

Hygrothermal Properties of Raw Earth Material

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Abstract : Raw earth is the oldest building technique used for over 11 centuries, thanks to its various benefits. The most known raw earth construction technics are compressed earth blocks, rammed earth, raw earth concrete, and daub. The raw earth can be stabilized with hydraulic binders, mixed by fibers, or hyper-compacted in order to improve its mechanical behaviour. Moreover, raw earth is characterized by a low thermal conductivity what make it a good thermal insulator, and it has a very important capacity to condense and evaporate relative humidity. In this context, many researches have been developed. They have shown that the mechanical characteristics of earth materials increase with the hyper-compaction and adding fibers or hydraulic binders. Besides, other researches have been determined the thermal and hygroscopic properties of raw earth. They have shown that this material able to contribute to moisture and heat control in constructions. Its hygrothermal properties are better than fired earth bricks and concrete. The aim of this study is to evaluate the thermal and hygrometric behavior of raw earth material using experimental tests allows to determine the main Hygrothermal properties such as the water Vapour permeability and thermal conductivity and compare the results with those of other building materials such as fired clay bricks and cement concrete is presented.

Keywords : raw earth material, hygro-thermal, thermal conductivity, water vapour permeability, building materials, building materials

Conference Title : ICEMC 2022 : International Conference on Earth Materials and Construction

Conference Location : Paris, France

Conference Dates : May 16-17, 2022