

Optimization of Batch Crystallization for Poly-Hydroxybenzophenone

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In industry, the hydroxybenzophenone is normally obtained by batch crystal processes for highly purified product. However, the hydroxybenzophenone produced in industrial processes appeared to have relatively low product filterability, which causes high cost and long operating time for washing process. The product filterability is highly related to crystal morphology, crystal size and crystal size distribution (CSD). In order to improve the filterability of hydroxybenzophenone crystal, a cooling strategy of crystallization process is investigated with examining the solubility and growth kinetics of hydroxybenzophenone. The operating strategy is divided into two steps. The first step to generate the seed by dissolving the raw material and by changing operating conditions. The second step is to grow the seed to the product with desired crystal size distribution. For each part, an operating strategy has been devised using the solid-liquid phase equilibrium data and growth kinetic experiments in a ternary system. The strategy for the first step is determined by the experience and the second one is determined by the theoretical modeling and optimization.