



Functional properties and biodeterioration behavior of new formulations of lime technical mortars

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Although biodeterioration of building materials is a critical problem for maintenance of heritage constructions, lime and earth-based mortars have been poorly explored in this regard. This study examines the damage resulting from the biodeterioration of four different lime mortar novel formulations. Mortars of plaster, reintegration, joints and injection were prepared in 1:3 and 1:4 ratios of lime to sand, with different arid and additives (also hydraulic), using in all cases aerial lime in paste as binder. The microbial colonization on the mortars was assessed by colour spectrophotometry and PAM fluorometry non-destructive techniques in laboratory assays. Functional properties related to the wettability of the material (a factor controlling the movement of water on the surface or within the pore spaces of the material), including real and apparent density, open porosity, capillarity, wetting-drying kinetics and contact angle were determined. Biodeterioration processes were monitored and quantified. Also a bioreceptivity index (BI), related to the potential to host living organisms, was calculated for each material.