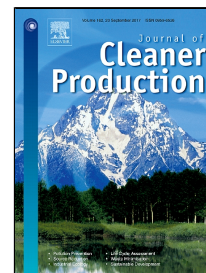


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Production of eco-efficient earth-based plasters: influence of composition on physical performance and bio-susceptibility

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Abstract

An experimental campaign was developed to evaluate the properties of earth plastering mortars, not only at the level of workability and physic-mechanical performance but also their susceptibility for biological colonization. A ready-mixed earth mortar and several other mortars formulated with a raw clayish earth were produced. The influence of partial replacement of fine sand by a phase change material (PCM) and the addition of low amounts of oat fibres and hydrated air lime were assessed. The experimental campaign shows that the PCM completely changes the mortar workability, with a decrease on wet density. The addition of PCM and fibres decreases the bulk density and, consequently, increases the porosity of the mortars. The presence of PCM, fibres and air lime decreases the thermal conductivity. Earth mortars are susceptible to mould development, and the fibres or PCM seem to intensify their bio-susceptibility. A low addition of air lime increases pH and inhibits fungal growth though decreasing the mechanical properties.

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