

Design of isosorbide crystallization process as a recovery system for polyester production using solubility and growth behavior of isosorbide

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The development of bio-based materials for the industrial polymers has been emerged and a few monomers has been adapted for industrial polymer applications. Bio-based materials have benefits such as bio-degradability, renewability, and reduction of carbon dioxide concentration against fossil resource-based materials.

A significant amount of isosorbide is lost during polymerization process due to its low reactivity and it should be recycled to reduce production cost. A crystallization process could be adapted to recycle isosorbide which has benefits of low energy consumption without thermal decomposition or color change by heat.

In this study, we present solubility of isosorbide and the growth behavior of isosorbide in ethylene glycol as a solvent. And a CSTR cooling crystallizer is suggested for recovery of isosorbide from by-product of a polyester process.