16.2.1 Chocolate panning

Chocolate panning is a temperature-dependent method in which the coating solutions are melted by heating and hardened again by cooling. Several layers of warm melted coating are applied to the centres and solidified again. Although chocolate is still the predominant coating medium today, compound and yoghurt coatings are fast gaining popularity.

16.2.2 Soft coatings

Soft coatings are produced with the absorption and desorption of moisture. A liquid is applied and allowed to flow over the centre before it is dried out using absorbing solids. The liquid should have adequate bonding properties to hold all the solid particles (usually a sugar) in place. Frequently multiple layers of powder will be required to completely dry out the whole wet layer as far as the centre material. Relatively thick layers can be applied to the centres and so the product rapidly gains weight, which makes this technique particularly useful in the confectionery industry.

Depending upon the amount and type of the powder used, soft coatings harden over time to almost the same hardness levels as hard coatings. Sugar eggs and jellybeans are just two of the more well known products made utilising this method.

16.2.3 Hard coating

Hard coating is a method where the solids are dissolved in their respective solvent. In confectionery, water is predominantly used for this task. Any type of sugar can be dissolved in water to a concentration close to its saturation point at the usage temperature. The higher the solids content in the liquid, normally the shorter will be the drying time. Care should be taken not to over-dry and cause cracking or to dry too quickly because of encapsulating moisture that will later migrate through the sweet and damage the finish of the product. Hard coating is also known as warm or French coating. The name French coating goes back to a time when this type of process was mostly carried out in France. Warm coating is a process where the pan was heated with steam coils or by an open gas-flame placed under the pan. Today most hard coatings are carried out at lower temperatures to prevent the centres from deforming (e.g. in caramels and chewing gum) or melting (e.g. the chocolate in M&Ms™ and Smarties™).

16.2.4 Film and suspension coating

These techniques are most often used in the pharmaceutical industry and often involve ingredients not generally approved by national food legislation. The solvents used here include alcohol and ether, which perform a similar function to the water in hard coating. Great care has to be taken due to their explosive nature and to avoid air pollution. Some of the more modern equipment available incorporates side-vented pans in which some of these volatile chemicals can be captured and reused.

Surprisingly, suspensions are not widely used in the confectionery industry as an alternative to the absorption process for making soft coatings. Suspensions can easily be produced by mixing, followed by further homogenising in a colloid mill. The suspension can then be sprayed onto the product, thereby avoiding a lot of the dust normally generated when the powder is applied onto the wet product in the pan.

Polymers, both in solution and in suspension, can be continuously sprayed in order to form a film on the product. By continuous application and simultaneous drying, an exact balance can be reached, whereby the viscosity of the solution on the product surface slowly increases and eventually produces a hardened coating. Film coatings have the advantage of being relative quick to apply and they will form an even coating around the centres, thus preserving the shape of the sweet centre.

16.3 The process of chocolate panning

The range of equipment available is very large, ranging in size from a few kilogammes to 3 t, and includes conventional pans (round or tulip shaped), semi-automatic belt coaters and fully automated self-contained units. However, over the years, the principals of chocolate, compound and yoghurt coating have not changed and by and large the following steps have to be taken into consideration in order to obtain a good panned product:

- Centre selection;
- Centre preparation;
- Coating selection (largely dictated by the marketing requirements);
- Engrossing, which involves
  - Building the base with chocolate or compound and so on;
  - Engrossing – giving rapid weight gain;
  - Smoothing;
- Polishing;
- Sealing;
- Packaging.

16.3.1 Centre selection

A wide range of centres can be used for chocolate coating. Natural centres, such as nuts or raisins, are particularly popular. Many manufactured centres have to be treated immediately after their production to preserve the quality or be panned before oxidation or other deterioration sets in. Centres should be of a slight convex shape, with no sharp edges, in order to avoid irregular build up and uncoated spots. Almonds, peanuts and cashews are some of the more difficult samples to coat. Almonds generally have sharp edges, which often give rise to uncoated areas. Roasted peanuts have a tendency to split, causing "doubles" due to their concave split area, whereas cashews tend to have a blank underside because of their natural curve.