

Application Instructions for Avery Dennison® Pure Defense Series Paint Protection Films

Technical Bulletin #6.10 (Revision EU2)

Dated: 01/05/21

This technical bulletin describes a general technique for the application of Avery Dennison Pure Defense Series, a range of different paint protection films. The following application guidelines should be followed when applying:

- Avery Dennison Pure Defense PU (Avery Dennison product code BZ1080001)
- Avery Dennison Pure Defense PVC (Avery Dennison product code BQ4510001 and BR8410001)

1.0 Consult Product Data Sheet

- Before applying the product, consult the appropriate product data sheet for information regarding appropriate substrates and product performance. Once assured that all factors are understood with respect to the product, and all factors comply with the product specifications, you can decide to apply Avery Dennison Pure Defense PU and PVC.

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)
- Avery Dennison squeegee for wet application
 - Squeegee Orange (Flexible) (Avery Dennison product code BO7850001)
 - Squeegee Yellow (Rigid) (Avery Dennison product code BO7840001)
- Cutter with break off blades (Avery Dennison product code CA8140001)
- Stainless steel blades (Avery Dennison product code BM3290001)
- Lint-free cleaning cloth
- Professional Heat Gun
- Spray Bottle (Avery Dennison product code CA8140001)
- Avery Dennison Surface Cleaner (Avery Dennison product code CA3750001)
- Baby Shampoo and Water
- Ethanol (>96% purity)

3.0 Storage conditions

Avery Dennison Pure Defense PU and PVC should be stored at a temperature of 20 °C (± 2 °C) with 50 %RH ($\pm 5\%$), in the original package and in a vertical position. 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. Improper shall mean that the user did not store the film in accordance with the aforementioned instructions.

4.0 Preparation and 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 instructions 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.

5.0 Installation of the films

Flat and semi-flat surface

Avery Dennison Pure Defense PU and PVC have been designed to protect the car's body surface and can be applied to car fronts, wheel arches, rocker panels, door edges, pillars etc.

Before starting the application, wash your hands, to avoid fingerprints on the adhesive and ensure that the film is applied in a clean, dust-free and well lit environment.

Avery Dennison Pure Defense PU and PVC need to be applied with the wet application method, using Avery Dennison Application Gel or alternatively a water and soap solution. For optimal application performance, the recommended soap solution for application is 1 Liter of water mixed with 2 mL of baby soap. Both Avery Dennison Application Gel and water and soap solution can be sprayed using the Avery Dennison spray bottle.

As a first step in application, spray the gel or soap solution on the painted surface before applying the film. Then cut the material from the roll to an approximate needed size and spray the surface of the film with Avery Dennison Application Gel or soap solution.



Remove the liner and spray the exposed adhesive side with the soap solution. Then position the material on the selected application area. If necessary, slide the film until you have reached the correct positioning. Pull the film to fit it to the application surface, laying it flat and removing all the wrinkles.



Once the material has been positioned, re-wet the facefilm with Avery Dennison Application Gel or soap solution and gently start to squeegee the film. Use an Avery Dennison Squeegee Pro with felt cover or Avery Dennison Yellow and Orange Squeegees and gradually increase the pressure in order to remove all the air and water from under the film. Overlap the squeegee strokes by about 50% to avoid remaining air/water entrapments. During this phase, make sure to keep the tip of the squeegee and the face of the film wet with the soap solution to facilitate sliding of the squeegee on the film surface. To squeegee mild curved or concave surfaces, make use of the intrinsic flexibility of Avery Dennison Orange Squeegee or use the palm of your hand.



When using Avery Dennison Pure Defense PU and PVC, re-positioning of the film is only possible in the stage of initial positioning and low or no squeegee pressure. If done in a later stage small marks or lines might remain visible in the film surfaces.

Convex and concave shapes

Avery Dennison Pure Defense PU

Avery Dennison Pure Defense PU presents a good degree of conformability and it is suitable for application on conventional convex and compound shapes on car fronts.

When applying the film on curved shapes (e.g. Car Bumper), firstly it is necessary to firmly pull and stretch the film in order to conform the film around the surface.

It is recommended to stretch the material without applying any heat, making use of the intrinsic flexibility of the PU facefilm.

When applying Avery Dennison Pure Defense PU in a corrugation, apply the film first in the deepest part of the recess, using a finger to push the film on the surface and ensure proper adhesion. If higher tack/faster adhesion is needed when stretching the film into a compound/curved part, it is possible to spray the substrate with a solution of water and ethanol (1 part ethanol 4 parts water, as for example 250 ml ethanol, 1 L water).



Avery Dennison Pure Defense PU presents a good degree of conformability, thus conventional convex and compound shapes on car fronts are mostly suitable to be covered with this film. Nevertheless, in deep corrugated shapes, it may be necessary to make an incision in order to avoid any form of air/water entrapment in the deep recesses. This incision does not jeopardize the functionality or durability of Avery Dennison Pure Defense PU.

Avery Dennison Pure Defense PVC

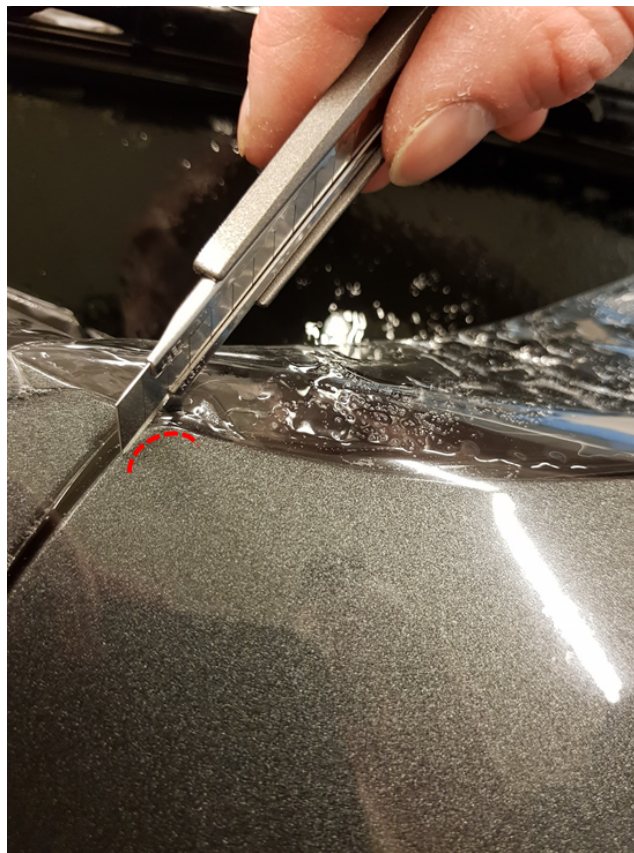
Avery Dennison Pure Defense PVC is recommended for flat and slightly curved surfaces, where a stretch < 10% is required. Avery Dennison Pure Defense PVC is not recommended for application on deep concave or convex shapes.

When applying Avery Dennison PVC on a curved surface, it is recommended to warm the film up to 40-50 °C to increase the stretchability. Apply heat using a heat-gun in a uniform way, ensuring not to locally overheat the film.

If higher tack/faster adhesion is needed when stretching the film into a compound/curved part, it is possible to spray the substrate with a solution of water and ethanol (1 part ethanol 4 parts water, as for example 250 ml ethanol, 1 L water).

Finishing

Once the film has been applied and effectively squeegeed on the selected application areas, proceed to the finishing step by trimming the excess film off the edges. Especially on difficult sharp corner, do not fold the edges of the film around the surface but cut the film short approx. 3 mm from the corner.



To facilitate cutting, make sure to use a new and very sharp knives for cutting: dull knives will result in blurred cutting edges. When applying Avery Dennison Pure Defense PU and PVC, it is recommended to use stainless steel blades with your knife. The use of a stainless steel blade will delay rusting and deterioration of the blades, due to contact with water.

As final application step, re-squeegee the most critical areas (e.g. deep corrugation and edges) with a wet squeegee to ensure secure adhesion to the substrate. To facilitate and speed-up adhesion on edges, spray the edges using a solution of water and ethanol (1 part ethanol 4 parts water, as for example 250 ml ethanol, 1 L water).

6.0 Self-Healing Property

Self-healing is intended as the capability of repairing the surface of the film from slight abrasion and small/medium scratches, resulting from daily usage of the film.

Large and deep scratches or damages cannot be recovered.

The surface of the Avery Dennison Pure Defense PU is able to heal small and medium scratches if exposed to an external source of heat (>40 °C), such as hot water, heat gun or warm sunlight.

7.0 Cleaning, Maintenance and Removal

Avery Dennison Pure Defense PU and PVC feature a long-term protection of the car body during the lifetime of the product. In order to maintain and clean the film, it is recommended to use Avery Dennison Supreme Wrap Care products. Other commercially available cleaning products may be suitable but need to be tested prior to use on an inconspicuous area of the film.

Within the limit of its expected lifetime and if applied on properly cured car paint, Avery Dennison Pure Defense PU and PVC can be removed with a clean removability feature. Clean removability is not warranted if the film is applied on an existing graphics, not properly cured car paint or other type of surface rather than car paint. The general instructions for removal of self-adhesive films are described in Technical Bulletin 1.2.

8.0 Disclaimer

This technical 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.

Avery Dennison™ is a registered trademark of Avery Dennison Corp.