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Effect of Local Steel Slag as a Coarse Aggregate in the Properties of Fly Ash Based-Geopolymer Concrete

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Abstract : Local steel slag is produced as a by-product during the oxidation of steel pellets in an electric arc furnace. Using local steel slag waste as a hundred substitute of crushed stone in construction materials would resolve the environmental problems caused by the large-scale depletion of the natural sources of dolomite. This paper reports the experimental study to investigate the influence of a hundred replacement of dolomite as a coarse aggregate with local steel slag, on the fresh and hardened geopolymer concrete properties. The investigation includes traditional testing of hardening concrete, for selected mixes of cement and geopolymer concrete. It was found that local steel slag as a coarse aggregate enhanced the slump test of the fresh state of cement and geopolymer concretes. Nevertheless the unit weight of concretes was affected. Meanwhile, the good performance was observed when fly ash used as geopolymer concrete based.

Keywords : geopolymer, molarity, steel slag, sodium hydroxide, sodium silicate
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