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## Thermal and mechanical characterization of a new material based on two gypsums from different localities : High Atlas of Marrakech and Safi Basin, Morocco

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Over the last few decades, the construction industry has become interested in materials that are durable, environmentally friendly and easily recyclable. This interest is due to the advantages these materials offer, among others local availability, low carbon footprint, energy efficiency and indoor comfort. The objective of this work is to study the properties of plasters prepared from a mixture of two types of gypsum. We were interested in the evolution of thermal conductivity, mechanical resistance and setting time as a function of the percentage of addition.

Two types of gypsum were studied, the first one belongs to the Safi basin and the second one comes from the High Atlas of Marrakech.

The characterization of the gypsums was necessary to determine its physical and geotechnical properties, its mineralogy, its thermal behavior and its microscopic structure. Several analyses were developed such as density measurement by pycnometer, X-ray diffraction, infrared spectroscopy and scanning electron microscopy.

We have made samples, of standardized dimensions, of mixtures based on both types of plaster. The water/gypsum mass ratio was set at 0.75.

The results revealed that the properties of gypsum as well as the percentage of addition affect the mechanical and thermal properties and the setting time of the composite material. The addition of the High Atlas gypsum of Marrakech allowed improving the material in terms of thermal insulation. The results of the other tests will be communicated later.