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Unconfined Strength of Nano Reactive Silica Sand Powder Concrete

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Abstract : Nowadays, high-strength concrete is an integral element of a variety of high-rise buildings. On the other hand, finding a suitable aggregate size distribution is a great concern; hence, the concrete mix proportion is presented that has no coarse aggregate, which still withstands enough desirable strength. Nano Reactive Silica sand powder concrete (NRSSPC) is a type of concrete with no coarse material in its own composition. In this concrete, the only aggregate found in the mix design is silica sand powder with a size less than 150 mm that is infinitesimally small regarding the normal concrete. The research aim is to find the compressive strength of this particular concrete under the applied different conditions of curing and consolidation to compare the approaches. In this study, the young concrete specimens were compacted with a pressing or vibrating process. It is worthwhile to mention that in order to show the influence of temperature in the curing process, the concrete specimen was cured either in 20 ^{0}C lime water or autoclaved in 90 ^{0}C oven.

Keywords : reactive silica sand powder concrete (RSSPC), consolidation, compressive strength, normal curing, thermal accelerated curing
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