

## **Crystallization of Palm Oil Containing Fat Compositions in Presence of Sorbitan Esters**

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In margarine manufacture, blends containing palm oil show a slow rate of crystallisation and, occasionally, a tendency to re-crystallize. The occasionally occurring granular crystals are a major hurdle in the successful application of palm oil in high quality spreads products. This phenomenon is often also referred to as “tropical graininess”. This phenomenon is caused by the segregation of the triacylglycerol 1,3-dipalmitoyl 2-oleoyl glycerol that undergoes the polymorphic transition from the b' to the b form. Recent work from Ueno et al. however indicates that also the presence of tripalmitate plays a major role in the likelihood of occurrence of the defect. Beyond the manipulation of the triacylglyceride composition also other means to control the crystallization behaviour fat mixtures exist. Emulsifiers can be used to control fat crystallisation properties. Earlier studies by Garbolino et al. but also other researchers have shown that sorbitan esters are particularly potent crystal habit modifier (CHM). In contrast to the aforementioned earlier work this contribution is trying to shed some light on the specific action of the sorbitan esters on the crystallizing palm oil based fat compositions. Mainly based on d.s.c. analysis a hypothesis on the mechanism of action taking the different triacylglycerides present in palm oil into account is formulated.