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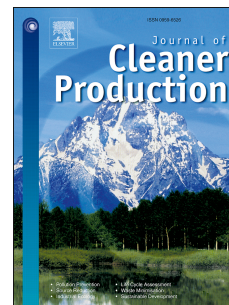
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Influence of recycled aggregate on fly ash geopolymer concrete properties

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ABSTRACT

Geopolymer binder and recycled aggregate are environment friendly products and is thus considered as part of sustainable development. This paper presents a study of the effect of recycled aggregate on strength and durability of fly ash based geopolymer concrete. Geopolymer concrete samples were prepared from high calcium fly ash, sodium silicate solution, sodium hydroxide solution, fine aggregate from river sand, and two types of coarse aggregate viz., recycled concrete aggregate and crushed limestone coarse aggregate. Test results indicated that recycled concrete aggregate can be used as a coarse aggregate in high calcium fly ash geopolymer concretes with the 7-day compressive strengths of 30.6-38.4 MPa which were slightly lower than those of high calcium fly ash geopolymer concretes containing crushed limestone. The use of high sodium hydroxide concentrations of 12 and 16 molar resulted in better performances both in strength and durability than that of 8 molar.

Keywords: Recycled aggregate; High calcium fly ash; Geopolymer concrete; Mechanical properties; Durability.

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