

Accepted Manuscript

Critical parameters for the compressive strength of high-strength concrete

Hoang Thanh Nam Le, Leong Hien Poh, Shasha Wang, Min-Hong Zhang

PII: S0958-9465(16)30567-4

DOI: [10.1016/j.cemconcomp.2017.06.008](https://doi.org/10.1016/j.cemconcomp.2017.06.008)

Reference: CECO 2845

To appear in: *Cement and Concrete Composites*

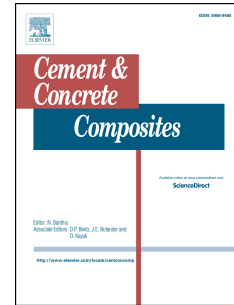
Received Date: 20 September 2016

Revised Date: 3 May 2017

Accepted Date: 19 June 2017

Please cite this article as: H.T. Nam Le, L.H. Poh, S. Wang, M.-H. Zhang, Critical parameters for the compressive strength of high-strength concrete, *Cement and Concrete Composites* (2017), doi: 10.1016/j.cemconcomp.2017.06.008.

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.



Critical Parameters for the Compressive Strength of High-Strength Concrete

Hoang Thanh Nam Le, Leong Hien Poh*, Shasha Wang, Min-Hong Zhang

Department of Civil & Environmental Engineering, National University of Singapore, 1
Engineering Drive 2, Singapore 117576

Abstract

This study investigates the influence of several material properties underlying the failure mechanism of high-strength concrete (HSC) under uniaxial compression. An experimental-numerical characterization of a single inclusion block (SIB) – an idealized composite comprising of a granite cylindrical core embedded within a high-strength mortar (HSM) matrix – is first carried out. Parametric studies are next conducted with the calibrated SIB model, to identify the critical parameters governing the failure of the idealized composite. The qualitative understanding obtained from the SIB is then utilized to design a series of experiments, exploring the extent of influence of the identified critical parameters on the compressive strength of HSC. Complementary experimental data in literature are also examined. For the range of specimens considered, it is found that the lateral strain capacity of mortar matrix has the most influence on the compressive strength of HSC.

Keywords

Compressive strength; High-strength concrete; Lateral strain capacity; Plasticity-damage model.

*Corresponding author
Email: ceeph@nus.edu.sg

Download English Version:

<https://daneshyari.com/en/article/5436786>

Download Persian Version:

<https://daneshyari.com/article/5436786>

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