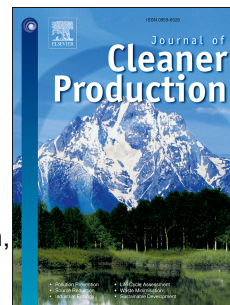


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Synthesis of geopolymer from industrial wastes

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## Synthesis of geopolymer from industrial wastes

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### ABSTRACT

Aluminium and grey cast iron slags are produced in small industries and in spite of blastfurnace slag are considered as wastes. In this work, synthesis possibility of geopolymeric paste and concrete through alkali activation of different mixes of these slags is studied. Workability of the mixtures was achieved immediately after mixing and compressive strength tests were conducted on specimens cured at room temperature. Workability of all pastes and concrete specimens were in acceptable range for use in constructions. Maximum compressive strength for both paste and concrete specimens was achieved by using silica/alumina weight ratio of 3.0. By increasing the value of parameters of this study including sodium hydroxide concentration, age of curing and silica/alumina weight ratio, more silicon and aluminium ions dissolve from slag mixture into alkali activator and hence, compressive strength increases. It was concluded that among the considered parameters, silica/alumina weight ratio is the most important factor. The results indicated the possibility of production of geopolymers by utilizing appropriate ratios of aluminium slag (alumina source) and grey cast iron slag (silica source). In most related works reported in the literature, an aluminosilicate source or a

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