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**Investigation on the durability of concrete structures against adverse weather effects
through optimum cover**

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Many concrete structures fail in performance due to inadequate concrete cover depth, which leads to spending large amount of money for maintenance and repair. In the attempt to solve the problem, beam specimens were prepared for concrete grade C25, basing on different sizes of the concrete covers of 20, 25, 30, 40, 50, 55, and 60mm using coral and granite aggregates. Water absorption, flexural strength and permeability tests were performed on specimens before and after subjecting them to a temperature of 100°C. Basing on the size of covers and type of aggregates, the following outcomes were noted: The percentage of water absorption before and after subjecting the specimens to temperatures of 100°C decreased as the size of cover increased. The percentage of water absorbed by the specimen after subjecting to temperature of 100°C was higher than the percentage of water absorbed by the specimens before subjecting to a temperature of 100°C. The percentage of water absorbed by coral aggregates concrete was higher than the percentage of water absorbed by granite aggregates concrete. The flexural strength before and after subjecting to a temperature of 100°C decreased as the size of cover increased. The permeability before and after subjecting the specimens to a temperature of 100°C decreased as the size of cover increased. The study concluded that, increasing the size of concrete covers which includes the use of granite aggregates lead, to enhanced long durability of concrete structures.