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Abstract

Concrete is a civil engineering material and widely used in various constructions. Cement, as major composition in concrete, consumes amounts of energy and generates pollution during production. Thus more research should be conducted to reduce the dependency of cement. In this paper, micro sized eggshell powder is used as a cementitious supplementary material to partially replace cement. Four cement replacement percentages are set with 2.5, 5, 7.5 and 10%. Workability, compressive strength, flexural strength, water absorption and acid attack were tested to analysis the performance of eggshell mortar. The results revealed that 0.4 micron micro size eggshell powder could improve the workability and mechanical properties of mortar while cause negative effect on durability of concrete. Replacement of 5% cement replacement with eggshell powder is the optimum percentage for both of compressive strength and flexural strength. On the basis of mechanical properties, eggshell could be a potential alternative material to replace cement.

Keywords

Concrete Eggshell Cement Replacement Compressive strength

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