Influence of the Use Eva-Poly (Ethylene-Vinyl Acetate) Waste as Lightweight Aggregate in Alkali-Activated Mortars

Flores, Lucas

Flores, Rafael

It is intended in this work to evaluate the technical feasibility of using waste as EVA lightweight aggregate in matrix-based alkali-activated mortars aimed at the development of non-structural elements for construction. The purpose for undertaking the present study is due to the fact that with the increase of industrial waste arises the need for proper disposal, as for thermoset polymer that present difficult reprocessing. An example is the EVA - Poly (ethylene vinyl acetate) - which is considered a flexible material, high durability and low cost, and to present these properties, is widely used in the footwear industry. The recycling of EVA has a high cost because it requires the division of components, generating less profit for the companies that provide disposal in landfills. The percentage of incorporation was 30% compared to pure mortar. Determination of specific mass, compressive strength, porosity, relative density, water absorption, in addition to environmental and microstructural testing has done to verify that the alkali-activated mortar was appropriate, as trials were performed. The relative density has decreased because of the impact of less mass and higher volume related to the substitution of the mineral aggregate (sand) for EVA. The compressive strength test was positive. The environmental tests were positive because no one of the analyzed solvents were identified. In summary, we can say that the substitution of sand by the waste EVA in the production of alkali-activated mortar generates positive results according to the rules of construction.

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