عنوان مقاله:

Effect of mineral and chemical admixtures on the rheological properties of cement paste in constant workability

محل انتشار:

دومین کنفرانس بین المللی یافته های نوین پژوهشی در مهندسی عمران، معماری ومدیریت شهری (سال: 1395)

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خلاصه مقاله:

Self-compacting concrete (SCC) is a new generation of high-performance concrete which in comparison to conventional concrete. SCC usually exhibits very low shear yield stress and a fairly wide range of viscosities, and it is characterized by its ability to spread easily and to self-consolidate without exhibiting any significant bleeding, settling, or segregation of its constituents. In SCC mixture design, superplasticizers and powders usually guarantee the workability and resistance to segregation, respectively.A better characterization of the rheological behaviour of cement pastes is a first step to study the rheological properties of SCCs. In this study the rheological behaviour of cementitious materials incorporating different powders and superplasticizers has been investigated in a constant yield stress. The rheology of the pastes was evaluated through the mini-slump test and marsh-cone to successfully select the type and dosage of mineral and chemical admixtures which yielded key rheological parameters: yield stress, viscosity, respectively. These parameters, such as type and content of mineral or chemical admixtures alter the required W/C ratio for a constant workability (yield stress). Among the six different admixtures tested, polycarboxylic based superplasticizers and pozzolan powders were determined to give the best results by achieving more adequate viscosity. Finally, test results enable to underline the interactions between mineral and chemical admixtures used in designing self -compacting concrete

کلمات کلیدی:

cement paste, rheology, constant workability, superplasticizer, powder, W/C