

# Coating not cracking

**COATING FOR BEGINNERS //** Virtually everyone starting out in the world of print product coating will work up from oilprint varnishes to dispersion coatings. But things can go badly wrong. Several precautions need to be taken to ensure a dispersion coating does not end up looking like cracked, leathery skin.

Dispersion coatings are mostly made up of water (at least 45 percent). After water come styrene acrylates (with or without pigment), which are responsible for producing the intended effect. Then there are other components that ensure dispersion is stable and define properties such as surface tension and rub resistance. Once the water has dried off, the remaining components meld together to form a film. This film is odor-free, practically resistant to yellowing, ideal for coating everything from luxury print products to packaging for frozen foods and ensures rub resistance. Press operators can also cut powder consumption, utilize the full pile height and – because the coating sets quickly – rapidly move on to further processing.

However, operators who want to make the most of these benefits must keep a close eye on how much coating is applied. To do this, they can use a DIN viscometer (ISO 2431) to check the coating's flow time. To ensure accurate results, it is crucial that the coating manufacturer's guidelines (warehousing, usage, processing temperature, emulsification, etc.) are followed to the letter. Nonetheless, it is all too common for coatings not even to be stirred properly. Indeed, if all these requirements are ignored, flow time cannot be calculated properly. This results in inaccurate profiles and turns the coating application process – which is so heavily dependent on timings – into a game of chance. Accurate and regular measurement is particularly important when using a two-roller system, which can produce larger fluctuations than a chambered blade system. Using too little coating or working at too high a speed can lead to problems such as cracking in the coating layer and ink buildup on the coating form. On the other hand, using too much coating can result in a halo effect, streaking and paper distortion.



*“Cracking” with a web-like pattern of fine cracks mostly occurs if the temperature is too high and the speed or quantity of coating is too low.*

Operators using the chambered blade system are at an advantage, as a laser-engraved screen roller ensures that a largely consistent quantity of coating is applied. That is why this system is also more suitable for applying Iriodin products and coating fine fonts and details. When using either of the systems, it is important to cautiously work up to the optimum contact pressure between the metering or screen roller and the coating plate. If this pressure is too great, details can be destroyed or a halo effect produced. If it is too weak, the coating application process can be adversely affected.

To achieve application levels that are as uniform as possible, it is advisable when using the two-roller system to optimally adjust the gap between the water pan and metering rollers along their entire length. When using the chambered blade system, the same applies when adjusting the printing pressure between the chamber and the screen roller.

To ensure the perfect coating result, it is also important that dispersion coatings are allowed to dry properly. Because they dry through evaporation only, exactly the right combination of infrared radiation and hot air needs to be used. If too much heat is applied, the layer of ink can

“soften,” causing sheets to stick together in the pile. However, the most common problem that occurs when the temperature is too high and the speed or quantity of coating is too low is “cracking,” when a web-like pattern of fine cracks forms in the coating, causing it to resemble cracked, leathery skin. If not enough infrared radiation or hot air is used for the selected production speed, quantity of coating, etc., the coating may not dry out properly and this causes sheets to stick together. However, the same could happen if not enough moist air is extracted quickly enough at the delivery!

As a rule of thumb, the pile temperature at the delivery should be 8-10 degrees Celsius higher than at the feeder when processing paper and 10-15 degrees warmer when working with card. One of the best ways of checking this is with a portable moisture meter that has a temperature readout. However, as the optimum pile temperature will vary depending on a whole range of factors (specific coating properties, climatic conditions, delivery type, etc.), it is well worthwhile seeking the advice of an application engineer.

Heidelberg recommends coatings from the comprehensive Saphira product range, since these products are ideally suited for use in Speedmaster presses. That applies to everything from simple functional coatings to attractive effect coatings and special Performance Kits for truly impressive quality at maximum production speeds – double-sided inline coating included. ■

#### Info

The products described may not be available in all markets. Further information is available from your local Heidelberg representative.