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Effect of Pulverised Burnt Clay Waste Fineness on the Compressive Strength of Concrete

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Abstract : The use of supplementary cementitious materials as partial replacement for cement is steadily increasing in the construction industry. Concrete produced with these materials has shown significant improvement in durability compared to conventional concrete. However, blended cement concretes produced using these supplementary materials typically gain compressive strength at later ages beyond the 28-day, and this does not favour its use when early age strength is required. Improving the fineness of the supplementary materials could be a way to improving the strength performance of its blended cement concrete. In this paper, the effect of pulverised burnt clay waste fineness on the compressive strength of concrete has been investigated. Two different fineness of pulverised burnt clay waste classified as coarse and fine portions were obtained by sieving the original pulverised burnt clay waste portion through sieve sizes No. 100 (150 µm) and No. 200 (75 µm), respectively. Pulverised burnt clay waste dosages of 0% (control), 10% and 20% by weight of binder were used in producing the concrete mixtures. It is found that the compressive strength of the concrete depends on the fineness and proportion of pulverised burnt clay waste. The result shows improvement in compressive strength at all curing ages with the fine portion pulverised burnt clay waste having the highest strength and improved early age compressive strength.

Keywords : pulverized burnt clay waste, supplementary cementitious materials, compressive strength, pozzolans, fineness
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