

Stringing
Tips for Optimization







- Cleaner and resource-saving packaging processes
- Less cleaning and maintenance

Jowat Adhesives

Stringing–Tips for Optimization

Machines soiled with adhesive lead to time-consuming cleaning and maintenance. Stringing is an often-observed undesirable side effect, where the adhesive bead is not properly cut off at the nozzle and pulls a fine string of hot melt down the line. A few simple optimizations can make packaging processes cleaner and save resources.



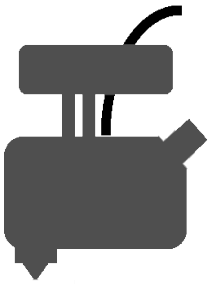
Identifying the problem

The length of the string determines how noticeable the buildup will become in an industrial environment. A string of just a few millimeters on the single bead can add up to a a visible amount in a high-throughput process. Apart from being wasteful, this also increases the cleaning effort. The result: maintenance cycles and production standstills.



Optimizing the process

First of all, the process parameters have to be verified, starting with the processing temperature. It plays a central role in the viscosity of the adhesive and largely determines how well the adhesive is cut off at the nozzle. The temperature at the applicator head is particularly important. An increase of only five degrees Celsius at the applicator head can already significantly reduce the stringing. The temperature in the last few millimeters prior to the application is generally decisive. However, ambient conditions can also have an impact on the temperature of the adhesive. Open windows and doors, unfavorably positioned fans or high process speeds can cause draft. This can cool the applicator head as well as the adhesive and can increase the stringing. Another factor is the distance between the substrate and the nozzle. The bigger the distance, the longer the string. The temperature difference between the hot nozzle and the colder substrate also plays a role.



The influence of the equipment

The mechanism inside applicator heads can be either electro-pneumatic (air open/spring close, or air open/air close) or fully electrical without pressurized air. Both technologies facilitate accurate adhesive application. However, applicator heads with a high closing force can cut off the adhesive string more cleanly in unfavorable conditions. One of the most important aspects to look at when trying to reduce stringing is the capillary volume, i.e. the hollow space inside the nozzle. A smaller volume is more conducive to a clean adhesive cut-off. Experience shows that multichannel, long-slot or angular nozzles are more likely to cause problems compared to short nozzles with only one channel.



Adhesive change can be an opportunity

If the approaches described above are ineffective or unfeasible, the option remaining is to change the adhesive. A clean hot melt cut-off at the nozzle is generally easier with a low-viscosity adhesive. Special raw material combinations facilitate the formulation of adhesives with virtually no stringing tendency. When a new adhesive is chosen, it must be ensured that the product meets the requirements in terms of cycle times, restoring forces, demanding surfaces or special temperature resistances. These tests are carried out by Jowat free of charge for its customers.

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