

Microwave Production of Geopolymers Using Fluidized Bed Combustion Bottom Ash

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Abstract : Fluidized bed combustion (FBC) is a clean coal technology used in the combustion of low-grade coals for power generation. The production of large solid wastes such as bottom ashes from this process is a problem. The bottom ash contains some toxic elements which can leach out soils and contaminate surface and ground water; for this reason, they can neither be disposed in landfills nor lagoons anymore. The production of geopolymers from bottom ash for structural and concrete applications is an option for their disposal. In this study, the waste bottom ash obtained from the combustion of three low grade South African coals in a bubbling fluidized bed reactor was used to produce geopolymers. The geopolymers were cured in a household microwave. The results showed that the microwave curing enhanced the reactivity and strength of the geopolymers.

Keywords : bottom ash, coal, fluidized bed combustion (FBC) geopolymer, compressive strength

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