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Influence of glass residue on the properties of a mortar

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The realization of actions aimed at sustainable development is unquestionable. As the technological improvement increases every day, the possibility of reusing different wastes to replace the use of natural resources in the development of construction materials is growing, since the wastes and byproducts from other industries have a significant representation in the volume of solid waste generated in the country. Aiming at the need to reuse waste, this work aimed to develop a multi-purpose mortar for use in construction with waste glass industry, in order to replace part of the binder material (Portland cement) by waste glass in percentages of 0, 5, 15 and 20%. The methodology used consisted of the experimental program that consists of the characterization of the materials used for the production of the multiple-use mortar, as well as the execution of technological tests of mortars in the fresh and hardened states. According to the results, it was possible to observe that the analyses made both on the residue and on the properties of the fresh and hardened state of the mixture, it was possible to verify that the influence of the residue in the mixture presented in its composition a 68% concentration of silicon oxide (silica), one of the main components of cement. In view of the aspects analyzed, it was concluded that the mortar with the replacement of Portland cement by glass waste showed better results regarding the porosity of the mortar since the capillary water absorption coefficient was the lowest among all mortars.

Keywords: binders; substitution; sustainability; residue.

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