

Investigation on the effect of steel slag as cement replacement material on mechanical properties of mortar

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ABSTRACT

The use of SS to replace cement in mortar production can reduce the consumption of cement while improving the efficiency of the resource utilization. This study is to investigate the influence of SS as cement replacement material on the properties of fresh and hardened mortar. A series of mixes by varying the contents of SS from 0-40% with increment of 10% replacement ratio was prepared. Flow table test, compressive strength test and flexural strength test have been conducted. While for the compressive strength, it reduces from 19.7 to 4.2 MPa, 34.1 to 10.4 MPa, 41.5 to 13 MPa with the increase of SS replacement ratio for 1-day, 7-day and 28-day curing age mortar, respectively. Flexural strength value decrease from 5.7 to 2.5 MPa, 7.5 to 4.3 MPa and 8.2 to 5.6 MPa with the increase of SS replacement ratio for 1-day, 7-day and 28-day curing age mortar, respectively. The optimum mix design of SS mortar is 10% replacement ratio.

KEYWORDS

Steel Slag; Compressive Strength; Flexural Strength

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