

A good gum solution, or shellac, both acts as a filler and forms a continuous film over the surface, thereby providing all the requirements for a high gloss.

Polishing is usually carried out in pans dedicated to this task. The environment should be dust-free, cool and dry. The pans are equipped with ribs or baffles to prevent the product bed from slipping, once the product has been polished. Where no ribbed pans are available, a smooth pan can be modified by coating the inside with a thin layer of dark chocolate. Before the chocolate hardens, scratch it in the direction of the pan axes. This will then create enough resistance to roll the product bed. The ideal drying air temperature is 13 °C (55 °F) with a relative humidity (RH) below 55%. A RH of less than 45% can cause the formation of a skin, trapping moisture and leading to subsequent flaking off of the polishing material.

The chocolate coated sweets, free of dust and debris, which have been set overnight at room temperature or well cooled (for large-scale operations), are loaded in the polishing pan. The product can then be tumbled for a short period to further improve the surface (care must be taken not to heat up the product). Once the product has reached the desired smoothness, cold air is turned on to start hardening the surface, usually producing a product bed temperature of 15–17 °C (59–63 °F). The air is then switched off and sufficient polishing masse is applied with a ladle or spray to coat evenly all the sweets. Once the chocolate pieces have a wet appearance, the air is applied again and the product bed is dried. The drying time for the first coat takes around 5 min and should not be shortened, otherwise the polishing layer will surface dry and flake off. Once the sweets are no longer clammy to the touch, the step can be repeated. The second layer will normally give best results when the drying takes about 8–10 min. If the product still has only a very poor gloss, a third or even fourth layer may be required. The product is subsequently further dried and tumbled until a high gloss is achieved. When completely dry, the product is ready for the sealant. (Dust from flaking polishing materials can damage the surface if tumbling continues when the product is too dry.)

Sealing of the panned and polished product can now begin. Shellac, also known as confectionery glaze, is very commonly used for this process. In the United States three to four pound cut shellac [pound cut is a ratio term equalling three or four pounds of shellac to one gallon of alcohol (approximately 1 kg in 2 l)] with some added wax is readily available from suppliers. When using a spray system, the sealing masse is usually thinned down even further with alcohol (or other solvent) to counteract evaporation of the solvent in air before it reaches the product.

The centre must be thoroughly dried before sealing, as any moisture still present will form a grey haze under the shellac.

As soon as the product is evenly covered with sealing solution, cold dry air is turned on to evaporate the solvent. Care should be taken that the correct amount of shellac is being applied. Insufficient sealant will give a blotchy surface, whilst

excessive amounts of shellac will result in stretch marks. Often operators keep the pan stationary as the solvent evaporates, with only the occasional turn. Preferably, however, newer commercial sealants can be used, which contain waxes that enable the pans to run continuously. Once the solvent has evaporated, the pan can be rotated slowly for 5–10 min to produce a high gloss.

The processing is now finished but, in order to obtain the best results, the product should be stored overnight, as it takes shellac almost 24 h to cure and become moisture-resistant. Placing the cool product in relative humidities above 50% will however cause it to become sticky. This is reversible and will go away with time or as soon as the product warms up. Should sticking occur, the tray containing the product should be shaken with one blow. Trying to separate the product by hand will permanently mark the surfaces.

The solvents used for the sealants have to be handled correctly because, if they are not, there is a danger of explosion in the storage facilities. Air pollution from volatile organic compounds (VOCs) is another major concern. For these reasons the polishing area should be well ventilated. Some countries also restrict the use of VOCs and it is therefore necessary to ensure that the process is being carried out within the local legislation. Systems are available to contain and destroy the VOCs, for example wet scrubbing, condensation, biofiltration, thermal oxidation and so on. High capital cost installations tend to have smaller operating costs and vice versa. The cheapest system with the highest operating cost would be a direct flame afterburner. This can be made more environmentally friendly by re-using the resulting heat.

Alternative sealing masses and techniques are being developed, but do not yet give a high gloss. Suppliers of polishing solutions should be contacted to obtain up to date information regarding alternatives and current legislation. In temperate climates shellac may indeed not be required at all, if the product is sold in high-quality packaging.

16.4 Packaging and storage

The type of packaging is frequently determined by the sales and marketing departments. It is however important to realise, however, that the packaging should not only be attractive at point of sale but should also protect panned products. Problems such as moisture transfer, scratching, splitting and light-induced rancidity must be prevented in order to preserve texture, flavour and appearance. Packaging material suppliers can be of great assistance in this respect. A highly glossy surface is one of the biggest attributes of most panned confections. Once hazing, bloom and scratches have started to form on panned chocolate, the customer will think that the product is old and stale, no matter how fresh it might be. In all cases, a storage test should be carried out to determine the right packaging material.