

## **Application of Phase Change Materials in Building Applications**

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### **Abstract**

Energy consumption in the building sector still represents the highest proportion of energy used in most developed and developing countries. Thermal energy storage (TES) has always been one of the most critical components of building applications. TES also provide a reservoir of energy to adjust this mismatch and to meet the energy need at all times. It is used as a bridge to cross the gap between the energy sources i.e. the sun, the application and the building. The implementation of the appropriate energy storage device through Phase Change Materials (PCMs) have been considered for TES in buildings since before 1980, which can improve the energy management and as well as will help to match the supply and demand patterns.

There is a large number of PCMs that melt and solidify at a wide range of temperatures, making them attractive in a number of applications. For the present study, Capric acid, Lauric acid, Myristic acid, Palmitic acid, Stearic acid and Acetamide used as PCMs. Experimental results based on the Differential Scanning Calorimetry (D.S.C.) study show that these materials can also play an important role in building applications, as these materials eutectics were also fitted in the desirable temperature range with high latent heat of fusion for other solar thermal applications.

**Key Words:** Phase change materials (PCMs), Buildings, Fatty acids, Thermal Energy Storage (TES), Latent heat storage (LHS)