

# Avery Dennison Instructional Bulletin 1.4

## Application Methods for Pressure Sensitive Adhesive Films

### Introduction

Avery Dennison pressure sensitive adhesive films are available in a wide range of face film and adhesive combinations for different applications. Application of these films must to be done in the most appropriate manner to ensure the product will perform as expected. Correct application technique results in an optimal bond between adhesive and the substrate.

This Instructional Bulletin outlines the parameters to be used when applying different types of pressure sensitive films.

### Application Temperature & Environment

- Application temperature is one of the most critical factors in film application.
- Lower temperatures restrict good adhesion properties, which increase the risk of a graphic failure due to low levels of adhesion.
- For Easy Apply RS™ films, the substrate and ambient temperature must be above 10°C minimum application temperature. For optimal application performance and ease-of-use characteristics, a minimum temperature of 16°C is recommended.
- Easy Apply RS™ films have a broad application temperature range (refer to the appropriate product data bulletin). While the film can be applied at the lower end of the temperature range, more pressure will be needed and it will take longer for a functional bond to be achieved during application. Until a functional bond is achieved, it is risky to remove premask or allow a vehicle to be transported.
- Higher heat and humidity conditions may also make a graphic more difficult to reposition once it has made contact with the application surface. If the air temperature or the application surface temperature exceeds 40°C, Avery Dennison® Easy Apply RS™ performance may be limited.

**Note:** For all products be sure to read the appropriate product data sheet for details about minimum and maximum application temperatures, recommended substrates, and immediate service conditions before and after application.

### Traditional Application Tools

Avery Dennison® Easy Apply RS™ Films can be applied using traditional tools and techniques; no special tools are required (refer to Instructional Bulletin 1.4).

- Squeegee Pro (Blue), Squeegee Pro Flexible (Red) or Squeegee Pro Rigid (White)
- Flextreme Squeegee's
- Application Glove
- Heat gun
- 30° Knife
- Snitty
- Rivet Brush
- Air Release Tool
- Masking Tape
- Avery Dennison Magnets
- Lasertemp
- Measuring Tape

Wax/Chinagraph Pencil (chalk like marking pencil is strongly not recommended)

## Cleaning and Preparation

**Note:** For detailed information on cleaning and preparation please refer to Avery Dennison Instructional Bulletin 1.01

### General Substrate Preparation

1. Washing with a mild detergent solution, after which the surface should be rinsed and dried with a lint free cloth.
2. Wiping with a solvent-saturated cloth, such as Avery Dennison Surface Cleaner or IPA until all dirt and/or grease has been removed. The solvent should be sufficiently mild not to attack the substrates.

### Vehicle Surface Preparation

- Surface of vehicle (must be OEM painted surface) must be cleaned thoroughly from all dirt, grime, oil, wax and other contaminants.
- Remove all dirt and grime with water and detergent solution.
- Remove grease, oil and wax by scrubbing with a rag soaked in solvent. We recommend Isopropyl Alcohol (IPA), or Avery Surface Cleaner

### Final preparation

- The substrate should be cleaned with Avery Surface Cleaner. Spray the surface allowing to dwell, then wipe off with a clean dry lint free cloth or microfiber towel, ensuring you rotate to a clean side with each wipe. – or;
- The substrate should be wiped with an IPA soaked cloth, and cleaned off with a clean dry lint free cloth or microfiber towel, ensuring you rotate to a clean side with each wipe before the IPA has time to evaporate. Take special care with recesses, returns of panels, behind rubbers (e.g. inside edge of door) and any hard to reach areas.
- It may be necessary to clean some areas more than once until the desired result is achieved.
- Check all critical areas that have been cleaned by using the 'nail test'. Feel the surface with the back of you finger nail. If the surface feels slippery and your nail slides easily, then it should be cleaned again. If it is difficult to slide you nail across the surface and it grips heavily, then the surface is clean.

Many commercially available cleaning/degreasing products exist. The applicator should establish the suitability of a product prior to actual use. In addition, the following factors should be considered prior to decal application:

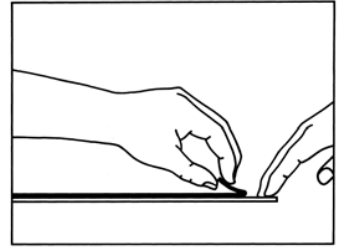
- Bare metals can best be prepared for decal application by cleaning with a detergent solution, followed by solvent cleaning with a (solvent) saturated cloth. Solvents that can be used include: white spirit, heptane or other suitable degreasing solvents.
- Car wax and polish residues must be completely removed.
- Paint surfaces must be completely dry and hardened. On most oven baked paints, decals can be applied immediately after cooling down. Air dried paints and car repair paint require at least two weeks to properly cure before decals can be applied. Solvent residues in painted substrates which are not completely cured may adversely effect decal adhesion and can cause excessive shrinkage or blistering.
- Painted substrates for pressure sensitive adhesive decals should be applied according to the paint manufacturer's recommendations. It is important to avoid solvent retention. Paint system components that are not compatible or that do not adhere properly to each other may cause paint to be lifted when decals have to be removed after use.

Pressure sensitive adhesive films have various degrees of flexibility/conformability. On three dimensionally shaped surfaces a cast film generally gives the best results. The use of an electric heat gun will improve the

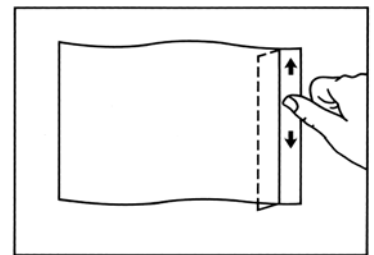
conformability and reduce the tendency for films to delaminate or lift. Always respect the minimum application temperatures as given in the technical datasheets.

### Small Size Decals

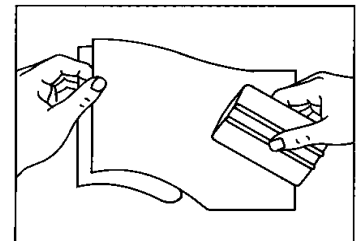
Place the decal upside down on a flat surface. Remove the liner along one edge for 2-3cm and fold it backwards as shown in the drawing. The result is an edge of 2-3cm exposed adhesive.



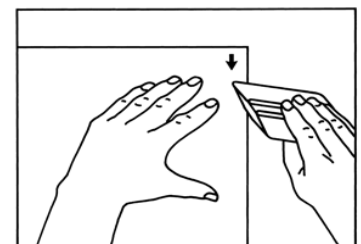
Position the decal that is still covered with liner on the application surface. Once it is in the right position, the exposed edge is pressed to the surface, starting at the middle of the edge, working you way up and down. Do not allow wrinkles or bubbles to form.



Lift the decal slightly and remove 15 to 20cm of the liner (or more if you feel comfortable enough). Keep the decal close to the application surface and start to apply it with overlapping squeegee strokes, beginning at the middle of the already applied edge. Proceed with this application until the entire decal is applied.



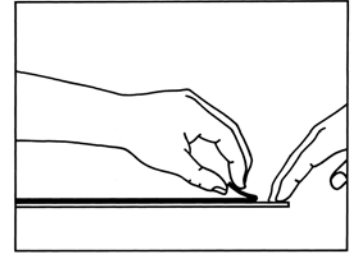
Check if all edges have been applied properly and re-squeegee them. Bubbles can be punched with a needle or air release tool and the air can be removed by pushing it through the hole, starting at the edges of the bubble.



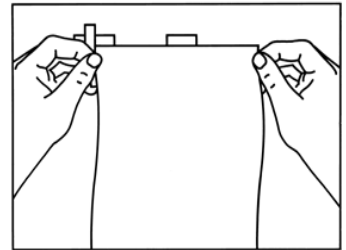
## Medium Size Decals

Apply reference marks on the application surface so that the position of the decal to be applied can easily be identified. Masking tape or easily erasable markers will generally do this job.

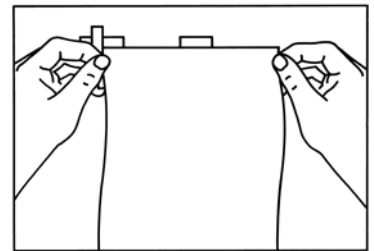
Place the decal upside down on a flat surface. Remove the liner along one edge for 2-3cm and fold it backwards as shown in the drawing. The result is an edge of 2-3cm exposed adhesive.



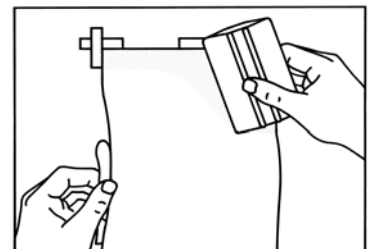
Take the decal up close to the exposed edge and position the decal on the application surface, making sure it lines up with the reference marks.



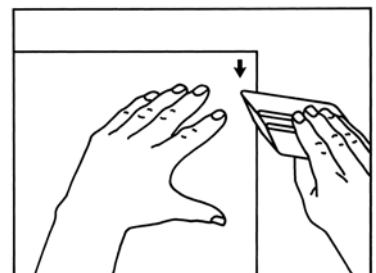
Then the exposed edge is pressed to the surface, starting at the middle of the edge working your way up and down (or left to right as shown on this picture). Do not allow wrinkles or bubbles to be formed.



Lift the decal slightly and remove 15 to 20cm of the liner (or more if you feel comfortable enough). Keep the decal close to the application surface and start to apply it with overlapping squeegee strokes, beginning at the middle of the already applied edge. Proceed with this application until the entire decal is applied.

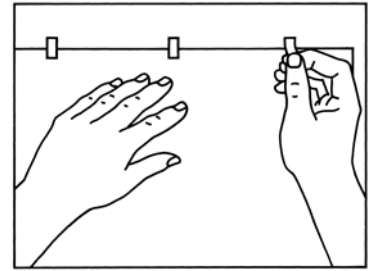


Check if all edges have been applied properly and re-squeegee them if necessary. Bubbles can be punched with a needle and the air can be removed by pushing it through the hole, starting at the edges of the bubble.

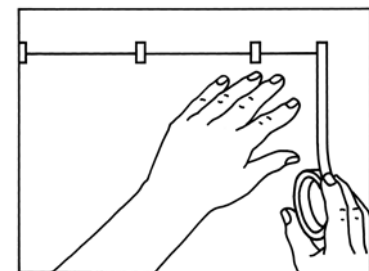


## Large Size Decals

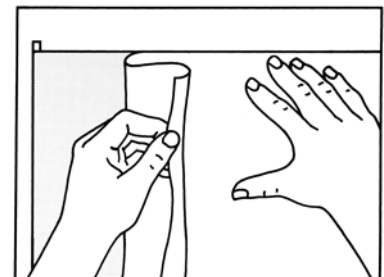
Position the decal on the application surface and fix it on the top edge with small strips of masking tape. Make sure that indeed the position is correct.



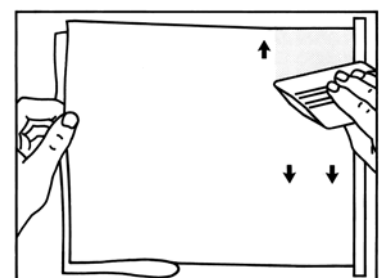
Apply a strip of masking tape over the full length of the edge, either on the right or on the left side of the decal. This strip should hold the decal in the correct position if the positioning masking tape strips are removed. If necessary, apply an extra strip of masking tape, overlapping the first one for some 50%.



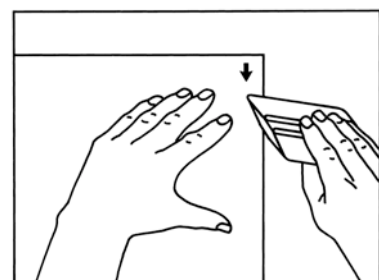
Remove the positioning strips from the top edge. Flip the decal over at the now formed hinge, and remove the liner over a 20-30cm wide area parallel to the hinge. Fold the liner slightly so that the adhesive remains exposed.



Flip the decal over and start to apply it at the hinge, making use of a hard plastic squeegee. Apply with overlapping squeegee strokes, from the middle of the hinge to the top and bottom decal edges.



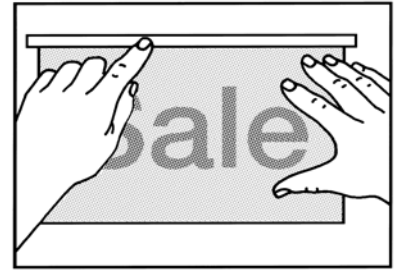
Proceed with application step by step, removing the liner and applying the decal alternately until the entire decal has been applied. Then remove the hinge and check and re-squeegee all decal edges.



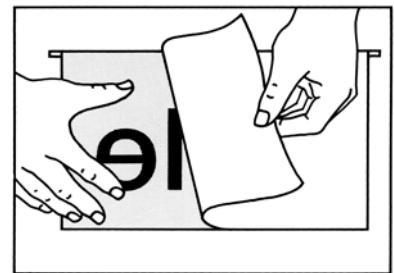
## Application of Plotter Cut Texts and Logos

Texts and logos that are cut on a plotter or by kiss die cutting should be applied with the help of application tape. Application tape is laminated over the graphics and serves as a means of transport and it keeps the graphic in the right shape during the application. Generally, the application method for these graphics do not differ very much from the one for printed graphics. Depending on the size of the graphic, one can make use of a hinge.

Fix the entire graphic, including liner and application tape, with strips of masking tape in the correct position and apply a horizontal or vertical hinge.



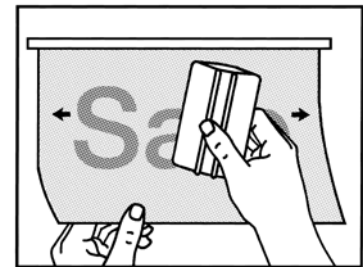
Flip the graphic back on the hinge and remove the liner partially, or if size allows entirely. Prevent the graphic from sticking to the substrate prior to application.



Without touching the adhesive of the graphic, apply it to the surface with a hard plastic squeegee with overlapping strokes. Proceed with application from the hinge to the other end of decal.

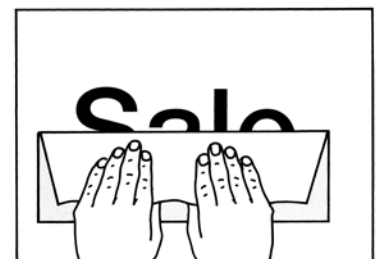
While keeping the adhesive free from the substrate, apply the decal with a hard plastic squeegee. Do not stretch the film but 'follow' the surface irregularities. Stretching the film may result in delamination.

Try where possible to use the full width of the squeegee to press the film down over the entire surface area to be applied.



Make sure the film is applied well in the edges that border the individual sections. Remove application tape after 15 minutes and check and re-squeegee the edges.

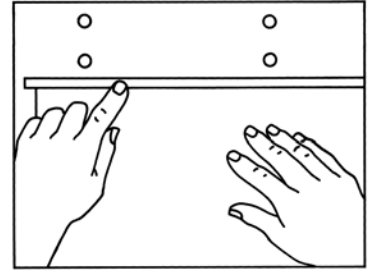
Remove the application tape at the angle of close to 180°. Preferably this should be done 15 minutes after the graphic has been applied, as this may prevent air bubbles from appearing and maximises adhesive performance. Check and re-squeegee all edges of the graphic.



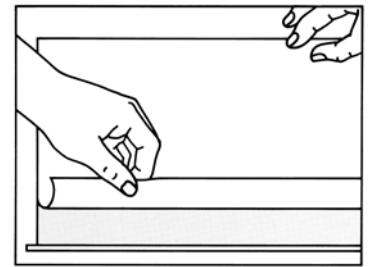
### Application to Riveted Surfaces

Only use cast films on riveted surfaces. Printed or cut graphics made of cast film should always be applied with application tape. This will ensure the graphic does not distort, as cast films are conformable and hence, are easy to stretch.

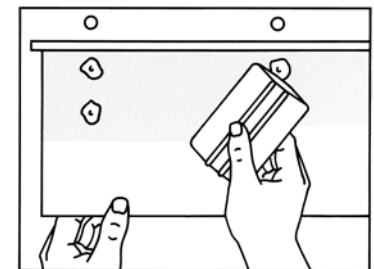
Fix the decal in the correct position by means of a masking tape hinge: the decal's edge should not cross a rivet. See also instructions above.



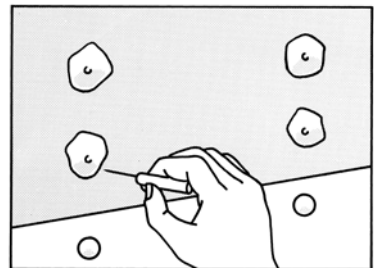
Flip the decal over the hinge and partially remove some of the liner, beginning at the hinge. Do not remove all liner to prevent pre adhesion to the substrate



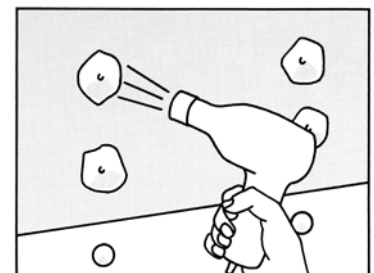
As with large decals, start application from the hinge towards the lower edge of the decal, remembering to work from the centre to the edges. When you reach a rivet, push the film towards the rivet head with the squeegee and apply the decal leaving an air 'bubble' around the rivet. Maintain sufficient tension in the decal to prevent pleats around the rivets.



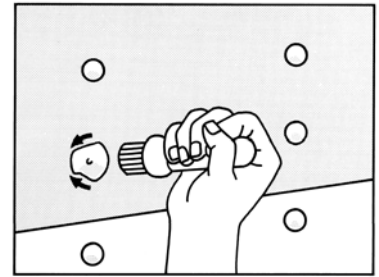
Once the entire decal has been applied and with the application tape still in place, punch with a needle or air release tool 4 or 5 holes around the rivet and continue to apply the film with a squeegee. Once finished, remove the application tape.



Push as much air out as possible and heat the film around each individual rivet with a heat gun until the film softens. (Do not overheat). Push the film down with a squeegee or with your thumb as close as possible to the rivet edge.

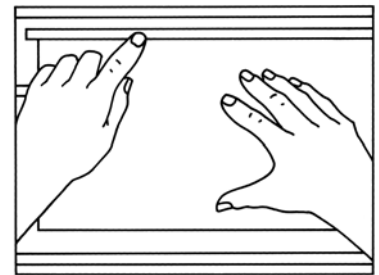


Then 'mould' the film around the rivet with a rivet brush, using circular strokes or a squeegee. This will fix the film to the rivet edges. Application can be completed with a hard squeegee. After application, check and re-squeegee all edges of the graphic applied.

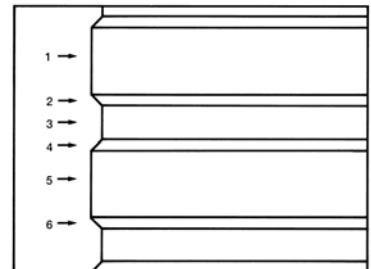


### Application to Corrugated Surfaces

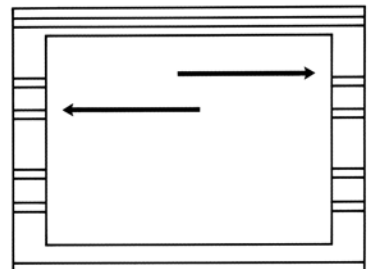
Position the decal to the application surface with a masking tape that can serve as a hinge (see previous instructions). Ensure that the hinge is in a flat section of the surface. Only remove a small area of liner to prevent pre adhesion to the surface.



Application to this type of surface should be done section by section and should be covered with film as shown on the picture. Deviation from this application sequence may result in pleats that are impossible or difficult to remove.



As with large size decals, start the application at the hinge (but section by section), and apply the film from the centre to the graphic's edges. This will limit the occurrence of pleats.



For further information, contact your local Avery Dennison Graphics representative.



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## Warranty and Limited Remedy

This instructional bulletin describes a technique. The information contained herein is believed to be reliable, but Avery Dennison makes no warranties, express or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. To the extent allowed by law, Avery Dennison shall not be liable for any loss or damages, whether direct, indirect, special, incidental or consequential, in any way related to the technique of making a graphic regardless of the legal theory asserted.

The above information provides basic information on how to apply pressure-sensitive graphics. The instructions are designed to help ensure success across a broad range of applications. Depending on the size and complexity of applications, a certain amount of expertise is needed.

Professional applicators can be hired to ensure proper application of finished graphics. When mounting graphics in remote geographic areas, professional applicators can offer the added benefit of local service.

Avery Dennison has a vast network of Specialist Installers who have been specially trained and certified in accordance with our recommended techniques.

You can review the Specialist Installer list here: <http://carwrapsanz.com/specialist-installers/>

Consider hiring a professional whenever the application requires:

- Multiple panels to be registered
- Complex surfaces, such as rivet and corrugated trucks
- Harsh environmental conditions (i.e. outdoor applications in high heat climates)
- Remote geographic locations

For further information, contact your local Avery Dennison representative.