This study numerically investigates integrating phase-change materials (PCMs) into passive solar buildings. A two-dimensional CFD model, using the enthalpy-porosity formulation, simulates PCM melting in a rectangular enclosure heated from one side (Th = 38.3 °C) while the opposite side is kept cold (Tc = 28.3 °C), with insulated horizontal walls. The impact of rectangular and triangular fins on heat transfer and melting is analyzed for a Rayleigh number around 10□. Results, showing melt fraction contours and temperature distributions, demonstrate that higher PCM specific heat capacity (Cp) and thermal conductivity (□) accelerate melting. Rectangular fins sped up melting (from 35 to 32 minutes) due to increased surface area, while triangular fins promoted more uniform melting. The study details the .effects of thermophysical properties and fin integration on flow structure and heat transfer