

Abstract

Preliminary Assessment of Biomass Fly Ash as a Partial Aggregate Replacement in a Screed Mortar Formulation [†]

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Biomass fly ash (BFA) is an inorganic solid waste produced in biomass-fired power plants. Due to the adopted coal phase-out strategy, the amount of BFA produced worldwide is increasing. Currently, most of the generated BFA is being disposed of in landfills, so more sustainable management practices are being investigated, such as their recycling in construction materials.

In this work, the valorization of two sorts of BFA as an aggregate substitute in a screed mortar formulation was evaluated. The BFAs were characterized (XRF, XRD, SEM, and particle size distribution). The influence of the incorporation amount of BFAs on the workability, mass loss upon curing, bulk density, water sorptivity (by capillary and immersion), and flexural and compressive strength properties of the screed mortar was evaluated.

The results obtained from this preliminary assessment reveal that it is possible to substitute up to 25 wt.% of sand with the two sorts of BFA under study in the screed mortar formulation, preserving the required properties. This result enables a decrease in primary raw materials consumption, while reducing the amount of BFA disposed of in landfills, a practice with a high economic and environmental impact.

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