Abstract: The aim of this study is to prepare and characterize n-hexadecane core-poly(methylmethacrylate-co-2-hydroxy ethylacrylate) \( p(\text{MMA-co-HEA}) \) shell microcapsules as thermal comfort property additive in textiles. Miscellaneous \( p(\text{MMA-co-HEA}) \) shell materials with 1, 5, and 10\% HEA content to encapsulate n-hexadecane were formed to investigate capsule properties. Both structural characteristics and thermal properties of the microcapsules were investigated. The capsule shape was characterized as spherical with average diameters in the range of 11.92-15.59 \( \mu \text{m} \). The results of differential scanning calorimetry analyses indicated that n-hexadecane in the microcapsules melted in the range of 16.9-17.5 \(^\circ\text{C}\) and crystallized in the range of 15.1-16.1 \(^\circ\text{C}\) with latent heats of 68.3-105.7 and −68.7-107.2 J/g respectively. Accelerated thermal cycling test was used to prove thermal reliability.