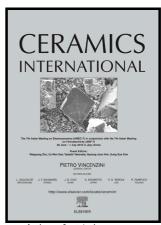
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ACCEPTED MANUSCRIPT

Leaching behavior of fly ash-waste glass and fly ash-slag-waste glass-based

geopolymers

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Abstract

The leaching behavior of contaminants in the fly ash/waste glass or fly ash/blast furnace

slag/waste glass-based geopolymers was investigated through surface area analysis and

leaching tests. Spent fluorescent lamps classified as hazardous waste due to their

specific contaminant contents were used as a source of waste glass. The results from

semi-dynamic leaching tests showed that the mobility of contaminants increases as the

amount of waste glass added to the synthesis mixture increases. These results are

consistent with those obtained from the surface area analysis. However, the comparative

analysis of mobility of contaminants between types of activated mixtures highlighted a

different trend of mobility of contaminants to that of pore size distributions. Therefore,

the leaching behavior of contaminants suggests that their immobilization in the

activated mixtures might occur by both physical and chemical mechanisms. Also, it was

emphasized that waste glass is not compliant with respect to its leachable Hg content,

and that Hg and Pb exhibit high mobility in the geopolymers with high amount of waste

glass added to the synthesis mixtures.

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