

VitroGeoWaste III

Ionic Volatilizations during vitrification of fly ashes

Oral presentation / Poster presentation

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Abstract: The vitrification of fly ashes for producing vitreous materials as bulk glasses, frits and glass-ceramics has been widely studied during the last decades. However, in this case almost no attention has been given to the volatilization of some components in the melting processes. Mainly, some gases can be emitted to the atmosphere apart of metal impurities and other gaseous components of fly ashes. Here are reported some experiments by formulating two glasses from an average of French fly ashes with glass cullet which were melted in a laboratory furnace for the purpose to determine the chloride and sulphur dioxide emissions with thermal methods coupled with Mass, Fourier Transformed Infrared Spectroscopy, as well as Ionic Gas Chromatography and SEM/EDS compared analysis. Results indicate that these emissions are important, but they are inside the limits of BREF regulations.

The aim of CIRCOM project is the development of binders obtained from the activation of black steel slag with low crystallinity. During this first phase of the project, the optimization of the material will be carried out through its characterization in terms of mechanical resistance, porosity, rheology and thermal resistance in order to obtain different products with low environmental impact that will be used in different applications linked to the metallurgy sector (circular economy). The alkaline activated binder will be for the manufacturing of foundry molds and refractory concrete for furnaces.

The final objective is to produce a sustainable product, free of Ordinary Portland Cement, with the adequate mechanical strength and dimensional stability under high temperatures obtained through a cost-effective production process.

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