

Evaluation of Mechanical Properties of Cement Composites With Nanomaterials

I. CHOI¹, J. KIM² AND C. CHUNG^{3*}

¹Dept. of Architecture Engineering, Pukyong National Univ., Busan, Republic of Korea (gatooso05@naver.com)

²Multidisciplinary Infra-technology Research Laboratory, Pukyong National Univ. Busan, Republic of Korea (kjh@pknu.ac.kr)

³ Dept. of Architecture Engineering, Pukyong National Univ., Busan, Republic of Korea (cwchung@pknu.ac.kr)

Mechanical properties of Cement Paste

It is known that physical and chemical changes of cement hydrate cause problems in the volume stability of concrete. In order to overcome these problems, there is a growing interest in research on mixing technology of cement-based materials and nanomaterials. So we compared mechanical properties of cement paste with various nanomaterials. Carbon nanotubes and Graphene Oxide are known to have superior mechanical properties, The research using Single walled Carbon nanotube, Multi walled Carbon nanotube and Graphene Oxide. In this study, first we prepared a dispersion solution to use nanomaterials. We used 2 types of surfactant. The first is DOC, a surfactant already used to disperse nanomaterials, and another one is a superplasticizer used in construction site. And then we measured the compressive strength to compare the mechanical properties. So our mix proportion is shown in the table below.

W/C	0.35
Nanomaterials	Single walled carbonnanotube
	Multi walled carbon nanotube
	Graphene Oxide
Surfactant	Superplasticizer
	Sodium deoxycholate

Table 1: Table used to display mix proportion of cement paste.