Glass Foams Obtained Using Solid Waste and Its Characterization

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Vitreous foam has been gaining ground in the industrial sector, being increasingly applied as thermal insulation in industrial constructions. The main raw material for glass foam is glass, and it is also an environmentally disturbing agent due to the large accumulation of waste in the environment. The charcoal producers use furnaces in hot-melt masonry for the carbonization of wood, in which they have low efficiency in the production of charcoal. In addition, there is generation of charcoal fines that are accumulated, causing a problem to the sector due to the low added value. The objective of the project is to obtain vitreous foams applied as coating in carbonization furnaces, aiming to increase the thermal efficiency of the process and increase the production of coal. In order to obtain the foams, I formulated and molded samples with different content of foaming agents (coal fines), being 5% and 10% by weight, incorporated in a ground glass matrix. After the molding, the samples were flashed varying the rates of 2.5 and 10ºC / min at different temperatures: 600, 700, 800 and 900ºC for 30 min. Samples were characterized by volumetric expansion, compressive strength, thermal conductivity, porosity and scanning electron microscopy (SEM). The volumetric expansion reached 221% and porosity in the order of 80%, obtained results of conductivity and compressive strength of the order of 0.17W / m.K and 4.6 MPa respectively, producing a desirable porous cellular structure for applications such as glassy foam.

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