

Tips for Overlaminating, Premasking and Packaging Graphics

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1.0 Scope

This bulletin provides recommendations for the application of Avery Dennison's® DOL clear overlaminate film to provide additional abrasion and weathering resistance. The procedure for applying a premask and packaging converted films is also covered. Please be sure to read, understand, and practice the proper safety and operating procedures recommended by your laminator manufacturer.

2.0 Laminating / Premasking Equipment

To properly apply Avery Dennison's DOL films and approved premask a laminator is required. The information contained in this bulletin is general as it applies to the use of Avery Dennison DOL films with the proper equipment. For specific information regarding equipment, follow the manufacturer's instructions or consult with the manufacturer's technical service department.

****NOTE:** it is very important that your printed media be fully cured and dried prior to laminating. A minimum recommended drying time is 24 hrs from time of print. Laminating a print before it is fully cured and dried can cause adhesion failure and separation of the laminate from the media. Prints with heavy ink loads could require longer curing times. For best drying results roll up the print loosely and stand vertically to allow for good air flow and evacuation of solvents.

3.0 Laminator Set-Up Tools

In addition to the set-up procedures and tools recommended by the laminator manufacturer, it is recommended that the nip pressure and "footprint" of the laminator be monitored.

3.1 Nip Impression Paper

Nip impression paper is a wax transfer paper used to determine the evenness of the nip "footprint" across the width of the laminating rolls. If the footprint is inconsistent (too heavy on the edges, too heavy in the middle, or too heavy on one side), poor toner transfer, poor toner bond, or wrinkles may result. Nip impression paper can be obtained through:

Beloit Manhattan Division

P. O. Box 155, Ivy Park
Clarks Summit, PA 18411
Phone: 717-587-5111

Recommended Product:

- "Nip Impression Kit for Covered Rolls"

Alternatively, an inexpensive nip impression paper can be made by printing three solid black images on plain paper in a xerographic copier or printer. NOTE: The laminator rolls must be hot to perform this test. Mark the strips left, right, and middle and insert the sheets into their respective positions between the top and bottom heated rolls. Close the nip momentarily (about 10 seconds). Remove the sheets and examine the consistency of the impression across the width of the laminator. If necessary, adjust or repair the

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laminator according to the manufacturer's instructions. **NOTE:** Heat activated overlamine (folded adhesive side in) may also be used.

4.0 Overlamination

The following general recommendations apply to overlaminating Avery Dennison films with Avery Dennison DOL clear overlamine films. For specific instructions relating to equipment operation when overlaminating, please refer to the instructions provided by the laminator manufacturer.

1. The use of heat is generally not recommended when overlaminating with Avery Dennison DOL clear overlaminating films. Should heat be required in the overlamination process, do not exceed 115°F (46°C) on the top or bottom roll. Watch for possible heat-related problems, including waves, tunneling, wrinkles, etc.

NOTE FOR OVERLAMINATING UV PRINTED GRAPHICS:

Heat assist and increasing lamination pressure when applying the overlamine will reduce the silvering that can occur when laminating UV printed graphics. Do not exceed 115°F (46°C) on the top or bottom roll. Roll pressure up to 100 psi may be used. When applying the overlamine in this manner, use the minimum amount of unwind tension on the overlamine to reduce stretching during application.

2. To overlaminate printed Avery Dennison films roll-to-roll, mount the printed film on the bottom roll unwind and follow laminator manufacturer recommendations for unwinding from the bottom shaft. Pull the printed film through the front nip (image side up). Continue pulling the web evenly through the back pull rolls. Close the back pull roll nip and apply 50-70 PSI (350-490 kPa).
3. Mount the Avery Dennison DOL clear overlamine film on the top unwind and web according to the laminator manufacturer recommendations. Pull the release liner away from the overlamine film and adhesive. Attach the liner to the upper rewind shaft to accumulate the delaminated liner. Pull the overlamine film and adhesive evenly through the front nip until the web is wrinkle free with even tension across the web. Close the front nip and adjust the pressure to 50 PSI (350 kPa). Start running the laminator at 1.0 FPM (0.3 m/min). Cut away the overlamine film and adhesive before it reaches the back nip.
4. As the overlaminated film passes through the back roll nip, inspect the web for signs of wrinkling, waviness, bubbles, etc. If problems are evident, stop and correct them before proceeding. Once the overlaminated film looks good, increase the speed to 4 FPM (1.2 m/min.). **NOTE:** Overlaminated graphics are less flexible than typical pressure sensitive film constructions. For best results, feed the overlaminated graphics onto a flat table and cut into sheets.
5. To hand feed printed sheets into the laminator, web the Avery Dennison DOL overlamine as instructed in this section. Use a length of release liner beneath the print to protect the bottom roll from contacting the adhesive. The liner can also be used as a leader to begin sheet feeding.
6. Once the Avery Dennison DOL overlamine has passed through the front nip, close the front nip and adjust the pressure to 50 PSI (350 kPa). Start running the laminator at a speed of 1.0 FPM (0.3 m/min). Cut away the non-laminated clear film between front and back nips.
7. When the Avery Dennison DOL overlamine is feeding evenly, begin feeding printed sheets into the nip, taking care to align the sheets evenly with the overlamine. Increase the running speed as desired. Adjust the overlamine unwind brake to maintain the minimum tension required to keep the overlamine free from wrinkles. As the sheets exit the back pull roll nip, cut between the sheets.
8. For graphics to be applied by hand (not roll laminated onto a board surface), such as vehicle graphics, window graphics, etc., a premask is recommended to protect the graphic from damage during handling and application. Refer to Section 5.1 for recommended premask.

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5.0 Premasks

Premasks are self wound specialized paper (or plastic) pressure sensitive tapes with an adhesive on one side. It is applied to the front of some graphics before applying the graphics to the substrate. The premask aids in the successful production, handling, and protection of a graphic during application. A premask has a lower adhesion to the film than the film has to the substrate; this is why it is easier to remove from the film.

Premask may also be referred to as “application tape” or “pre-spacing tape”.

5.1 Premask Selection

The type of premask required depends on the type of graphic being produced, ink used and overprint clear coat used.

Recommended premasks for Avery Dennison’s pressure sensitive films.

- Four-color process printed decals may require heat lamination to prevent tunneling of the premask.
- It is recommended to allow the premasked graphic to dwell for a minimum of 3 hours before applying the finished graphic.

Generally it is not necessary to use a premask on film that is 4 mils thick or thicker, or for any film that has an overlamine film applied. However, a premask does prevent stretching and protects the graphic during handling and squeegeeing.

After applying the premask, avoid exposing the graphic to sunlight except during application. Sunlight, or UV light, can cause the tape to permanently bond to the film.

Type of Graphic	Use this premask
<p><i>Unprinted large format graphics with or without EZ or EZ RS</i></p> <ul style="list-style-type: none"> • <i>Large format panels</i> • <i>Medium size panels</i> • <i>Small panels or cut vinyl letters</i> 	<ul style="list-style-type: none"> • <i>Low Tack</i> <ul style="list-style-type: none"> ○ <i>American Biltrite: TransferRite 760U</i> ○ <i>R-Tape 4700</i> • <i>Medium Tack</i> <ul style="list-style-type: none"> ○ <i>American Biltrite TransferRite 782U, AirMask</i> ○ <i>R-Tape 4760</i> • <i>High Tack</i> <ul style="list-style-type: none"> ○ <i>American Biltrite TransferRite 792U</i>
<p><i>Printed large format graphics with or without EZ or EZ RS and laminated with an Avery DOL</i></p> <ul style="list-style-type: none"> • <i>Large format panels</i> • <i>Medium size panels</i> • <i>Small panels or cut vinyl letters</i> 	<ul style="list-style-type: none"> • <i>Low Tack</i> <ul style="list-style-type: none"> ○ <i>American Biltrite: TransferRite 760U</i> ○ <i>R-Tape 4700</i> • <i>Medium Tack</i> <ul style="list-style-type: none"> ○ <i>American Biltrite TransferRite 782U, 6882</i> ○ <i>R-Tape 4760</i> • <i>High Tack</i> <ul style="list-style-type: none"> ○ <i>American Biltrite TransferRite 792U</i> ○ <i>R-Tape 4775</i>

Type of Graphic	Use this premask
Printed with Solvent inks and clear coated with UV screen print inks <ul style="list-style-type: none"> • Large format panels • Medium size panels • Small panels or cut vinyl letters 	<ul style="list-style-type: none"> • Low Tack <ul style="list-style-type: none"> ○ American Biltrite: TransferRite 760U ○ R-Tape 4700 • Medium Tack <ul style="list-style-type: none"> ○ American Biltrite TransferRite 782U, 6882 ○ R-Tape 4760 • High Tack <ul style="list-style-type: none"> ○ American Biltrite TransferRite 792U ○ R-Tape 4775
Printed with UV Inkjet Inks (uncleared) <ul style="list-style-type: none"> • Large format panels • Medium size panels • Small panels or cut vinyl letters 	<ul style="list-style-type: none"> • Low Tack <ul style="list-style-type: none"> ○ American Biltrite: TransferRite 760U ○ R-Tape 4700 • Medium Tack <ul style="list-style-type: none"> ○ American Biltrite TransferRite 782U, 6882 ○ R-Tape 4760 • High Tack <ul style="list-style-type: none"> ○ American Biltrite TransferRite 792U ○ R-Tape 4775

6.0 Packaging

Finished graphics should be wound face out with a minimum inner diameter of 6". Keeping the inner diameter at 6" or larger will prevent the graphic from tunneling.

7.0 Troubleshooting

The following describes a number of common problems encountered in image transfers and overlamination, along with possible causes and solutions:

Problem	Possible Cause	Solution
Wrinkles in film going into nip	Tension too low	Increasing unwind brake setting on affected web
	Uneven feeding of webs	Cut webs and re-thread according to steps described in
	Uneven tension across web	Reduce unwind brake setting momentarily and then increase to bring tension back up

Problem	Possible Cause	Solution
Mottle or air bubbles in overlaminated graphic ("silvering")	Not enough pressure at nip	Increase pressure. See Section 4 of this document
	Running too fast	Reduce speed in 0.5 FPM (0.15 m/min.) increments
	Uneven footprint in nip	Check graphic - if mottle has consistent repeat in roll direction or is heavier on one side, problem may be in laminator set-up or laminator rolls. Refer to instruction manual or contact laminator

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Problem	Possible Cause	Solution
Mottle in adhesive coat		Check mottle pattern - if consistent across web or decreases in repeat as roll unwinds, problem may be with adhesive related. Try slower speed, higher pressure, or add heat [no more than 120° F (50° C)].

Revisions have been italicized.

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