

SOLID-SOLID PHASE CHANGE MATERIAL

Highly performant solid-solid Phase Change Material (PCM) designed to improve thermal efficiency of buildings materials and more generally protect various equipments and objects from temperature variations.

APPLICATIONS

- Energy efficient building materials (plaster, cement...)
- Thermal efficient packaging
- Cooling electronic circuits

INTELLECTUAL PROPERTY

[Patent application](#)

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Solid-solid Phase Change Material ■ **Thermal energy storage** ■
Phase shift ■ **Energy efficiency** ■ **Thermal comfort** ■
Sustainable building

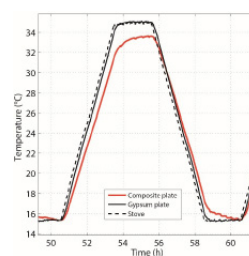
PRESENTATION

PCM improve thermal performances of buildings by delaying temperature increase and decrease and by mitigating the temperature peaks. Most PCM available for building material purposes are based on state change implying solid and liquid transitions which present major issues for buildings such as leakage risks.

Our technology is based on a solid-solid phase change material that avoids any leakage risks. The temperature of phase change can be tuned between 20°C to 35°C according to the chosen target (higher transition temperatures are currently under development). Latent heat ranges from 80 to 116 J/g depending on the phase change temperature. The PCM presents a Shore hardness which allows its grinding up to grain size lower than 50 µm. The grain size of the PCM can be controlled by sieving.

The environmental impact of the PCM is limited, as the synthesis process does not involve any solvent.

The PCM is expected to improve the resistance to fire. The phase transition will delay the temperature rise of the building materials, and the degradation temperature of the PCM up to 450°C.



Thermal profile of the PCM when incorporated in plaster, and comparison with plaster only. © IDF Innov

COMPETITIVE ADVANTAGES

- Good thermal performances: up to 116 J/g
- No liquid phase, no encapsulation requirement
- Water resistant
- Solvent-free synthesis
- Limited mechanical properties degradation
- Controlled grain size
- Resistance to fire