

from West Africa may be used, for example from the Ivory Coast, Nigeria, Ghana and Cameroon (see Chapter 2).

Substantial training has been given to many cocoa bean growers to improve the quality and consistency of the crop, mainly in West Africa and South America, and has concentrated on organic, Fairtrade and, in particular, the quality of regional and single estate crops. The blending of the cocoa beans/mass and level of roasting is very important and is dependant upon several factors:

- 1 Cocoa bean quality;
- 2 Producer experience in blending cocoa beans and roasting times and temperatures;
- 3 The equipment available and its use;
- 4 Purchasing practice.

Cocoa mass is normally produced in one of two different ways. Whole bean roasting involves blending, cleaning, roasting, breaking, winnowing, pre-grinding and grinding. Alternatively, nib roasting is carried out by blending, drying (or pre-roasting), breaking, winnowing, roasting, pre-grinding and grinding. Chapter 3 describes these processes in more detail.

The finer cocoa bean, such as the Criollo type is normally roasted at a lower temperature range than the bulk Forastero type. For milk chocolate the lower roasting temperatures are normally preferred to give a good balance of milk and cocoa flavour.

Roasted cocoa nibs and mass can also be modified by heat or steam treatment.

The treatment modifies the roasted flavour by reducing undesirable acids as well as providing some sterilisation of the cocoa mass and reducing conching times.

Normally a blend of West Africa cocoa is used by European chocolate manufacturers. The ratio will depend on the type of chocolate being produced, the cocoa availability, which varies from season to season and its cost.

Currently there are many fine chocolates being made in smaller quantities and using cocoa beans from specific “origins”: countries, specific regions or estates, variety or type of cocoa. These are normally dark chocolate with a high cocoa mass content to emphasise specific flavours. There is now quite a large number of artisan producers of these specialised chocolates aimed towards the highest quality and price market, normally using specialised ingredients, machinery, production and product knowledge (see Chapter 18).

20.3 Conching to develop flavours

During conching (see Chapters 8 and 10), the flavour changes or modifications are affected by the following:

- 1 Type and action of the conche;
- 2 Temperature of conching: (white 40–50 °C (104–122 °F); milk 40–70 °C (104–158 °F); dark 50–90 °C (122–194 °F);

- 3 Time of conching (4–36 h, depending of type of chocolate and conches);
- 4 Exposure to air;
- 5 The time and amount of addition of the additional fat and emulsifiers;
- 6 The addition of flavours, normally vanilla or nut paste, often hazelnut.

20.4 Chocolate recipes

There are many recipes depending upon the final use. The main types of use are:

- 1 Chocolate bars/tablets;
- 2 Chocolate confectionery products;
- 3 Ice cream and frozen desserts/confectionery;
- 4 Bakery and biscuit products (including chocolate chips);
- 5 Speciality products;
- 6 No added sugar chocolate;
- 7 Compound and coatings (made with vegetable fats other than cocoa butter).

For all the chocolate recipes, up to 5% of the cocoa butter can be replaced with cocoa butter equivalents (CBE – fats compatible with cocoa butter), in countries where the regulations permit (Chapter 28). The final product must be clearly labelled that it contains vegetable fat. Most chocolates would also contain a flavour. Legally this cannot be a chocolate flavour, but is normally natural vanilla extract or synthetic vanillin. For certain applications a small amount of salt may be added to enhance flavour.

20.4.1 Chocolate bars/tablets

In this sector, many factors have to be taken in consideration, particularly regarding flavour, smoothness, snap and mouth melting profile. Multinational producers have their own “house” flavours and there are also national and regional tastes.

To the customer this chocolate bar must bring the ultimate in eating pleasure, by giving the expected flavour, smoothness and melting profile.

The fineness of most bars, whether dark, milk and white, is 15–20 µm for top quality products, 22–25 µm for medium quality bars and 25–30 µm for bars with inclusions, such as fruit, nuts and cereals (see Chapter 9). The fineness profile is not just a guide on the smoothness of the chocolate, but also a quality and price statement: the lower the particle size, the higher the cocoa butter requirement for a given viscosity. Also, the lower the particle size the less throughput of the chocolate refiner: all adding extra cost, but adding perceived quality to the end product as well.

A range of different dark chocolate recipes is given in Table 20.1.

The most popular solid eating chocolate is still milk chocolate, either as a milk chocolate bar or with added fruits, nuts, cereals and so on. Typical recipes are given in Table 20.2.