

## Thermal Insulating Silicate Materials Suitable for Thermal Insulation and Rehabilitation Structures

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**Abstract :** Problems insulation of building structures is often closely connected with the problem of moisture remediation. In the case of historic buildings or if only part of the redevelopment of envelope of structures, it is not possible to apply the classical external thermal insulation composite systems. This application is mostly effective thermal insulation plasters with high porosity and controlled capillary properties which assures improvement of thermal properties construction, its diffusion openness towards the external environment and suitable treatment capillary properties of preventing the penetration of liquid moisture and salts thereof toward the outer surface of the structure. With respect to the current trend of reducing the energy consumption of building structures and reduce the production of CO<sub>2</sub> is necessary to develop capillary-active materials characterized by their low density, low thermal conductivity while maintaining good mechanical properties. The aim of researchers at the Faculty of Civil Engineering, Brno University of Technology is the development and study of hygrothermal behaviour of optimal materials for thermal insulation and rehabilitation of building structures with the possible use of alternative, less energy demanding binders in comparison with conventional, frequently used binder, which represents cement. The paper describes the evaluation of research activities aimed at the development of thermal insulation and repair materials using lightweight aggregate and alternative binders such as metakaolin and finely ground fly ash.

**Keywords :** thermal insulating plasters, rehabilitation materials, thermal conductivity, lightweight aggregate, alternative binders.

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