

Residual Monomer Elimination from Super Absorbent Polymer Using Supercritical CO₂ Extraction

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Residual monomer (acrylic acid) extraction from SuperAbsorbent Polymers (SAPs) was carried out with supercritical CO₂. As it has both excellent power in absorbing water and a feature of not easily discharging water, SAPs are used in baby diapers, adult incontinence products and sanitary napkins as well as being employed as farmland moisturizing agents and waterproofing materials in building or civil engineering works. However, after polymerization, SAPs contain large amount of residual acrylic acids. These residual acrylic acids may cause sensitization (allergic reaction) and even very small future exposures can cause a skin rash. Therefore, in case of Europe, acrylic acid concentration of SAPs is restricted 500PPM and below. The experiment conditions are as follows : temperature in the range of 25 to 60°C, pressures at 100, 200 and 300bar, extraction time in the range of 30 to 180min.