

Effect of Tapioca Starch on Fresh Properties Concrete

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Abstract : This project is aimed to be a preliminary study of using Tapioca Starch as a viscosity modifying agent (VMA) in concrete work. Tapioca starch effects on the viscosity of concrete, which could be investigated from the workability of corresponding mortar. Cement only mortars with water to cement ratio (w/c) 0.25 to 0.48, superplasticizer dosage of 1% to 2.5%, starch concentration of 0%, 0.25% and 0.5%, was tested for workability. Mortar mixes that have equivalent workability (flow diameter of 250 mm, and funnel flow time of 5 seconds) for each starch concentration were identified and checked for concrete properties. Concrete were tested for initial workability, workability loss, bleeding, setting times, and compressive strength. The results showed that all concrete mixes provide same initial workability, however the mix with higher starch concentration provides slower loss. Bleeding occurs when concrete has w/c more than 0.45. For setting times, mixing with higher starch concentration provide longer setting times (around 4 hours in this experiment). Compressive strength of starch concretes which always have higher w/c, are lower than that of cement only concrete as in this experiment initial workability were controlled to be same.

Keywords : viscosity modifying agent(VMA), self-leveling concrete, self-compacting concrete(SCC),low-binder SCC

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