

## **Enhancing the Filtration Behavior of a Pharmaceutical Intermediate Through the Use of Micronized Seeds**

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### **Abstract**

A pharmaceutical intermediate under development was isolated from a temperature driven crystallization. In the original process, the crystallization was unseeded resulting in poor filtration properties due to the crystal habit. To improve the slurry's filtration properties, the crystallization seeding and temperature profiles were systematically studied on laboratory and pilot plant scale. A crystallization protocol with micronized seeds, either jet or wet-milled, was found to be optimal. Utilizing this optimized process on a 1.5 m<sup>2</sup> filter dryer at 115 kg scale, the plant filtration flux was increased from 216 L/m<sup>2</sup>h to 1030 L/m<sup>2</sup>h. The specific cake resistance was reduced five fold leading to process cycle time savings of over 20 hours. Malvern® particle size distribution analysis and optical microscopy images were used to confirm the root cause of the filtration differences. The impact of different filtration equipment (centrifuge and pressure filter) on the isolation will also be discussed.