

ABSTRACT

The Effect of Steel Fiber Mixture on Flexural Tensile Strength of Geopolymer Concrete

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This study aims to evaluate the impact of using steel slag as a replacement for coarse aggregate on the compressive strength and density of concrete. The research was conducted by mixing concrete with three variations of steel slag replacement percentages: 0%, 60%, and 100%. Compressive strength tests were carried out at 7, 14, and 28 days using a compression testing machine, while the density of the concrete was measured for each mixture variation. The results indicated that replacing coarse aggregate with steel slag significantly affects the compressive strength and density of the concrete. Concrete with a 100% steel slag replacement showed a significant increase in compressive strength compared to normal concrete, with the optimal value at 28 days. Conversely, a 60% steel slag replacement resulted in a decrease in compressive strength compared to normal concrete. The density of the concrete tended to increase with higher percentages of steel slag in the mix. In conclusion, using up to 100% steel slag as a replacement for coarse aggregate can enhance the performance of concrete, while mixed replacements can decrease the quality of concrete in terms of compressive strength.

Keywords

Concrete, Steel Slag, Coarse Aggregate, Compressive Strength, Density, Aggregate Replacement