

023 Granulation of micronised fat powders

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ABSTRACT

In the Particles from Gas-Saturated Solutions (PGSS) process, a gas (usually CO₂) is dissolved into an organic melt at high pressure (typically 150 - 300 bar). This mixture is subsequently expanded over a nozzle, producing a fine powder of very porous particles. Within Unilever we have applied this process to triglyceride fats. In order to reduce handling problems of these fine powders (~ 50 g/l) we have studied granulation with various types and quantities of triglyceride oil as the binder liquid. From a background point of view, we were interested to see to what extent conventional granulation theory/concepts apply to these highly porous powders, which can partly melt or dissolve due to the viscous heating of a granulation process. It was found that curves of granulation time versus binder liquid fraction could be collapsed to a mastercurve if the amount of liquid is corrected for the melting/dissolution of the fat at the prevailing temperature at the end of the granulation process.

Keywords: Granulation, PGSS, fat, oil