

Tips & Tricks

Foggy Film-laminated Prints

Even the smallest of errors on exclusive packaging may attract unwanted attention. Nothing should detract from that first, positive impression. A good example is cosmetic packaging. A prerequisite for optimum packaging is often a high gloss effect, while the surface must also be protected against mechanical stress and strain. It is possible to fulfill these requirements to a certain extent using various coating systems. However, the desired characteristics are best attained using the glossy film lamination technique.

Film lamination is at its most effective when good contact between the film and the cardboard surface is maintained. Heterogeneous, unconnected materials result in pitting, which becomes visible when the product is viewed from an angle. In addition, the top view over the entire surface often reveals a type of greyness which clients find particularly disturbing.

Causes and remedies

If the film lamination process takes place in the later stages of production, an overly high amount of powder or an incorrect grain size during offset printing can lead, despite ink set-off, to contact problems. If this is the case, it is possible to remove the majority of excess powder grains from the surface by "pre-stretching" the paper in the offset press itself, that is, the paper is passed through the press with switched off inking units.

Contact between glue and film may be interrupted by wetting problems as the fluid glue moistens the film. These problems can be reduced through the use of pre-treated laminating film. Pre-treatment, which is usually carried out by the film's manufacturer, increases the interface tension. Printing stock with a smooth surface and a harmonized series of printing inks may also produce high-level laminating results.

Case study

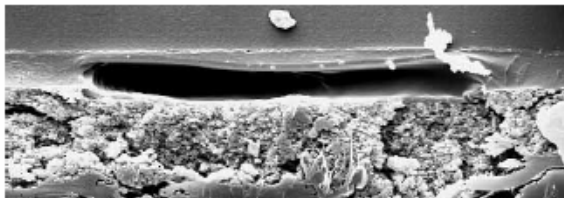
A folding carton for use in high-class cosmetic packaging was printed entirely in a shade of dark blue. Some days later, the glossy film lamination process was carried out by a finishing company. After taking delivery of the punched blanks, the ultimate buyer logged a complaint about the goods, commenting that, after tilting the blanks to the light, the top view had shown numerous dot-shaped light imperfections which created a foggy impression. We will now determine the cause of this foggy effect.

Analysis

An electronic screening microscope was used to determine whether this problem was caused by single particles under the film or by embedded air. The film was removed from the cardboard surface

for this purpose. Images were then made of the back of the film and of the front of the cardboard, the two surfaces which had previously been attached.

The images showed that the layer of glue had not adhered to the cardboard in places. No embedded particles were detected. Further images were made of cross-sections of the finished folding carton cardboard. As the illustration shows, the glue had been applied too thinly in places, or had not been applied at all, which resulted in the formation of cavities.



Cavities in the glue layer are visible in this cross-section.

The illustration demonstrates that the contact between the 20- μm laminating foil and the 7 μm glue layer is, in principle, satisfactory. The cavities appear only on the interfaces between the cardboard surface and the glue layer. This allows us to conclude that the imperfect film lamination was not caused by embedded particles (e.g. print dust powder) but by gaps in the glue layer. It was not possible to determine the precise cause of these cavities on the basis of the sample material.

Here are a few possibilities:

- Inadequate glue viscosity
- Air embedded in the glue (foam formation)
- Lack of or inadequate pre-treatment of the laminating film
- Uneven wetting of the cardboard surface ■

Facts & Figures

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