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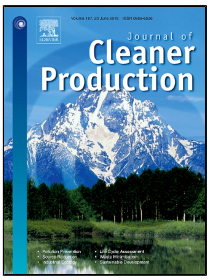

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RECYCLING PAPER INDUSTRY EFFLUENT SLUDGE FOR USE IN MORTARS: A SUSTAINABILITY PERSPECTIVE

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ABSTRACT:

The paper and cellulose manufacturing industry generates significant quantities of waste, including an extremely humid sludge, which is considered to be an effluent with high environmental liability for the manufacturer. Studies have shown that this waste sludge may be utilized in construction material, such as mortar for fixing blocks, as well as for ceiling and wall coatings that use ceramic masonry as a sealant. The recycling of pulp and paper industry waste sludge has important environmental benefits, by preventing soil and water pollution caused by inadequate disposal and by reducing the depletion of natural resources, such as lime, used in cementitious materials. This study analyzed the sustainability of incorporating such waste into cement-based mortars. Tests were conducted replacing lime, one of the most expensive mortar components with high environmental impact, with waste sludge in contents of 5%, 10%, 15%, and 20%. Analysis was then performed on the samples to assess the primary technical characteristics of these incorporated mortars, such as the consistency index, heat of hydration, content of incorporated air, water retention, mechanical strength and the capillarity coefficient. The results were compared with the results of the characterization