Experimental investigation of the effect of different curing methods on the performance of concrete

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Abstract

This research was carried out to consider the effect of different curing methods on the performance of concrete for grade 25 of normal concrete. The objective of this research was to determine the effect of different curing methods on the performance of concrete. This study considers the effect of five curing methods (air curing (B1), water submerged curing (B3), spraying curing (B2), burlap curing (B4) and moist sand curing (B5)) were used to evaluate the strength, carbonation, length change, absorption, and sorptivity of concrete on 3rd , 7th, 14th, 28th and 56th days at hot air temperature (18-390C) and medium air temperature (11.2-32.70C). A total number of 210 cube and 30 prisms samples were cast for all curing methods. The result indicated that water submerged curing was the highest strength of concrete followed by the close burlap, spraying, and moist sand curing methods of concrete. The air curing was the lowest strength of concrete and carbonated concrete in hot and medium air temperatures. The concluded weak positive correlation between the strength and the density of concrete. The strength strong negative correlation with length change, water sorptivity, and water absorption of concrete at hot and medium air temperatures. Finally, the water submerged and moist sand curing techniques were the appropriate techniques for off-site construction of concrete structures; and the burlap & spraying curing were suitable for off-site and on-site construction of concrete structural members in hot and medium environmental conditions.

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