as mineral admixture for the production of the self-compacting concrete (SCC) had been increasingly widespread. In this study, the SCC with FA, GGBFS of 20 %, 30 %, 40 % were prepared, the fresh, mechanical, durability properties and porosity of the SCC were evaluated. The presence of FA, GGBFS increased the initial slump flow and reduced the slump flow loss rate, wet density of the SCC and prolonged the setting times of cement paste, the use of FA, GGBFS in the SCC had not obvious affect on the flowability and stability of the SCC. Also, the replacement of cement with FA, GGBFS in the SCC lowered the mechanical properties and increased the water porosity at the early stage, the differences of the mechanical properties and water porosity of the control SCC, FA, GGBFS SCC were insignificant at the later curing period. Although the FA, GGBFS series SCC exhibited a higher carbonation depth than the control SCC, but, utilizing FA GGBF in the SCC were more effective on resistance the chloride migration and drying shrinkage.

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