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Experimental and theoretical study of the effect of the particle size of limestone fillers on the rheology of self-compacting concrete

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Abstract

The formulation of self-compacting concrete (SCC) requires a large volume of additions to increase the volume of the paste and reduce the amount of cement. . This paper presents the results of an experimental and theoretical study of the effect of particle size of limestone filler on the rheology of SCC in its fresh state. The first part is devoted to the experimental study of the influence of particle size of the limestone filler on the rheology of SCC in the fresh state. In the second part, a simple theoretical model was developed to determine the dosage of filler considering its particule size. Finally, the theoretical model was validated by experimental tests on differents SCC mixed with different quantities of filler predicted by the model. The results showed that all concretes have a similiar rheology and compressive strength.