

Physical and Thermo-Physical Properties of High Strength Concrete Containing Raw Rice Husk after High Temperature Effect

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Abstract : High temperature is one of the most detrimental effects that cause important changes in concrete's mechanical, physical, and thermo-physical properties. As a result of these changes, especially high strength concrete (HSC), may exhibit damages such as cracks and spallings. To overcome this problem, incorporating polymer fibers such as polypropylene (PP) in concrete is a very well-known method. In this study, using RRH as a sustainable material instead of PP fiber in HSC to prevent spallings and improve physical and thermo-physical properties were investigated. Therefore, seven HSC mixtures with 0.25 water to binder ratio were prepared, incorporating silica fume and blast furnace slag. PP and RRH were used at 0.2-0.5% and 0.5-3% by weight of cement, respectively. All specimens were subjected to high temperatures (20 (control), 300, 600 and 900°C) with a heating rate of 2.5°C/min and after cooling, residual physical and thermo-physical properties were determined.

Keywords : high temperature, high strength concrete, polypropylene fiber, raw rice husk, thermo-physical properties

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