Control of Caramel Texture through Formulation

The effects of formulation changes on texture may be better understood by approaching caramel as a multiphase system.

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Milk caramel is a perennial favorite, either as a stand-alone confection or as an inclusion in other products. Caramel is available in a wide range of textures, ranging from fluids, sauces and fillings, spreads such as dulce de leche, chewy wrapped or enrobing caramel all the way to hard lozenges and pops. When compared to many other foods, caramel has a relatively short list of ingredients: sugar, corn syrup, a milk protein source, fat, lecithin and salt. It would seem that caramel texture should be pretty simple to control, provided that it is cooked to the correct temperature. However, control of caramel texture can be problematic, especially if the confectioner is trying to match a specific texture or is bound by quality control parameters such as target moisture content, ingredient declarations or nutritionals.

CARAMEL TEXTURE: A STICKY SITUATION

Texture is among the most important attributes of caramel, for both the manufacturer and the consumer. Some of the texture terms that are typically associated with caramel are *standup* (or cold flow), *hardness*, *stickiness* and *toughness*. *Stretchiness* or *stringing* can be used to describe how long or short a caramel is. Milk caramels have a semisoft chewy texture, ranging from stretchy and elastic "long" caramels to grained or fudge-like "short" textures.

Unwanted variability in caramel texture can be a frustrating problem: chewiness and stickiness are expected to some degree, but a caramel that is too hard, too soft or too sticky can lead to difficulties during manufacture and may not be desirable to the consumer. Cold flow or poor standup can lead to a variety of problems. Caramels that have excessive cold flow can lose shape over time, sagging or slumping, leaking out of wrappers or even breaking through chocolate shells. When packaged in bulk, caramels that have excessive cold flow may become smashed or misshapen, especially at the bottom of the box. Toughness, elasticity or shortening of texture can be problematic for cut and wrapped caramels, making it difficult to extrude or rope the caramel.

Adjustment of moisture content is usually the first approach to address a texture problem. The caramel is simply cooked a few degrees higher or lower to change the texture and sometimes that will resolve the issue, but it may lead to other problems. For example, consider a soft caramel that is to be sold in blocks or loaves but that has poor standup. The formulation is cooked to a higher temperature to reduce moisture content and standup is improved, but the caramel is then too hard. If major label changes are not an option, how can standup of the caramel be improved while still keeping a soft texture? If we look beyond ➤

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