14.3.6 Temper

Tempering has been discussed in Chapter 13, but it is possible that a degree of temper is required for the optimum coating performance, which does not conform to the "good" temper value.

- A slight over-temper can be used if there is a limited cooling tunnel length and quicker solidification of the chocolate is needed. The disadvantage of this is a less fluid masse and so a thicker coating.
- A slight under-temper gives a more fluid chocolate, which can result in a more uniform coat.

Both the gloss and the shelf life of the finished product should be checked when making these changes.

14.3.7 Product centre

Preparation of the centre for enrobing is equally important to tempering the chocolate (Koch, 2011). Assuming the centre material (wafer, rope or slab) has been sized and shaped, the individual pieces must be brought to a temperature compatible with tempered chocolate. For most applications and in a normal climate controlled environment, ambient temperature (22–24 °C; 72–75 °F) is a good guideline for optimal gloss and bloom stability. Depending on the chocolate specification, centres can also be introduced at temperatures up to 27 °C (81 °F). Too warm centres may cause poorly tempered chocolate and excessive feet (see Section 14.3.14). Cold centres give a dull finish and may cause cracking in the coating after leaving the cooling tunnel. The arrangement of the centres on the belt before the enrober is important to cover each piece completely and prevent "doubles". Typically they are fed in straight rows with a separation that will vary with the shape and size of the piece and the speed of the line. A good guideline for optimal coating is to separate the pieces by about twice the height of the piece itself.

The structure of the centre dictates the enrobing technique and whether one enrobing station or multiple stations are necessary. Soft products require extra care on the bottoming and often a pre-bottomer is required to achieve a good result (see Section 14.3.8). Light products are also a challenge to ensure complete coverage of all surfaces. Starch moulded pieces or wafer pieces must be clean of dust since chocolate behaves somehow like "Sellotape" and will not stick to a dusty surface. Oily surfaces will not coat easily either, while loose nut pieces, coconut shreds or crumbs can be washed off the centres and cause problems with tempering or viscosity of the chocolate.

The quality and quantity of fat used in the centre also needs consideration especially in relation to fat migration and fat bloom.

14.3.8 Enrober components

Whether fitted with a temperer inboard or externally, enrobers have the same basic components (Schremmer, 1988).

14.3.8.1 The curtain

There are two main methods of controlling the feed rate to get a continuous curtain:

- A trough with an adjustable slot in the bottom,
- A trough with a rotating roller(s) to control feed rate.

In either case, there should be a feed pipe into the trough about every 250 mm (10 in) across the unit, to equalise the holding time of the chocolate across the curtain. Tempered chocolate changes very quickly when not stirred and if there is only one feed, it takes longer to reach the outside edges of the trough, where it will contain larger crystals and less liquid fat and so be more viscous.

The metal discharge plate on the underside of the curtain trough can usually be tilted at various angles. If it is in an approximately horizontal position, there will be two curtains and, if it is angled, one curtain is produced.

The position of the curtain trough can be adjusted horizontally and vertically, with the first curtain normally being about 20 mm (0.8 in) before the start of the bottoming bath. If the curtain is more than 2 0mm (0.8 in) above the product centre, it can be wavy and may cause air to be included. The adjusting plate(s) at the sides of the curtain trough must be set by hand to give a constant level in the curtain.

A roller produces a more even and more easily controlled curtain, but is more expensive. Most older enrobers, as well as many new ones, use the simpler adjustable slot to form the curtain, generally with perfectly satisfactory results. The necessary criteria include a uniform, thick curtain across the complete machine width, even with relatively viscous chocolate.

Most of the air bubbles present in the chocolate can be burst using a thin chocolate layer (approx. 1 mm; 0.05 in), A still smaller trough slit (0.5 mm; 0.02 in) will show even better results; however, it may be necessary to sieve the chocolate to prevent blocking such a narrow aperture.

14.3.8.2 The bottomer

Chocolate from the curtain flows into the bottoming tank; this may be a simple plate, or it may be fitted with a bottoming roller, which transports the masse upwards. This roller rotates in the opposite direction to the belt. The sides of the bottoming tank each have an opening which acts as an overflow into the sump. The depth of the bath is controlled by the speed of the bottoming roller and is normally 6–10 mm (0.25–0.4 in). If it is set too high the chocolate can roll or overflow over the front of the scraper (see Figure 14.19). Light product centres then do not run freely into the bottoming bath and create a blockage. If the chocolate level in the bottoming bath is too high, the rotary valve on the chocolate feed pipe can be opened. It serves as bypass and directs part of the chocolate directly back into the sump. Controlling the chocolate level in the bottoming bath by means of partially opening and closing the discharge flap is not recommended, as the chocolate then runs through the wire belt and air bubbles can be incorporated.