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SELF-COMPACTING CONCRETE UNDER ELEVATED TEMPERATURE

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Abstract

Self compacting concrete (SCC) can be placed and compacted under its self weight with little or no vibration, and which is at the same time cohesive enough to be handled without segregation or bleeding. It is used to facilitate and ensure proper filling and good structural performance of congested and heavily reinforced structural members. The high fluidity may lead to brittle during the hot weather or fire. This paper reveals the effect of high temperature on mechanical strength properties of five different self-compacting concrete mixes. Initially five different SCC mixes such as normal concrete, SCC (Self Compacting Concrete) with Fly ash, SCC with silica fume, SCC with rice husk ash and SCC with 20% quarry sand and were designed. The fresh concrete properties such as filling ability and passing ability were ascertained. Specimens were subjected to high temperature up to 500^0 C and 1000^0C for 1 hour in hot furnace. Mechanical properties such as compressive strength, split tensile strength and modulus of rupture were obtained by conducting respective tests as per Indian Standards. Results of specimens subjected to high temperature are compared with the conventional specimens.

Keywords: Self compacting concrete, elevated temperature, fresh concrete properties, mechanical strength properties