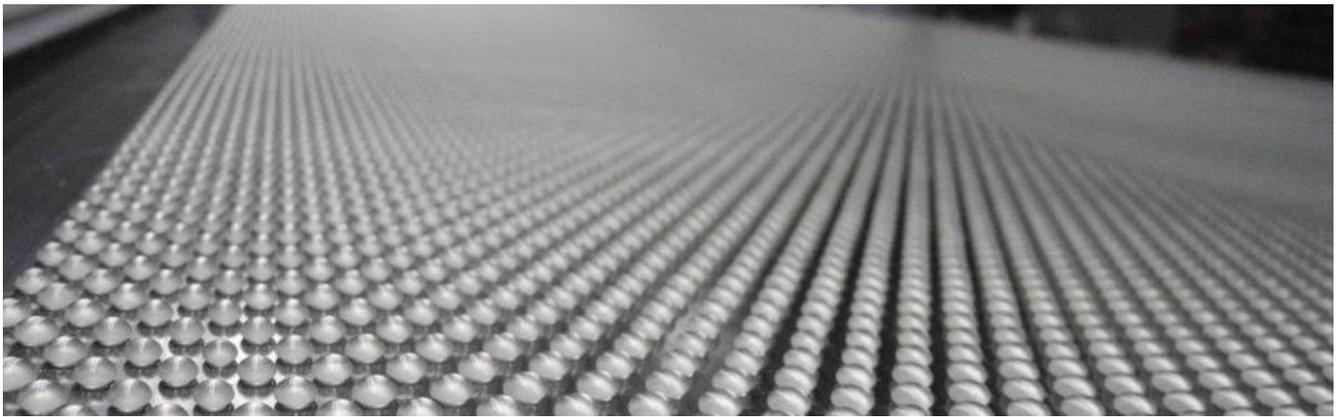


Processing of Hotmelts for Packaging Applications

Tips & Tricks No. 12



General

Hot melts for packaging applications are solid at room temperature, but liquefy under the influence of heat and quickly provide adhesion as heat is lost. This makes it possible to achieve high production speeds on short conveyor systems because the packages can be further handled immediately.

The most important components of a packaging hotmelt are

- Resins which contribute tack and power of adhesion
- Polymers which provide strength
- Waxes which serve as dilution agents
- Stabilizers
- Anti-oxidants

Processing recommendations:

Despite the presence of anti-oxidants and stabilizers, whenever hotmelts are used they are exposed to the influence of oxygen and heat which leads to chemical changes characterized by colour change, gel formation and finally charring - and to a loss of adhesive power. Therefore, when hotmelts are being used, care should be taken to ensure that the tank of the applicator is always well filled and closed to the atmosphere. As far as possible, frequent melting and cooling stages should be avoided.

Whether you leave the hotmelt in a sack beside the machine or use the contents for re-filling purposes, make sure the sack is always closed to prevent contamination with dust.

The technical data sheets contain advice about the processing temperature of different hotmelts. In all cases this advice should be closely followed because higher temperatures lead to carbonization and the production of fumes while lower temperatures result in more stringing and/or a non-uniform pattern of application. The temperature should increase in steps of 5 °C between the tank, the connecting hose and the nozzle.

Each type of adhesive has a characteristic working property of its own and is suitable for use with different materials. Therefore, whenever a change is being made which involves the substrate, the operation of the machine or the performance required of the end product care must be taken to ensure hotmelt being used is suitable for that particular purpose.

An important criterion to be observed when selecting a hotmelt is its Open Time. This is the period between the application of the hotmelt and the time when it reaches its plastic stage. The application of pressure must take place within this period. Since the Open Time depends upon many factors – (e.g. application temperature, and rate, ambient air movement, room- and substrate temperature) no specific advice can be given in this respect.

To select the correct hotmelt for a given purpose, it is also necessary to know the Pressure-Application time of the machine. The correct combination of the Open Time and the Pressure-Application ensures good adhesion. However it is also necessary that no displacement of the surfaces bearing adhesive takes place while pressure is being applied. This could lead to a weakening of the adhesive bond or even a breakdown of that bond.

The application heads should be as close as possible to the substrate because stringing is generated over a greater distance. Furthermore, the hotmelt cools rapidly on its way to the adhesive application point and can become too cold to effect a reliable degree of bonding. It is also necessary to know which of the two surfaces to be bonded is the more difficult one to deal with – the application should be made to this particular surface to allow the hotmelt to “burn” itself in.

HEALTH AND SAFETY:

Care is necessary when working with hotmelts: certainly, direct contact with the skin must be avoided because of the high working temperature. Protective clothing (such as safety goggles, gloves, long-armed overalls) should be worn. If, however, a hotmelt does splash on the skin the natural reflex reaction to remove this immediately must be suppressed. It is far better first to cool the affected part thoroughly with cold water and then seek the help of a doctor.

Never heat a hotmelt product above 200°C because of the risk of the material catching fire.

TROUBLE SHOOTING:

Even if all safety precautions are taken, problems will still occur from time to time:

→ **Stringing:**

- Check the set temperatures
 - Reduce the gap between the nozzle and the substrate
 - Are the freshly-applied hotmelt and the guide-rails in contact with one another?
 - Is the nozzle closing properly?
- **Black particles in the tank:**
- Empty and rinse out the application unit, including the filter, with the special cph-cleaner AP 7. Then refill with fresh hotmelt.
- **Blocked Nozzle:**
- Clean the nozzle with the special cph-cleaner AP 7 and replace the filter
 - Change the whole quantity of hotmelt in the complete unit.
- **The carton tongues open out and both sides carry adhesive:**
- The Open Time of the hotmelt is too long. Reduce the temperature or change the hotmelt.
- **The carton tongues open out with adhesive carried on only the one to which adhesive has been applied:**
- The Open Time of the hotmelt is too short. Increase the temperature or change the hotmelt.
 - The substrate of the side to be pressed is not compatible with the adhesive. Change the hotmelt.