

THE INTERACTIONS BETWEEN ANTI-FOAMING AND SUPERPLASTICIZING ADMIXTURES AND THEIR CONSEQUENCE FOR PROPERTIES OF SELF-COMPACTING MORTAR AND CONCRETE

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Abstract

The aim of this paper is to investigate the effects of anti-foaming admixture type (AFA) and time of its introduction on compatibility with two types of PCP-based superplasticizer, air content, rheological parameters, physical adhesion, mechanical strength, microstructure and air-voids size of self-compacting mortar and concrete (SCC). Results reveal that the air content of plastic self-compacting mortars mixture decreases with the implementation of AFA regardless of the time of its introduction. Antifoaming admixture causes the increase of the mortar's flow diameter most when it is introduced together with PCP. The plastic viscosity value depends on the type of AFA significantly. AFA admixtures reduce the physical adhesion of self-compacting mortar. Moreover, test results prove that mortars with AFA maintain initial consistency for a longer time in comparison with mortar with SP only. Too big amount of AFA has a negative effect on mechanical properties and microstructure. Proper dosage of the right type of the anti-foaming admixture does not influence negatively compressive strength of mortar or concrete. The research results proved that too high dosage of AFA may cause compressive strength decrease and microcracking of self-compacting mortar or concrete, indicated on the basis of SEM research results.

Keywords: Anti-foaming admixture; Superplasticizer; Mortar; Concrete; Porosity; Workability; Compressive strength.