

Creamelt® Stand's the heat

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Introduction

While we expect chocolate to be hard and crisp when we bite into it we much prefer things like confectionery fillings and chocolate spreads to be softer, creamier and more luxurious. If we use and consume these at temperatures around 20°C then the fillings and spreads will be soft and creamy, but, if the temperature begins to rise then these attributes will change. The liquid part of the fat phase may start to separate giving an oily layer on the top of a chocolate spread in a jar.

Cocoa butter in a chocolate spread or soft filling may show signs of recrystallization (something similar to fat bloom on a bar of chocolate). This is not only unsightly but also affects the mouthfeel of the filling or spread because the crystals that are formed impart a grittiness to the texture. All of these aspects have made it very difficult to produce chocolate spreads and fillings that will withstand the kinds of temperatures found in warmer climates, especially those where the ambient temperatures are often above 30°C.

Consequently, the industry has been waiting for an ingredient that will

- (a) impart temperature tolerance to chocolate spreads by preventing oil exudation at higher temperatures, and,
- (b) prevent the recrystallization of cocoa butter in both soft chocolate fillings and spreads held at lower ambient temperatures (e.g. 20°C).

The good news is that the wait is now over because Loders Croklaan have developed a new member of their Creamelt® range of filling fats – **Creamelt® Stand**. Creamelt® Stand addresses both of these problems.

Creamelt® Stand has been shortlisted for the Innovation Award in the confectionery category at this year's Food Ingredients Europe exhibition. This in itself shows that new innovative technology has gone into the development of the product. How, then, can Creamelt® Stand make the differences necessary to enable soft, creamy spreads and fillings withstand higher ambient temperatures without the detrimental changes usually seen in these products?

Use of Creamelt® Stand

There are many similarities between confectionery fillings and chocolate spreads and, often, the same formulation can be used for each. Because it is much easier to show the visual effects of oil separation and cocoa butter recrystallization in a spread we will focus on that application. However, the thermal benefits of Creamelt® Stand are exactly the same when encased in chocolate in a confectionery filling.

Crystallisation speed

Before going on to talk about these ‘thermal’ benefits it’s useful to first consider one of the most important aspects of spreads production – the speed of crystallisation. The rate of crystallisation of spreads is important for two reasons. Firstly, the faster it is then the greater will be the production throughput. Creamelt® Stand crystallises much more quickly at 15°C than a standard spread fat (see Figure 1). The spread containing Creamelt® Stand reaches an equilibrium solid fat content in less than 5 minutes compared to more than 30 minutes with the standard spread fat. Secondly, and equally importantly, Creamelt® Stand gives the correct crystal network required for chocolate spreads to remain stable at higher temperatures.

Minimisation of oil exudation

It is not uncommon to see an oily layer above a chocolate spread even at moderate ambient temperatures but, when the temperature increases to above 30°C, this separation becomes even more apparent. It is unsightly and it affects the nature of the product because when consumers try to spread it on bread or biscuits they often pick up this separated oily layer as well, resulting in a greasy mouthfeel. Spreads made with Creamelt® Stand are able to withstand this separation of the oil phase for many weeks storage at very high ambient temperatures. For example, figure 2 shows the effect of holding a standard chocolate spread and one containing Creamelt® Stand at 40°C for 4 months. The degree of oil separation in the standard spread is clear to see; there is no such separation in the Creamelt® Stand spread.

It might be expected that, to contain oil separation and enhance crystallisation speed in the way that Creamelt® Stand does, the sensory characteristics of the spread would be compromised. In fact, according to a trained sensory panel, a spread made with Creamelt® Stand when held at 30°C (to simulate warmer climates) has almost identical sensory characteristics to one made from a standard spread fat held at 20°C (see Figure 3).

Versatility

Although we have focused on the beneficial attributes of Creamelt® Stand at elevated temperatures it is also possible to use it in spreads and confectionery fillings at lower ambient temperatures. In this case the texture and hardness of the spread can be controlled and modified by mixing vegetable oil with Creamelt® Stand.

Preventing recrystallization

The second issue identified in the introduction to this article is the problem of recrystallisation of cocoa butter in both spreads and confectionery fillings, especially when held at 20°C. There is a world of difference between a chocolate spread and a chocolate-flavoured spread. A chocolate spread contains real chocolate while a chocolate-flavoured spread gets its flavour from cocoa powder. The flavour and textural differences between the two are immediately obvious; the main compositional difference is the presence of cocoa butter in the real chocolate spread. While very desirable from a sensory viewpoint in a freshly made spread, cocoa butter can cause complications on storage because it often recrystallizes from solution in the softer oils in the spread. This causes both grittiness within the spread because the larger fat crystals can be ‘felt’ in the mouth and gives unsightliness to the spread because the fat crystals can be seen on the surface. Creamelt® Stand makes the spread more stable and prevents the textural changes resulting from recrystallization. The difference in surface appearance can be seen in Figure 4 where the spread made from Creamelt® Stand shows no recrystallization after 5 month at 20°C compared with significant surface recrystallization in the standard spread.

Commercial and consumer benefits of Creamelt® Stand

As well as the technological benefits there are commercial benefits to manufacturers and benefits to both retailers and consumers. As far as manufacturers are concerned the technical benefits of the product enable them to increase line production speeds and to both grow existing markets and widen the geographical scope of where their products can be marketed. Improvements in the quality and sensory image of their products will drive both profit and volume growth in a number of different ways – (a) by offering high quality confectionery spreads in tropical and sub-tropical regions where temperature constraints currently prevent this, (b) by developing new varieties such as spreads containing higher levels of real chocolate to add value in existing markets and (c) to bring premium chocolate brands to the confectionery spread sector.

As far as the consumer is concerned, lovers of confectionery spreads will now be able to enjoy their favourite products in warmer countries knowing that the spreads will stay stable and free of oil separation throughout a longer shelf life. Chocoholic spread lovers will be able to enjoy chocolate spreads branded with their favourite chocolate knowing that there will be no recrystallization of cocoa butter to spoil their sensory enjoyment.

What next?

After extensive internal testing of products within Loders Croklaan, the product is currently undergoing the final stages of approval at a number of manufacturers of chocolate spreads. Early results are good and it is expected that the first products containing Creamelt® Stand will be on the supermarket shelves at the beginning of 2016. If you are a manufacturer of chocolate spreads or of filled chocolate confectionery products, particularly if these are being produced for warmer countries and your appetite for what Creamelt® Stand can do for your products has been whetted then you can get more information on the product at the FIE, hall 6, stand I15 or via the website: www.loders.com

Figure 1 Isothermal crystallisation (at 15°C) of Creamelt® Stand compared to a standard spread fat

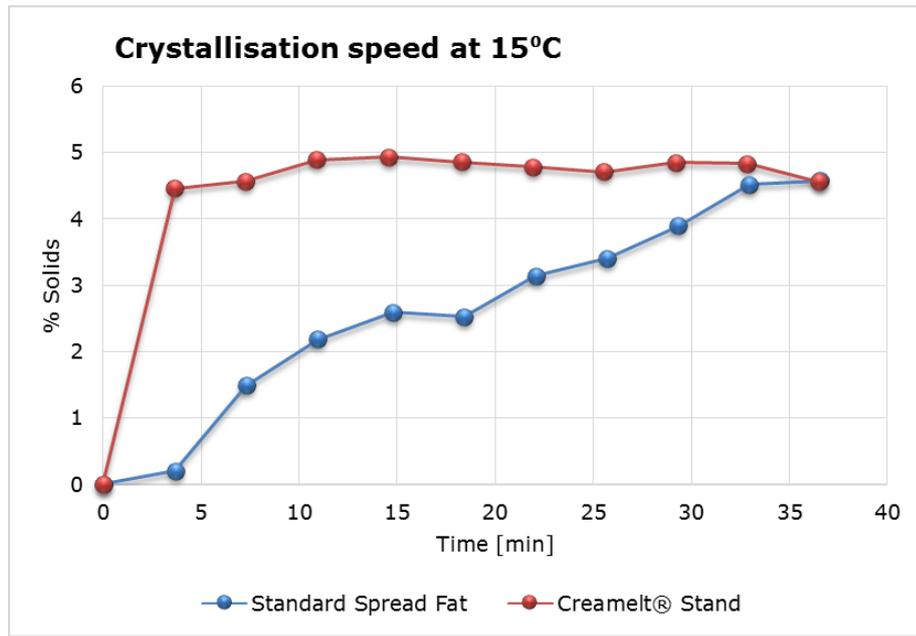


Figure 2 Oil exudation in a standard spread and one made with Creamelt® Stand after 4 months at 40°C

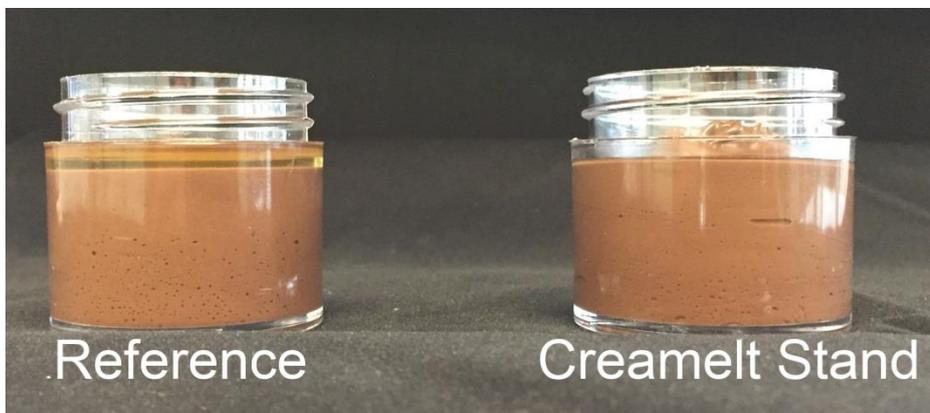


Figure 3 Sensory comparison of spreads made with a standard fat and with Creamelt® Stand

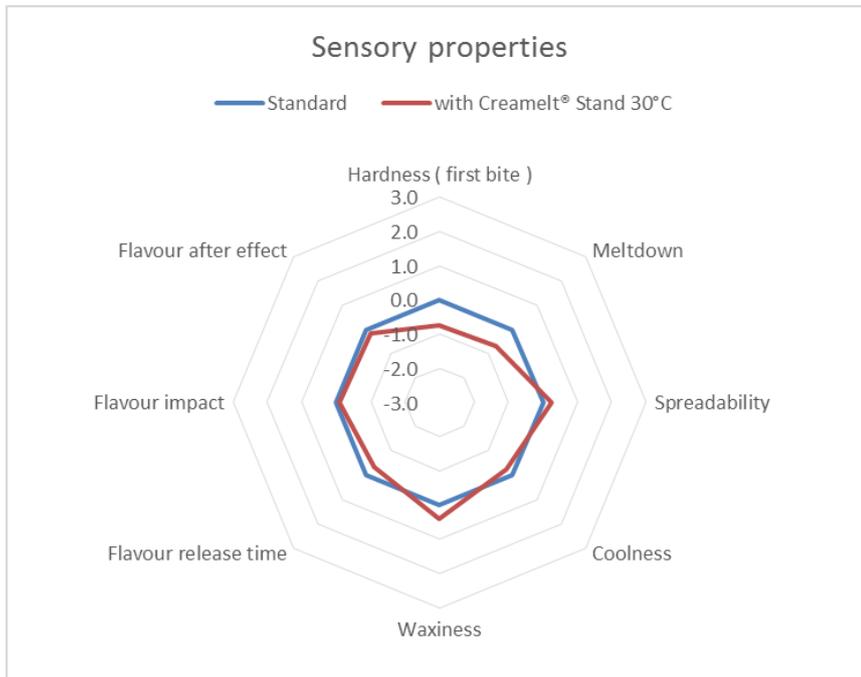


Figure 4 Comparison of spreads after 5 month at 20°C showing surface recrystallisation with a standard spread but none with Creamelt® Stand

