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## Review on Phase Change Material as thermal energy storage for cooling

Akshay Ahuja\*, M. Ramachandran

MPSTME, SVKM'S NMIMS University, Dhule, Maharashtra, India.

**Abstract:** As the demand of air conditioners and refrigeration has increased during past many years, the cooling systems can be modified for economic advantage over these outdated cooling plants. In the comfort zone to maintain temperature cooling and heating systems are installed. To replicate the effect of thermal mass of the building, we can use of phase change material depending on the application. Phase change material should have high energy density of melting, high latent heat material and low temperature range. Thermal energy storage through phase change material is capable of storing and releasing large amount of energy and this depends upon shift in phase of material. Heat is absorbed or released when material changes from solid to liquid or vice versa during processes such as melting, solidifying/evaporation. A variety of substances like water, ice, inorganic salts or organic salts are used. In change of state, a large amount of energy known as latent heat can be stored or released at constant temperature. Thus a small difference in temperature is used for storing or releasing energy. Therefore the choice of phase change material mainly depends on the area of application. In this paper we are discussing about the various properties, types and applications of lithium, graphene, aluminum foam, polymer and ceramic Based Phase Change Materials. Due to huge variety of Phase change material, the designer will have more option to choose the material depending on the area of application.

**Keywords :** Phase change Materials, lithium, graphene, aluminum foam, polymer, ceramics.

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