

## **Effects of starting material and reaction temperature on the morphology and physical properties of polyurethane foams**

### **Abstract**

Polyurethane foams (PUFs) were prepared by mixing poly (ethylene glycol)block-poly(propylene glycol)-block-poly(ethylene glycol) and isocyanates in the ratio of 1:1.03 in the presence of additives such as catalyst, blowing agent and surfactant. The effects of types of starting material in PUF formulation on cell morphology and properties were investigated using scanning electron microscopy (SEM). The results indicated that starting material highly affected the morphology of PUF cells. Process parameters such as concentration of starting material and reaction temperature were investigated using SEM, foam density and capacity of water absorption. It was found that foam density depends on the cell size. While, the capacity of water absorption is depends on the percentage of the open cells and cell size. PUF samples have cell size between 200 to 600  $\mu\text{m}$ , density in the range of 0.03 to 0.06  $\text{g cm}^{-3}$ , percentage of open cell at 25 to 60% and capacity of water absorption between 6 to 30%. Copyright © 2010 Smithers Rapra Technology.