Enhancing the absorption properties of biomass-based superabsorbent terpolymer

김정수, 김동현†
한국생산기술연구원
(dhkim@kitech.re.kr†)

Superabsorbent polymers (SAPs) can absorb and retain ten to a thousand times their dry mass of water due to their three-dimensional hydrophilic structures. Conventional SAPs are mainly composed of poly(acrylic acid sodium salt) derived from petrochemicals. The present work is aimed at limiting the use of the petrochemical component by replacing it with a biomass-based material. First, the core-SAP was prepared via the terpolymerization of itaconic acid, vinylsulfonic acid, and cellulose, and the optimum conditions in terms of material input ratio were determined. Next, the core-SAP was surface-crosslinked by esterification with butane diol to improve its liquid permeability and absorbency under load (AUL). The liquid permeability was measured according to the amount of 0.9 wt.% NaCl solution passing between the swollen SAP particles under a given pressure, and the AUL was estimated from the weight of this solution absorbed under 0.3 psi pressure.