

Avery Dennison[®] Instructional Bulletin 1.2

Wet Application Method - Window & Illuminated Graphics

Revision 5

Introduction

For most applications, Avery Dennison recommends the dry application method to be used. For applications onto flat transparent or translucent substrates (i.e. glass, polycarbonate, acrylic) the wet application method may be used if preferred. Wet application involves the use of an application fluid sprayed onto the substrate and adhesive to provide the following advantages:

- Increased time for positioning before adhesion builds,
- Repositioning without distortion,
- Improved visual appearance immediately after application without noticeable difference in squeegee pressure or air bubbles

If the wet application method is used with either water and detergent or a commercial application fluid it is extremely important the following procedures and processes are followed.

General Information

1. Pay careful attention to the following attributes:
2. Type of face film - Polyester films: although a rigorous cleaning regime should be used, special care must be taken when applying films made from polyester. These types of films will not conform to small amounts of dirt if left on the substrate and therefore defects will become more noticeable once the application is complete. Always ensure that the surface is 100% clean and the environment you are working in is dust and debris free.
3. Adhesive type and properties - Adhesives are designed to provide a certain level of tack and increased adhesion over time. These adhesion levels are completely changed with the introduction of an application fluid and adhesion will not build until the fluid is expelled from underneath the film or evaporates. Different adhesives are designed to have different adhesion levels and should be considered as part of the process or graphics failure may occur. We recommend the use of wet application of transparent and translucent films only on products with solvent-based acrylic adhesives. If emulsion-based adhesives are applied using the wet application method the adhesive may appear milky due to the fluid causing adhesive whitening – This may disappear after a few hours/days. Note: Wet application is not recommended for Easy Apply films.
4. Ambient & substrate temperature - If the ambient and substrate temperatures are low the application fluid will take a long time to evaporate and adhesion will not build. If the temperature is below the products minimum application temperature the adhesive will not provide an acceptable level of adhesion. Both may result in graphics failure. Please consult the Product Data Sheet for minimum application temperatures.
5. Surface cleaning and preparation - Like in any graphics application it is absolutely critical that the surface the graphics will be applied to are thoroughly cleaned of dirt, grime, grease wax, coatings or other contaminants which could affect the adhesion of the pressure-sensitive films.
6. Application fluids - Are designed to reduce the friction and neutralise the adhesion of the film to the application surface. The application fluid should be expelled or evaporate from between the film and surface after application to gain ultimate adhesion. If any additives are used they can contaminate the surface and cause graphics failure.
7. Application techniques - Must be considered in order to obtain the best visual appearance and remove any fluid to ensure maximum adhesion. Firm, overlapping squeegee pressure is required to remove application fluid and re-squeegee edges before and after the removal of application tape if used.

Application Methods and Procedures – Window Graphics

Removable adhesives are recommended for glass application, to minimise adhesive residue when removing at the end of the graphics life.

Ambient and surface temperature should ideally be between 16°C and 25°C, but must be above the minimum application temperature of the film being used. If the temperature is too low the fluid will take a long time to evaporate. This may cause issues when removing any application tape if used.

Surface cleaning and preparation

- Remove any tape, stickers, paint, stain or overspray, using a solvent cleaning solution and a single edge scraper blade. Apply a solvent cleaning solution (Methylated spirits, Isopropyl Alcohol, Prepsol) or Avery Surface Cleaner to the surface to loosen any contaminated whilst reducing the chance of scratching the surface. Use a fresh blade for each job and check the blade for imperfections that may cause scratches.
- Once the glass has been scraped clean of contaminants, spray the surface with a water and detergent solution and scrub the surface with a scouring pad, scrubbing brush or sponge.
- Squeegee the surface with a soft rubber window squeegee to remove any remaining cleaning solution or contaminants. Wipe the edges dry using lint-free paper towels or cloth.
- Note: Do not use glass-cleaning products that contain additives such as silicon, ammonia or others as they will contaminate the surface and reduce adhesion strength.

Application fluid

- The application fluid must be predominantly water. For every litre of water add no more than two (2) drops of a mild liquid detergent which will act as a slipping agent. If larger quantities of detergent are used it will contaminate the adhesive and reduce adhesion strength or cause visual cloudiness or whitening between the application surface and film.
- Note: Do not use commercial detergents with additives (i.e. moisturiser, enzymes, perfumes, lanolin) that can contaminate the application surfaces and reduce adhesion.
- If the application temperature is low or small detailed graphics are being applied you can add a mild solvent (i.e. Methylated spirits or Isopropyl alcohol) to the formulation to help the fluid evaporate faster and increase the adhesion build, allowing you to remove application tape faster. The percentage would vary depending on the size of the graphic and ambient conditions, however a maximum of 30% should not be exceeded and should always be tested prior to use.
- If using a commercially available application fluid ensure that you follow the dilution instructions provided by the manufacturer. In many cases you will find you can dilute the solution with water further than instructed.

Applying application fluid

- Using a pressurized spray bottle apply a light mist of application fluid onto the application surface and adhesive side of the film. Do not use excessive amounts of application fluid as it may cause:
 - The graphics to slip and slide excessively on the surface and make the application extremely difficult
 - Too much fluid to be trapped between the application surface and film creating water bubbles

Poor adhesion and graphics failure

Position the graphics in the correct position on the application surface. Ensure the graphics is laid smoothly and flat without any large water or air pockets/bubbles. If your graphics are computer cut and depending on the film used, apply a application tape which will be easier to remove after application

Squeegee Technique

- Squeegee from the top and centre moving out towards the edges of the graphic. This will ensure that the water is expelled from behind the graphic and water is not forced to seep under the top edge or get trapped in the centre.
- Use firm overlapping squeegee strokes to remove the application fluid and any air trapped underneath the film. It is critical to remove all application fluid via squeegee to get maximum adhesion to the application surface. Any water remaining trapped between the substrate and the decal can reduce adhesion and can cause graphics failure.
- Re-squeegee all edges before and after application tape removal.

Trim the graphics back from any edges ensuring it is not overlapping or touching any rubber or silicon window seals, we recommend a minimum distance of 2-3mm. If the graphics are applied to these surfaces it will cause adhesion and graphics to fail by either lifting or curling.

Avoid using large areas of dark colours on glass, especially black or large areas of highly contrasting colours. If these graphics are exposed to direct sunlight it can cause thermal shock or stress resulting in glass breakage or cracking.

Application Methods and Procedures – Illuminated Graphics

Refer to Section 3 – Window graphics except for the following points:

- Remove protective film from acrylic or polycarbonate sheeting and allow to outgas as long as possible before application
- If the application surface is acrylic sheet, polycarbonate or flexible sign face material, do not use a scraper blade in the first cleaning step as it could damage or scratch the surface
- See Avery Dennison Instruction Bulletin 1.05 Procedures for Acrylic & Polycarbonate Preparation
- See Avery Dennison Instruction Bulletin 2.03 Application of Translucent Films to Flex Face Material
- See Avery Dennison Instruction Bulletin 2.02 Converting Procedure for Vacuum Forming
- Avery Dennison polyester films are not recommended for application to acrylic or polycarbonate sheeting. As these substrates outgas over time, it will cause bubbles to appear in the graphics, as the outgassing cannot permeate through the polyester film.

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 Certified Installers who have been specially trained and certified in accordance with our recommended techniques.

You can review the Certified Installer list here: [Find a Graphics Installer](#)

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.

