

**Table 20.4** Typical recipes for milk, dark and white enrobing chocolates.

Ingredient	Milk chocolate (%)	Dark chocolate (%)	White chocolate (%)
Sugar	45	43.5	45
Skimmed milk powder	15.6		17.9
Milk fat	5.3		4
Cocoa mass	10	44	
Cocoa butter <sup>a</sup>	23.6	12	32.6 (deodorised)
Lecithin	0.5	0.5	0.5
Approximate total fat content	35	35	36.6

<sup>a</sup> Where legislations permits, up to 5% of the cocoa butter can be replaced by CBE fat.

**Table 20.5** Recipes suitable for one-shot systems.

Ingredient	Milk chocolate recipe (%)	Dark chocolate recipe (%)	White chocolate recipe (%)
Sugar	49	52	50
Full cream milk powder	20		20
Cocoa mass	10	35	
Cocoa butter	20.5	12.6	29.5
Lecithin	0.5	0.4	0.5
Approximate total fat	32	32	33.5

a viscosity, then a small amount of cocoa butter should be added to the “backing chocolate”.

With one-shot systems (see Chapter 15), depending on the type of equipment and the product centres; a less fluid hard chocolate with good contraction may be advantageous. Typical recipes for milk, dark and white chocolates that are suitable for one-shot systems are given in Table 20.5. If a more fluid chocolate is required for any of these recipes, up to 3% of the sugar can be replaced by cocoa butter.

### 20.4.2.3 Panning

A wide range of chocolate types and viscosity (and yield value) can be used depending upon the panning system itself and the products to be panned. The chocolate should not be so hard it causes splitting on panning or so soft it causes sticking together of the panned products after cooling.

Typical panning chocolate recipes for use with a spray system (Chapter 16) are given in Table 20.6.

If using round or onion-shaped pans, letting the panned product “rest” and “harden” for 24 h before glazing may be beneficial for a good gloss and no clouding of the glaze.

**Table 20.6** Chocolate recipes suitable for panning.

Ingredient	Milk chocolate recipe (%)	Dark chocolate recipe (%)	White chocolate recipe (%)
Sugar	46	54	48
Skimmed milk powder	15		10
Full cream milk powder			10
Milk fat	4	4	4
Cocoa mass	8	27	
Cocoa butter	26.5	14.5	27.5
Lecithin	0.5	0.5	0.5
Approximate total fat content	34.5	33	33.5

### 20.4.3 Ice cream and frozen desserts/confectionery

Over the last 30 years, many changes have taken place in the use of real chocolate in frozen products. Despite these, the ice cream and frozen product industry worldwide still uses more chocolate flavoured coatings than real chocolate. Adding vegetable fats and oils to real chocolate can also be beneficial, enhancing the melting profile and flavour release of the frozen chocolate in the mouth. The normal vegetable fat used to soften or modify real chocolate is coconut oil and the ratio is up to 20%. This procedure will normally adjust a basic chocolate into a dipping ice cream chocolate. Check with your local chocolate regulations regarding labelling.

Both ice cream chocolate and coatings have to meet a wide range of applications, from enrobed choc ices to sprayed cones and from after dinner ice confections to dipping lollies.

The rules of having to temper real chocolate and cool it slowly do not apply for real chocolate or coating products below 0°C (32°F), where very rapid solidification takes place. Real chocolate, which may or may not contain added vegetable fats, at a temperature of 42 to 45°C (108 to 113°F) before enrobing or dipping comes in contact with the frozen product which is –25 to –40°C (–13 to –40°F).

For best results when dipping or enrobing with real chocolate, the ice cream should not have an “overrun” (additional volume after aeration) of more than 60%. If a chocolate flavour coating is used, the depositing temperature is normally between 28 and 35°C (82 and 95°F) and the “overrun” can be up to 100% or in special cases even higher.

With enrobed products, an after-freezer is normally used to rapidly set the chocolate or coating. Dipped lollies may be rapid cooled by spraying with liquid nitrogen. (*Note:* For real chocolate, there is a slight softening of the chocolate after the initial hardening, which lasts about 10–15 min.)

The total fat percentage to give the correct pick up weight and cover for real chocolate dipped and enrobed ice cream, is between 42 and 48%, but up to 60%