

Antisolvent Crystallization of Sulfa Drugs and the Effect of Process Parameters

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The effects of process parameters have been demonstrated for the antisolvent crystallization of sulfa drugs. Two types of antisolvents (gas and liquid) were used to precipitate three model sulfa-drugs from their solutions. Sulfathiazole, sulfamethizole, and sulfabenzamide were dissolved in various solvents such as acetone, methanol, ethyl acetate, and N,N-dimethyl formamide (DMF). These solutions came into contact with two antisolvents, carbon dioxide and water. Variations of crystal properties were observed depending on the process parameters such as the type of solvents, precipitation temperature and the injection rate of the antisolvent. The crystal habit of the drug compounds was modified by changing the solvents used. The particle size of the three drugs consistently increased with crystallizing temperature, and the crystallinity of the particles was also influenced by temperature. The injection rate of the gas antisolvent affected the crystal habit, the particle size distribution, and the degree of crystallinity. The use of different types of antisolvents has also modified the crystal habit and particle size.