

Influence of Superplasticizer and Alkali Activator Concentration on Slag-Fly Ash Based Geopolymer

Authors : Sulaem Musaddiq Laskar, Sudip Talukdar

Abstract : Sustainable supplementary cementitious material is the prime need in the construction industry. Geopolymer has strong potential for replacing the conventional Portland cement used in mortar and concrete in the industry. This study deals with experimental investigations performed on geopolymer mixes prepared from both ultra-fine ground granulated blast furnace slag and fly ash in a certain proportion. Geopolymer mixes were prepared with alkali activator composed of sodium hydroxide solution and varying amount of superplasticizer. The mixes were tested to study fresh and hardened state properties such as setting time, workability and compressive strength. Influence of concentration of alkali activator on effectiveness of superplasticizer in modifying the properties of geopolymer mixes was also investigated. Results indicated that addition of superplasticizer to ultra-fine slag-fly ash based geopolymer is advantageous in terms of setting time, workability and strength performance but up to certain dosage level. Higher concentration of alkali activator renders ineffectiveness in superplasticizer in improving the fresh and hardened state properties of geopolymer mixes.

Keywords : ultra-fine slag, fly ash, superplasticizer, setting time, workability, compressive strength

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