The scope of this study is preparation and characterization of n-hexadecane core- poly (methylmethacrylate-co-acrylic acid) (PMMA-co-AA) shell microcapsules for thermal comfort property in textiles. The aim is to produce a microencapsulated phase change material (microPCM) with better reactivity toward conventional fibers. Preparation of microcapsules has been carried out by emulsion polymerization. The chemical characterization of (PMMA-co-AA)/n-hexadecane microcapsules was made by Fourier transform infrared (FT-IR) spectroscopy method as particle size and its distribution (PSD) were studied by particle sizer instrument. Thermal properties and thermal stability of (PMMA-co-AA)/n-hexadecane microcapsules were measured by differential scanning calorimetry (DSC) and thermal gravimetric analysis (TGA) respectively. As a result it was found that the n-hexadecane in the microcapsules melted in the range of 15.1-17.5 °C with latent heats range of 57-84 J/g as it crystallized in the range of 15.3-15.7 °C with latent heats range of -50 and -79 J/g.