



Thermal Laminating Technical Tips

Laminating Recommendations for Trans-Kote® Films

1. Always make sure prints are dried thoroughly before laminating.
2. We recommend doing a trial run of both print and lamination.
3. Temperatures should be adjusted to maintain minimum interface temperatures for the film being used.
 - a. MR – recommended interface temperature 220° to 230°F
 - b. KRTY – recommended interface temperature 230° to 240°F
 - c. MITY – recommended interface temperature 230° to 240°F
 - d. FG – recommended interface temperature 260° to 270°F

Interface temperatures *are not* temperature set points. This is the temperature the adhesive should reach before lamination occurs. Actual laminator set point temperature will generally

be higher, depending upon the type of laminator used and the speed of lamination. Heat shoe type laminators typically require more heat than heated roller types. Higher speeds will also require a higher heat setting.

The vast array of different types and sizes of laminators available prevent specific temperature and speed recommendations from being made. Adjust your laminator as needed to produce satisfactory results. If help is needed, call Transilwrap's Technical Services at 1-800-745-5802 or 1-800-441-0433.

Troubleshooting

| PROBLEM | DESCRIPTION | RECOMMENDATION |
|---------------------|---|---|
| Tunneling | Laminate separates from the printed image and forms a small tunnel between the laminate and the substrate. This can be caused by a variety of factors: rolling finished prints which have not properly cured; the bond strength is inadequate between the laminate adhesive and the print substrate; or using a laminate that does not have the proper adhesive for rolling prints. | Allow laminated prints to dry flat for a minimum of two hours (full cure usually takes place within 24 hours). For added insurance, use a high strength adhesive which becomes even stronger as time/temperature changes. |
| Print Curl | The print will not lay flat and curls at the edges. This can be caused by a variance in tension or dimensional stability between the laminate and the substrate. | Choose laminate films and print substrates with similar physical properties. Adjust film tension and/or reduce nip pressure. |
| Silvering | The finished print gives off a silver "look" when small bubbles appear, disrupting the colors in the print. This can be caused by a substandard bond of the laminate adhesive to the substrate on which you are printing. | Increase lamination pressure; reduce lamination speed; check roller calibration for consistent pressure across the laminator rollers. |
| Infeed Waves | Infeed waves are bubbles or wrinkles in the laminated print. This can be caused by uneven or inadequate tension across the web as well as moisture in the print itself. | Make sure inks and toners are completely dry before laminating. Increase pressure during lamination. |



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Troubleshooting cont.

| PROBLEM | DESCRIPTION | RECOMMENDATION |
|--------------------------------|---|--|
| Outfeed or Boat Wake | Outfeed or boat wake is a v-shaped rippled pattern originating from the backside of the laminate. This can be caused by high tension on the pull rollers, which causes distortion of the laminating film. | Reduce speed and tension. |
| Blistering (Outgassing) | Blistering typically occurs when temperature settings are too high and inks are not completely dry. | Make sure inks are dry. Use the correct temperature setting for the laminate being used. |
| Delamination | Delamination occurs when printed inks are not completely dry or laminate is not compatible with printed media. | Make sure ink is dry. Test lamination on an older print to determine compatibility with ink. |

Ink Jet Lamination Considerations

Low temperature laminating films are designed to be compatible with today's ink jet printer technologies, but may be used with many other digital output type devices.

What is Glycol and why is it important?

Glycol is an additive, which is mixed with inkjet inks to act as a lubricant and a solvent. Glycol stops the ink from drying on the ink head and clogging. It is the cause for most of the problems commonly associated with thermal lamination to inkjet prints. Since Glycol interferes with the bond, allow the printed sheet to dry 2-3 hours before laminating in order to achieve the best bond.

The use of heated air to assist drying of the print is also helpful. The heated air should come from the backside of the print, not from the printed side. Heated take up rollers on the printer can also help.

It will help to use media/paper that is more absorptive. When laminating, use matte or photo-based paper instead of photo gloss paper. The laminate will be responsible for the appearance of the finished print. Therefore, glossy paper is not necessary.

Temperature, Speed and Pressure Settings for DIGIKote® Digital Laminating Film

| FILM THICKNESS | TEMPERATURE | SPEED | PRESSURE |
|----------------|----------------------------|-------|----------|
| .003 (75µ) | 185°– 195° F, (85°– 90° C) | 5 fpm | 80 psi |
| .005 (125µ) | 185°– 195° F, (85°– 90° C) | 4 fpm | 70 psi |
| .010 (250µ) | 185°– 195° F, (85°– 90° C) | 3 fpm | 60 psi |



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