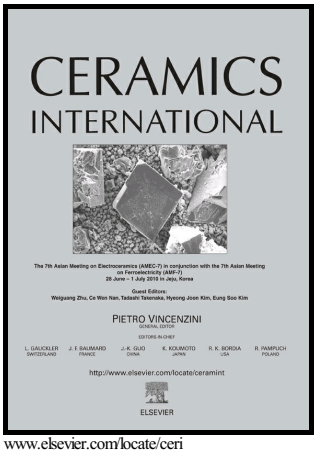

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Leaching behavior of fly ash-waste glass and fly ash-slag-waste glass-based geopolymers

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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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