

Development of Thermal Insulator Based on Phase Change Materials

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Thermal Energy Insulation is very important, especially for energy saving purposes. The use of Phase change material (PCM) for Thermal Energy Insulation (TEI) is technique That is being studied extensively for building temperature regulation Phase change material (PCM) generally used for this purpose have low melting temperature and high latent heat of melting–solidification. Latent heat thermal energy insulates (LHTEI) with phase change materials (PCMs) deserves attention as it provides high energy density and small temperature change interval upon melting/solidifying and provide thermal regulation at particular phase change temperatures. This study aimed to modify thermal insulator based on commercially available paraffin with melting point (T_m) around 60 °C. A series of experimental data were collected from a representative prototype construction, observing the temperature variation of enclosed system to identify the cut-off temperature. Using paraffin oil and coconut oil modified paraffin under different mass fractions of paraffin were studied to find the optimum combination. DSC/TGA and Lee's disc methods used to characterize the modified PCM to select better material for study.

Keywords: Phase Change Material, Thermal Energy Insulation