

PCM Impregnated Gypsum Board

Palm oil based fatty acid impregnated in Gypsum wall board

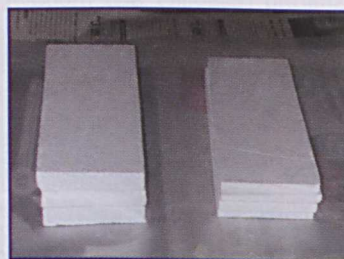
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Rapid developments in S&T have lead to huge energy demands. Thermal energy storage therefore becomes important in energy conservation and in the reduction of dependency on fossil fuels. Traditionally, available heat is stored in sensible heat form. Studies indicate that storage in latent heat form requires lower size and weight per storage capacity, and has lower temperature swing. Phase Change Material (PCM) stores heat as latent heat of fusion during phase change process.

The rising cost of conventional fuel as well as environmental concerns have resulted in an increased necessity for energy saving and the adoption of energy forms that are environmental friendly. Passive solar heating and cooling for building application contribute significantly in achieving this aim. Latent heat storage in PCM offers some advantage of storing a large amount of energy in small mass/volume and phase transition at a nearly constant temperature.

PCM is a material that absorbs heat during melting and releases it during solidification. In solar heating and cooling applications, PCM stores solar heat at daytime and releases it during nighttime or vice versa. The melting and solidification temperature of fatty acids, as PCM, can be adjusted according to the climate conditions by forming the eutectic mixture that acts as a single component.



Slabs of Gypsum wall boards



Samples of fatty acids

Main advantages of PCM impregnated Gypsum board are it saves energy thereby reducing electric consumption. As it is energy-environmental friendly, it reduces green house emission. It stores solar energy especially under harsh climate. Its supply is continuous as it is derived from renewable sources.

Applications of PCM impregnated Gypsum board include driveway pavement, inner wallboard, roofing, ceiling board, terrace houses, and other aesthetics uses of gypsum.

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