For the customer to receive the best possible product, care must be taken during its packaging. It is very easy to damage the chocolate coat, and the risk should be minimized by keeping handling and transfer-points to a minimum. Long drops and large storage containers of unpackaged product should be avoided. Damaged and broken sweets as well as loose parts from the shells will detract from the appearance of the product. Relative humidity in the packaging department should ideally be 60%, if the product has been previously stored in these conditions and has reached equilibrium. If, however, this is not possible, the room air has to be treated in such a way that the humidity at the chocolate surface temperature is lower than 60%, in order to avoid a tacky slow-flowing product.

16.5 The panning department

16.5.1 Room conditions

The temperature and humidity are critical to good panning and the room therefore should have some form of control. Shielding the room from the influence of the elements can be a great cost saver and will maintain good conditions throughout the year. The preferred temperature is no more than 15–18 °C (60–65 °F) at a relative humidity of less than or equal to 60%. Chocolate is set by cooling, not evaporation; but moisture can greatly influenced its setting properties, especially if spray systems are in use. The exception to these requirements is large volume panning equipment, which is self-contained and has internal temperature and humidity control.

Polishing and sealing should be carried out in a dust-free environment. If possible, the polishing pans should be separated from the engrossing pans by a wall, or at least some distance should be kept between the pans doing these two processes. The temperature and humidity should be similar to that in the engrossing area. In most cases, alcohol is used as a solvent for the shellac application and this requires additional ventilation. Manufacturers of some large panning equipment claim that it is possible to polish and engross in the same pan. This is only possible if the panning equipment is free from dust accumulations and additional polishing agents are used to repolish the pan walls.

Because of the relatively cool room environment, all the coating supply pipes must be water-heated and/or well insulated to prevent freeze-ups, which could cause long stoppages in production.

A good process air supply is required to obtain high-quality products, but this is often undersized. A 1.05 m (42 in) pan requires approximate 8.5 m^3/min (300 ft^3/min) of treated air at a maximum of 10 °C (50 °F) and it is best if the air can be cooled to remove moisture and then reheated. Once again, when obtaining large volume panning equipment, the manufacturer should be consulted as to the type of fan that is needed for the intended product. In all cases,

a low-pressure high-volume system is the most satisfactorily, the one exception being for pearled products, where a high-pressure high-volume system is needed to deliver intensely cold air to the product.

16.5.2 Quality and troubleshooting

There is some inevitable variation in ingredients and conditions. Care is needed at each step of the process to produce good quality product consistently. Table 16.1 lists some of the common faults and possible ways to correct them.

16.5.3 Panning equipment

Considerable development of new panning equipment has taken place over the last 30 years. From the original round pans mounted on a tilted shaft, ever-larger pans have been built, often mounted horizontally. This type of equipment is normally called a drum rather than a pan. In addition, belt coaters (described below) are available for the medium-sized production plant.

Great progress has been made in the area of control systems, turning panning from an art into a science. An endless discussion can be held on the relative merits of different types of panning machinery but there is a useful review in Boutin (2012).

Traditional pans are still the most common equipment in use. They are relatively cheap but require a skilled operator. This type of pan was originally made of copper, but they are now made from stainless steel. Copper was easy to fabricate

Table 16.1 Troubleshooting guide to chocolate panning (adapted from Fame, 2010).

Fault	Possible causes	Possible corrections
Bumpy/rough surface	Coating too thick, air too cold	Soften (smooth) the final layer, increase pan speed, remove air, add reduced viscosity chocolate
Poor coverage	Uneven centres, low coating/centre ratio, pan speed too fast, low air velocity/temperature	Pre-coating, use additional coating, reduce pan speed, increase air flow and/or temperature, or reduce chocolate flow
Fat bloom	Incompatible fats or high temperature	Change to compatible coating, pre-coating centres or lower coating temperature
Crushed centres	Overloading pan with centres, rib design in pan	Reduce pan load or start pan before loading
Peeling	Excessive cooling, pan loads too high, speed too high, centres too soft	Reduce load on pan
Chocolate not sticking to centre	Centres too warm, oil on centres, thin coating, coating temperature too high, air temperature too high	Reduce temperatures, pre-coating centres
Doubles	Coating added too fast, coating too thick, pan speed too slow, centres sliding in pan rather than tumbling	Reduce coating addition, change to spray system, increase pan speed, coat side of pan with chocolate before engrossing