

InteliCoat



Digital Imaging
Substrates

Lamination of Ink Jet Films

Below are some guidelines to follow when laminating ink jet films. These guidelines will help limit laminate adhesive failure. They apply when using white, clear, backprint, or polycarbonate films. A specific technical bulletin on building a trade show graphic using polycarbonate and vinyl backer is also available. Visit our website for additional Product Application Guides and Technical Bulletins.

Encapsulate rather than apply a laminate to the front or back if at all possible. Encapsulation provides adhesive-to-adhesive bond and seals the graphic ensuring complete waterfastness. Overlamination tends to stress areas of the composite graphic depending on the various methods, and finishing techniques used. Also overlaminated prints are typically trimmed which does not provide a true seal.

Let the print dry for at least 4 hours before applying an overlamine. It is very important to allow the inks to dry thoroughly. If the inks are not dry and the ink co-solvents are still present, the laminate adhesive will have difficulty adhering in those areas. The higher the relative humidity, the longer one should wait to laminate. In high humidity environments (70-80%+), waiting as long as 24 hours is recommended.

Allowing the laminate adhesive to "cure" after application and before being disturbed or stressed will result in a stronger laminated graphic. Adhesive strength typically improves over time, one hour minimum, overnight is better. Cold pressure-sensitive adhesives used in vinyl or polycarbonates require more of a set up time than heat-activated laminates.

Limit applied stress or tension during the actual application of the laminate through the laminator. Vinyl, polyester, and polycarbonate will try to relax after being stressed during application. Generally, heavier laminates apply more force on the associated layers.

If possible, design the graphic so a "non-image" border is present around the edges of the graphic. Laminates will bond more aggressively to the coating rather than the ink area. The higher the ink saturation on the edge of the print, the more likely for failure to occur in conjunction with other influences (like handling and environmental stresses). Pay attention to the recommended ink saturation levels for the media in use. Exceeding the saturation levels leaves the ink sitting on top of the coating rather than sinking into the coating. The ink that is left above the coating will not result in adequate laminate adhesion.

Be aware of shipping and handling stresses. Trim cutting a laminated print produces a large amount of localized stress on the edges. A heavy laminate, dull blade, and rough handling are some of the things that promote layer separation (with failure to occur over time once other forces come into play, rather than immediately). Rolling and unrolling a print for delivery and use promotes adhesion failure as well. This is common practice, but again, some methods are better than others. The tighter the wrap, the more the stress, the higher the chance for failure.

Environmental stress is probably the most variable, least recognized, and least controllable culprit that affects adhesion failure. In most cases, adhesion failure will occur over time and this is likely due to expansion and contraction stresses that the composite undergoes from exposure to varying environmental conditions. Thinking about these beforehand may determine best practice to employ as the graphic is built - materials, methods, handling.

Understanding that there will always be a weakest link in any laminate graphic composite. It may occur at one of the following layers: (1) coating to substrate or bond coat layer, (2) Coating or ink to laminate adhesive layer. (3) within the coating layer itself, (4) within the adhesive itself. The key is to limit the type and level of stress that causes adhesive failure to begin. Once the failure begins, it will continue as more stress is applied in conjunction to the factors discussed here.

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