

Avery Dennison® Instructional Bulletin 5.04

Conversion and Application of VisiFlex V-8000 High Visibility Reflective Films

Introduction

Avery Dennison® VisiFlex™ V-8000 Series High Visibility Reflective Film is engineered to improve the day and nighttime visibility of emergency response, utility, and construction fleets.

Safety and Handling

The use of any chemicals for cleaning should be done with caution. Refer to the manufacturers Material Safety Data Sheet and follow all instructions and guidelines.

Tools

It is recommended to use only Avery Dennison approved tools for use in Reflective material application. Squeegee, roller, utility knife, rivet punch, soap and water, Avery Dennison Surface Cleaner, Isopropyl Alcohol (IPA), wire brush, clean towels.

Storage

Avery Dennison V-8000 Reflective Prismatic Vinyl can be stored for one year from date of purchase at a temperature between 65-75°F (18-24°C) and a relative humidity between 45-55%. The Reflective Prismatic Vinyl must be applied within this one year time frame. Rolls should be stored in their original packaging or suspended from a rod or pole through the core of the material. Sheeted material should not be stored with the faces of two sheets touching without slip sheeting in between.

Converting

Safety and Handling

Avery Dennison has tested multiple print platforms to determine suitability for digital printing including our own Trafficjet Print System, along with other Eco Solvent, Latex, and UV digital printers.

For the appropriate Trafficjet print profiles, please contact Reflective.Tech@averydennison.com.

For all other print platforms, please visit the Avery Dennison Graphics ICC Profile page for the most up to date list of approved print profiles.

It is very important that the printed media be fully cured and dried prior to laminating. A minimum recommended drying time is 24 hrs from time of print.

Screen Printing

For Screen Printing on V-8000 Reflective Prismatic Vinyl, we recommend using Nazdar System 2 solvent based inks for air dry applications and Nazdar UVTS inks for UV cure applications.

For additional processing information including screen mesh, squeegee durometer, drying conditions and more, please visit:

Nazdar System 2 ink system:

http://www.nazdar.com/portals/0/TDS/NAZDAR_S2_Screen_Ink.pdf

Nazdar UVTS ink system:

<http://reflectives.averydennison.com/content/dam/averydennison/reflectives/na/en/Documents/Instructional-Bulletins/UVTS-Nazdar-Ultraviolet-Series-Guide.pdf>

Plotter Cutting

V-8000 Reflective Prismatic Vinyl is cuttable on Drum/Vinyl and flatbed plotters with up to 600 g cutting force when using a high angle 60 degree blade. The ability to print and cut using registration marks will be dependent on the ability of the optical sensor on your plotter. The prismatic tiling on the sheeting can make it difficult for the optical sensor to correctly pick up the registration marks. For additional information on how to cut this and other reflective products, please review Avery Dennison Reflective Solutions IB #8.25.

<http://reflectives.averydennison.com/content/dam/averydennison/reflectives/na/en/Documents/Instructional-Bulletins/8.25%20Plotter%20Cutting%20-%20Oct%202013.pdf>

Overlamine

The following general recommendations apply to overlaminating Avery Dennison films with Avery Dennison DOL clear overlaminate 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 overlaminate 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 overlaminate in this manner, use the minimum amount of unwind tension on the overlaminate 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 overlaminate film on the top unwind and web according to the laminator manufacturer recommendations. Pull the release liner away from the overlaminate film and adhesive. Attach the liner to the upper rewind shaft to accumulate the delaminated liner. Pull the overlaminate 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 0.3 m/min. Cut away the overlaminate 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 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 overlaminate 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 overlaminate 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 0.3 m/min. Cut away the non-laminated clear film between front and back nips.
7. When the Avery Dennison DOL overlaminate is feeding evenly, begin feeding printed sheets into the nip, taking care to align the sheets evenly with the overlaminate. Increase the running speed as desired. Adjust the overlaminate unwind brake to maintain the minimum tension required to keep the overlaminate 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.

Application Temperature

Avery Dennison V-8000 Reflective Prismatic Vinyl should be applied between 15°C and 38°C to ensure adhesion. Both the air and vehicle surface temperature should be within this range during application. Watch out for condensation build up when bringing cold surfaces into a warm environment. It is recommended that applied V-8000 Reflective Prismatic Vinyl remain within this temperature range for at least 2 hours after application.

Surface Preparation

Note: All surfaces are considered contaminated and must be cleaned and then dried prior to application. V-8000 Reflective Prismatic Vinyl should be applied soon after cleaning in order to prevent dust accumulation on the application surface. Newly painted surfaces should be dried and cured according to the manufacturer's instructions prior to Reflective Tape application.

1. Use a wire brush and/or paint scraper to remove any peeling paint, rust, burrs, debris, etc.
2. Wash surface with soap and water to remove dirt and grease. Rinse thoroughly with water.
3. Re-wash surface with isopropyl alcohol (IPA). Saturate a clean towel in solvent and wipe the entire application area. Immediately dry with a clean towel before the solvent dries. Repeat this process until no dirt transfers to the towel. Change towels frequently to prevent cross contamination.
4. Make sure the entire application area is dry prior to application. Watch out for areas around rivets, seams and hinges as these areas often trap water or moisture.

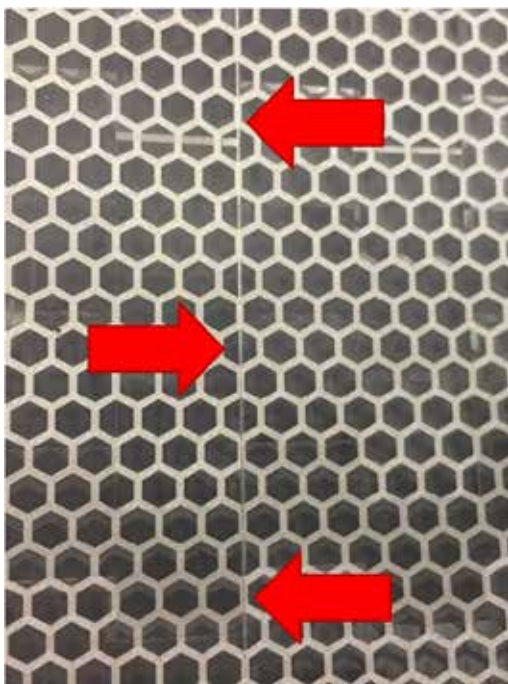
Application Procedure

Note: If applying in a continuous piece, Avery Dennison recommends leaving at least 25mm sticking to an angled/curved surface to ensure there is enough surface area to allow the sheeting to hold its shape.

Please follow Avery Dennison Instructional Bulletin IB 2.10 for application instructions.

Tooling Lines

Tooling lines are visible in all Reflective Prismatic films. These lines are an artifact of the tooling used to create the prisms that make the film retroreflective. V-8000 has lines that repeat every 14.5cm across web and every 72.5cm down web.



Cleaning

Note: Regular cleaning is recommended in order to remove dirt and ensure maximum performance for vehicle identification.

Proper Instructions for Hand Washing Reflective Prismatic Vinyl

- The cleaning solution should be a mix of clean water and a mild detergent wash that has a pH range of 3-11.
- Always test the cleaning solution on a small section of the graphic before using.
- Always read & follow the warning labels and safety precautions provided by the cleaner manufacturer before using.
- Mix your mild detergent and clean water to a soapy blend in a cleaning bucket. Make sure your cleaning bucket is clean and free of small debris that could get onto your cleaning rag and scratch your graphic.
- Rinse graphic first with clean water from a garden hose sprayer to remove any loose dirt or debris from graphic face.
- Begin washing the graphic from the top down to allow dirt and debris to run downward.
- Once the graphic has been washed, rinse graphic with clean water using a garden hose with spray nozzle attachment.
- Graphic can then be let to air dry or can be dried off by hand with the use of a microfiber cloth.
- Once dry, the use of a silicone or Teflon based polish designed specifically for vinyl graphics may be used for added protection. (Be sure to read & follow product manufacturer's directions and suggestions for frequency of use).

Using a Pressure Washer to Clean Reflective Prismatic Vinyl

The use of a pressure washer to clean vinyl graphics should only be used when all other cleaning methods have been used or tested and did not properly work. Keep in mind that pressure washing could have negative effects on the vinyl graphic including (edge lifting, face degrading over time).

Here are some tips to use for this cleaning method:

- Use a pressure washer that is no greater than 1200 psi with a water temperature no greater than 120° F (50°C).
- Spray nozzle opening should have a 40° angle.