

Application Instructions for Avery Dennison® Supreme Wrapping™ Film

Technical Bulletin #3.12 (Revision EU5)

Dated: 01/04/19

1.0 Consult Product Data Sheet

- Before applying the product, please read the appropriate product data sheet carefully for information regarding appropriate substrates and product performance. Once assured that all factors are understood with respect to the product, all factors comply with the product specifications and you made the assessment that the Avery Dennison Supreme Wrapping Film is suitable for the intended application, you can decide to apply the Avery Dennison Supreme Wrapping Film.

2.0 Application Tools

- Tool belt – to hold all application tools (Avery Dennison product code CB0650001)
- Microfiber Felt Edge Squeegee, like the following:
 - Squeegee Pro (Avery Dennison product code CA3480002)
 - Squeegee Pro Flexible (Avery Dennison product code CA9080002)
 - Squeegee Pro Rigid (Avery Dennison product code AP8270002)
- Cutter with break off blades (Avery Dennison product code CA8140001)
- Lint-free cleaning cloth
- Professional Heat Gun
- Avery Dennison Surface Cleaner (Avery Dennison product code CA3750001)
- Avery Dennison Application Glove (Avery Dennison product code BN6260001)
- Avery Dennison Laser Temp (Avery Dennison product code CA6380001)

3.0 Storage conditions

Avery Dennison Supreme Wrapping Film should be stored at a temperature of 20 °C (± 2 °C) with 50 %RH (± 5 %), in original package. Proper storage allows the film to keep its maximum performance and also enables a hassle-free application. User assumes all risk and liability for the loss of performance, when the film is stored improperly by user.

4.0 Preparation of the Application surface

4.1 Cleaning of the surface

To prepare the application surface, wash it with a mild detergent solution, after which the surface should be rinsed and dried with a lint free cloth.

After the surface has completely dried, the surface should be further cleaned and degreased using Avery Dennison Surface Cleaner and a lint free cloth. Depending upon the level of contamination, this process may need to be repeated to ensure that the surface is fully prepared for application.

It is recommended to clean the application surface with Avery Dennison Surface Cleaner. Many other commercially available cleaning/degreasing products may be suitable for cleaning and degreasing but need to be tested prior to use. In addition, the following factors should be included in the preparation before application:

- Car wax and polish residues must be completely removed.
- Paint surfaces must be completely dry, hardened and free of scratches. On most baked paints films can be applied immediately after cooling down. Air dried and car repair paints require at least one week to dry before films should be applied. Solvent residues in painted substrates may adversely affect film adhesion and might cause excessive shrinkage or blistering.
- Painted substrates should be dried according to the paint manufacturer's instruction to avoid solvent retention. Paint system components which are not compatible or do not adhere properly to each other may cause paint to be lifted when films have to be removed after use.
- Special attention should be given to critical areas as edges, corners, welding seams, rivets and the like. These should be thoroughly cleaned and dried before application.

For extra information on preparation and cleaning of application surface, additional instructions are provided in technical bulletin 1.1.

4.2 Application Temperature

- Air, film, and application surface temperature are important and must match the characteristics of the adhesive and film being applied.
- For optimal application performance and ease-of-use characteristics, apply films at a temperature of 21-27°C. Nevertheless, Avery Dennison Supreme Wrapping films have a broad application temperature range (refer to the appropriate product data sheet for details).
- 10°C is the absolute minimum application temperature for film, air, and substrate.
- Allow 24 hours for graphics to fully set prior to placing graphic marked vehicles into service. Material applied at the minimum temperature **MUST** be allowed to set at temperature for a minimum of 24 hours, or until graphics have completely set, verified through visual & physical inspection.
- 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.
- Higher heat and humidity conditions may also make a graphic more difficult to re-position once it has made contact with the applications surface.
- If the air temperature or the application surface temperature exceeds 38°C, Avery Dennison Easy Apply performance may be limited.

5.0 Installation of the film

5.1 General Application Notes

Avery Dennison Supreme Wrapping Film products have a high degree of conformability compared to other cast vinyl films. Therefore most of the instructions given in Technical Bulletin 3.9 are applicable. Consult this technical bulletin prior to the application of Avery Dennison Supreme Wrapping Film.

However, two major differences exist:

- NO Application Tape is required for the application
- DO NOT apply with water (wet method)

If you are not familiar with Avery Dennison Supreme Wrapping Film application, It is advised to experiment with a small piece of material on the substrate in order to feel the nature of the film and the adhesive.

Avery Dennison Supreme Wrapping Film is powered by Easy Apply RS Technology, which features an easy-to-apply property of the adhesive in combination with a conformable film. This combination allows easy positioning of the product to the application surface without the immediate bond of the product to the substrate.

For a successful application, follow the below instruction:

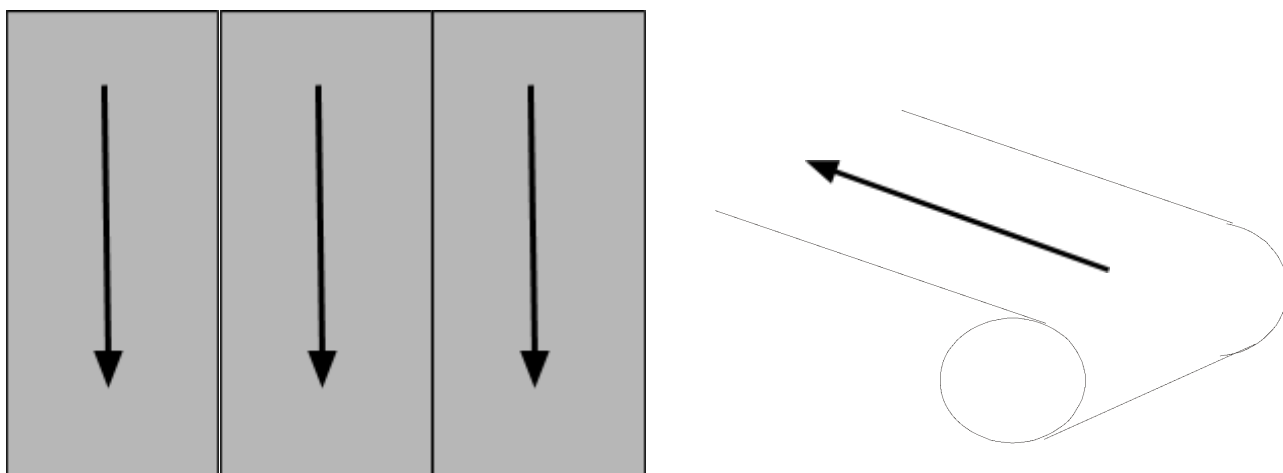
- Ensure that the application surface is clean and dry before application of any graphic film.
- Be sure the air, film, and substrate are within the temperature range recommended for the film.
- Experiment with what tool and technique works best before applying the graphics. Avery Dennison Supreme Wrapping film is designed to work with a variety of tools and techniques. Whatever the tools or technique, it is important to use enough pressure to make sure that the graphic firmly adheres to the substrate.
- Always ensure your squeegee is in good conditions for application and has a smooth edge. This ensures a smooth graphic finish after application is completed, and that 100% of the adhesive has contact with the vehicle substrate.
- Locate where to position graphics and mark the spot on the substrate using small pieces of tape.
- Squeegee the film using moderately firm, overlapping strokes, using an Avery Dennison squeegee with felt cover. When applying the film, hold the squeegee at 50-70 degree angle and overlap all strokes by approximately 50%. Make sure the material has made 100% adhesive contact with the substrate along the entire length of the stroke.
- Re-positioning of the film is only possible in the stage of positioning and low squeegee pressure. If done in a later stage small marks or images might remain visible in the film surfaces.
- For curved shapes, in order to further facilitate stretching of the film, heat can be applied to the film. For optimal conformability a film temperature between 40-55°C is recommended.
- As last step of the application, Avery Dennison Supreme Wrapping Film must be heated between 90° to 95°C in convex, concave and compound shaped surfaces to fix the product in place.

- During a wrapping process with Avery Dennison Supreme Wrapping Film it is recommended to use material of the same production lot. The batch number of the material is clearly identified on a label in the core of each roll.

5.2 Application of metallic matte and ColorFlow series films:

Application of metallic, matt and ColorFlow series Supreme Wrapping Film follows the same instructions as above. However, metallic, matte and ColorFlow series have a directional surface finish, because of the particular way the film is produced.

Therefore the appearance of the film might slightly change if observed from different angles (this effect is called: 'flop'). When applying metallic, matte and ColorFlow Supreme Wrapping Film, it is very important that the unwind direction of the roll is consistently oriented into one direction during application and application orientation is kept the same between different pieces (see picture below).



With metallic, matt and Colorflow Supreme Wrapping Film, it is even more important that material should be used from the same batch number for one application.

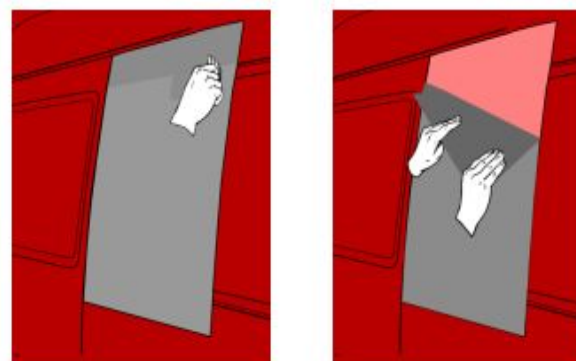
5.3 Application on Compound Shaped Surfaces

This section explains in details how to apply Avery Dennison Supreme Wrapping Film on a deep compound shaped surface. This is generally a complex form of concave and convex shaped surfaces, which can be found one after another or even side by side. In modern models of cars or vans one can find these shapes frequently. An example of compound shaped surface are deep recesses (i.e. Sprinter van window or complex concave curves on vehicles)

1. Position the film to the application surface with magnets or masking tapes that can serve as a hinge. Ensure that the hinge is in a flat section of the surface. Only remove a small area of liner to prevent pre-sticking.

Note: Application to this type of surface has to be done systematically; section by section is the best approach. Deviation from this application sequence may result in wrinkles, which are sometimes difficult or even impossible to be eliminated.

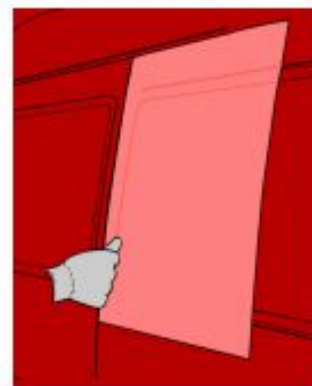
2. Start the application at the hinge (continue section by section) and apply the film from the center to the film or



graphic edges. This method will limit the occurrence of wrinkles.

3. While keeping the adhesive free from the substrate, apply the film with AD squeegee. Do NOT stretch the film, but follow the irregular shaped surface. Use the full width of the squeegee and press the film firmly down over the entire surface area. Vertical sections should be applied with vertical squeegee strokes. Make sure the film is applied correctly in the edges, corners, seams, etc

4. When edges and corners are re-squeegeed, make sure the material is fixed on the edges of the corrugation (see picture), and work your way around the entire corrugation, just fixing the edges.



5. Now the application of the material in the corrugation can start. In order to be able to do so without forming wrinkles or creases, it is advised to wet the AD application glove, using a water/soap mixture.



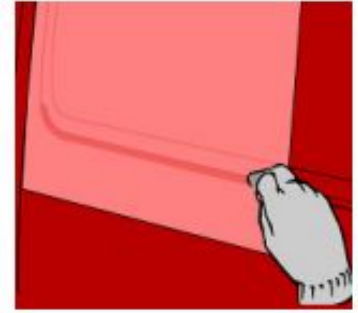
6. The next step is to heat the material gently, using a hot-air gun, to about 40°-50°C. The use of an AD laser temp will ensure your hitting this temperature range. It is advised to do small areas at a time.



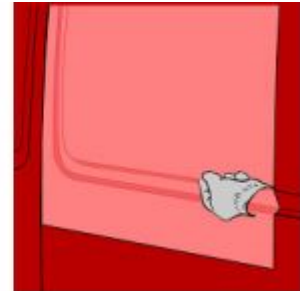
7. Now, start stretching the material in the corrugation, starting in the deepest part of the corrugation first (the part where the material will require the most amount of stretch, such as a corner). Make sure that the material is heated to remain at the 40°-50°C temperature.



8. Continue your way around the corrugation, only focussing on the deepest part of the corrugation.



9. When all the deepest areas of the corrugation have been applied, the remaining part of the corrugation can be done. Again, make sure the material is heated to the required 40°-50°C, and work your way through the corrugation.



10. With all the edges properly applied, it is necessary to apply the material in the center of the corrugation. When doing this make sure that the air is not trapped, always leave an opening for the air to escape.



11. Check the application for remaining bubbles. If there still are small air bubbles to be seen, these can easily be removed. Just make a small puncture, heat it (40-50 °C) and push the air out.



12. The final stage of the application starts. Using the hot air gun, the material should be post heated to a temperature of 90-95°C, especially in those areas where the material is stretched. The use of an AD laser temp is REQUIRED to ensure you achieve the proper temperature during the post heating process. Make sure that the heating is done gently, and the temperature is gradually increased.



5.4 Final Re-Squeegeeing

Re-squeegee the most critical areas to ensure secure adhesion to the substrate and avoid any premature failure due to edge lifting.

- Re-squeegee all graphic edges, overlaps, and seams using firm pressure.
- Use a heat source during this process to ensure edges are sealed properly, attaining temperatures in the range of 90-95°C.
- Use AD squeegee with a felt cover to prevent scratching or damage to the decal.
- Re-squeegee is a must on ALL edges of the decal, including any overlap edges.

6.0 Confirm Adequate Adhesion and Inspect

Ambient temperature is a key environmental factor affecting adhesion of pressure sensitive adhesive films. The warmer the ambient temperature is, the less time it will take the film to achieve adequate adhesion. Temperatures below the recommended low application temperature may take significantly longer, even days, to achieve adequate adhesion. Wait several hours after application before taking the vehicle outside for delivery, enabling the adhesive to reach its functional bond level.

Before delivering, inspect the installation completely verifying all material edges have full adhesion to the substrate, all compound curves have been properly set with heat, and the material has been applied and finished properly. Whenever possible, move the wrapped vehicle outdoors for natural light or use a well lit interior area to ensure a high quality application has been achieved.

7.0 Test Sensors

Test all vehicle components and sensors and confirm that they work correctly before releasing the vehicle to the customer. If necessary, cut and remove any film that covers sensors.

8.0 Cleaning, Maintenance and Removal

8.1 Cleaning and Maintenance

Refer to Technical Bulletin 1.6 “Cleaning and maintenance of Avery Dennison decals and Graphics” for general guidelines.

The cleaning solution should have a pH of 3-11. Dilution ratios of the cleaning solutions, as recommended by the manufacturer should be closely followed to reduce/minimize film degradation.

For the cleaning & maintenance of Avery Dennison Supreme Wrapping Films with matte finish, test an inconspicuous area of the film prior to using any cleaners, wax, and polish to ensure no color shift or change in finish is caused to the film. Cleaning products must be grit free to avoid scratching and it is recommended to always use a soft chamois or microfiber cloth. Do not use brushes. During cleaning, Water temperatures should not exceed 50°C. Final clean water rinse is necessary. Dry with a soft non-scratching absorbent cloth to avoid spots.

To clean your wrap and preserve it to top-conditions, it is recommended to use Avery Dennison Supreme Wrap care products, such as Wrap care cleaner, Wrap care power cleaners and Wrap care sealant.

8.2 Removability

Avery Dennison Supreme Wrapping Film offers long-term clean removability of the film during the lifetime of the product. The general instructions of removal of self-adhesive films is described in Technical Bulletin 1.2.

The Easy Apply RS Technology not only facilitates the application of the film, it also features clean removability of the material after the intended period of use.

Extended laboratory tests and accelerated ageing tests have shown that under these conditions a clean removability level of over seventy percent is reached.

Of course different application substrates and conditions are a variable in this property of the Avery Dennison Supreme Wrapping Film.

9.0 Brief summary

- Clean the surface using Avery Dennison Surface Cleaner
- Apply the film using Avery Dennison Squeegee Pro
- No Application Tape needed
- Do not use wet application method
- Pre-heat film between 40° - 55°C
- Eliminate all air from under film
- Re-treat entrapped air
- Post-heat to 90-95°C
- Re-squeegee critical areas
- Allow 24 hours acclimatisation period
- Test all sensors to verify they work correctly

10.0 Disclaimer

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