

# Lamination: Transfer Tape or Protective Overlaminating Film

Whether laminating self-wound paper, plastic transfer tape or lined overlaminating film using a laminating machine it is critical to use only as much unwind tension and nip pressure (gap closure) as needed to create a bubble and wrinkle free laminate. Excess lamination tension causes a variety of downstream problems with handling, installation and even after installation. When material emerges from the lamination process it should lay as flat as when it went in.

The same concept applies to manual lamination. When hand laminating with a squeegee it is easy to apply consistently uneven pressure across the web as one passes the squeegee from the near side to the center of a work table. At a minimum this creates unevenness and development of wrinkles at installation and in the worst case “tunneling” of release liner away from the graphic.

Certain product combinations are more likely to be sensitive to tunneling than others:

- Plastic release liners and release liners with low silicone/PSA bond create tunneling easier than paper products with paper liner.
- Heavier and more rigid protective overlaminates such as non-pvc anti-graffiti or polyester optically clear types are more prone to tunneling away from both release liner and the graphics than relatively thinner and more flexible pvc film.

Rolling the finished laminate for transport or storage can also negatively effect the graphic through roll-set or tunneling. The general rule of thumb is that a laminate should be wound loosely (minimum 6 inch diameter) with the lined side inward. The effects can be seen below for transfer paper laminated to plastic lined translucent film.

LAMINATION TYPE	PROCESS FEATURES						RESULTS
	High Tension	Low Tension	Tight Wound	Loose Wound	Graphic Wound Inside	Graphic Wound Outside	
MANUAL LAMINATION		X		X		X	Least Cross-Web Tunneling
MANUAL LAMINATION		X		X	X		Least Cross-Web Tunneling
AUTO LAMINATION		X		X	X		Less Cross-Web Tunneling
AUTO LAMINATION	X			X	X		More Cross-Web Tunneling
AUTO LAMINATION	X		X		X		More Cross-Web Tunneling
AUTO LAMINATION	X			X		X	Less Cross-Web Tunneling

*Note: In the case of overlaminating UV printed graphics, trapped air bubbles are formed between layers due to unevenness of the print surface. There are two things to consider; first minor air bubbles between vinyl layers will dissipate over a few days in the sun, second using increased nip temperature at the laminator is a sure way to reduce air bubbles at lamination.*