

Investigation on Reactivity of Fly Ash in Different Solutions

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The paper presents the experimental results of chemical analysis on pure fly ash in different solutions. The investigations were carried out on dipping raw fly ash in water or in alkali solutions. Quantitative results achieved by DCA, pH in-situ and ICP-AES measurements, and qualitative SEM observation on reaction products describe the early stage reactivity and the possibility of alkali-activation on fly ash by different activators.

Early stage reactivity of raw fly ash could be influenced by different alkali media. Calcium ions from ash particles were dissolved into solutions rapidly, and then bonded with other reactive components from the ash particles and/or the activator in solutions, forming C-S-H and other hardened products. In higher alkali pH range, more reactive silica and alumina were dissolved, and also more combined together with calcium ions. And silica and alumina networks of ash particles were also partially opened, where the reaction products grew easily.