

# Avery<sup>®</sup> Instructional Bulletin 1.16a

## Application Instructions for Avery MPI 1003 SC / MPI 1900 SC

### Introduction

Avery MPI 1003SC film has to be applied in the best possible manner to ensure that the product will perform as designed. Successful application results in adequate bond between adhesive and substrate. It is also extremely important to ensure the product has been printed and converted correctly before and application takes place. Please refer to Instructional bulletin 4.14 for correct processing instructions.

### Surface Preparation

The surface to which the vinyl is to be applied must be thoroughly cleaned.

- Refer to Instructional Bulletin 1.01 for comprehensive cleaning instructions.
- Wash with a mild detergent solution, after which the surface should be rinsed and dried with a lint free cloth.
- Wipe with a solvent-saturated cloth, until all dirt and/or grease has been removed. The solvent should be sufficiently mild not to attack the substrate (e.g. IPA, methylated spirits).

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 any application:

- Refer to Instructional Bulletin 1.01 for substrate preparation.
- Refer to Instructional Bulletin 4.14 for correct printing and finishing instructions.
- Car wash 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. 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 effect film adhesion and might cause excessive shrinkage or blistering.
- Painted substrates for self-adhesive films should be prepared according to the paint manufacturer's instruction. It is important 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 such as edges, corners, welding seams, rivets, etc. It is extremely important these areas are thoroughly cleaned and dried before application.

### Printing of MPI 1003 SC

- During the printing process using solvent inks, the ink-limiting feature in the RIP software should be utilised. Ink must be limited to a bare minimum to avoid excessive solvent build up and retention in the film.
- Printed MPI 1003 SC must be dried correctly to allow residual solvent to evaporate before application. Failure to do this will result in shrinkage and application failure. Drying times can vary drastically, depending on ambient temperature and drying process. If a strong solvent scent is present, the drying process is not complete.

**NOTE:** Please read Instructional Bulletin 4.14 in conjunction with this bulletin for proper processing of Solvent Inkjet printed graphics.

## Application Methods

Avery MPI 1003 SC film has a higher degree of conformability compared to other cast vinyls. On three dimensionally shaped surfaces Avery MPI 1003 SC films show excellent results. The use of heat will improve the ease of application. Always respect the minimum application temperatures as given in the data sheets.

*Note: After application it is absolutely necessary to post heat the areas of film that were conformed or stretched to achieve the final shape. Post heating will eliminate the applied tension in the film.*

Avery MPI 1003 SC films are designed for dry application to prepared surfaces. Although not recommended it is possible to apply Avery MPI 1003 SC films using the 'wet method'. Both methods are explained below.

## Dry Application Method

Using the dry application method it is an absolute must to use application tape. The application tape should be laminated over the graphic for ease of positioning and to protect it against stretching and scratching.

### Concave shaped surfaces

This hollow or bowl-shaped form implies that the material will be laid into a rounded or curved-in surface. Position the film over the total surface area, remove part of the liner and apply the film on the surface with the help of your thumb or a squeegee. Remove the application tape and start working the film into the hollow shape. If convenient, some heat can be applied to soften the film thus making the inlay process easier. The applied temperature should be in the range from 35° to 50°C. The use of cotton gloves (dry or slightly wet) will make this process easier. Gently follow the form of the substrate until all the material has been positioned. Apply heat over the total area, especially over the concave part in order to allow the film to take the shape of the substrate. The conformed or stretched parts of the film should then be post-heated at a temperature range of 80° to 90°C to complete the conforming process. Let the film and the substrate cool down to room temperature prior to cutting edges or overlays, etc.

### Convex shaped surfaces

This curved or rounded shaped form implies that the material will be stretched around a curved-out surface. Position the film over the surface area. Remove (a part of) the liner and apply the film on the surface with the help of a squeegee. Move around the convex area with gentle even strokes till no further stretch of the film occurs. Remove the application tape and start shaping the film with a felt squeegee or use cotton gloves to gently shape the film, some heat can be used to make the film more conformable. During the conforming process the applied temperature should be in the range from 35° to 50°C in critical areas of conforming using a squeegee covered with felt or cotton gloves to apply pressure. The conformed or stretched parts of the film should be re-heated in a temperature range of 80° to 90°C to complete the process. Let the film and the substrate cool down to room temperature prior to cutting edges or overlays, etc.

### Compound shaped surfaces

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 cars or vans, these shapes are found frequently. Use the methods of application described in the former two paragraphs.

### Corrugated surfaces

Position the film to the application surface with masking tape that can serve as a hinge (see Instructional Bulletin 1.4). Ensure that the hinge is in a flat section of the surface. Only remove a small area of liner to prevent pre-sticking. 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 pleats, which are sometimes difficult or even impossible to eliminate. Start the application at the hinge (continue section by section) and apply the film from the centre to the edges of the graphic. While keeping the adhesive free from the

substrate, apply the film with a plastic 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. Remove the application tape after 3 to 5 minutes and re-squeegee the edges or corners.

### **Riveted surfaces**

Position the film to the application surface with masking tape that can serve as a hinge (see Instructional Bulletin 1.4). Ensure the hinge is in a flat section of the surface. Only remove a small area of liner to prevent pre-sticking. Start the application at the hinge and work towards the edges of the film or graphic. When a rivet is reached, push the film towards the rivet head with the squeegee and apply the film leaving an air 'bubble' around the rivet. Maintain sufficient tension in the film to prevent pleats around the rivets. Once the film or graphic has been applied (with the application tape still in place), punch with a needle or air release tool some 4-5 holes around the rivet and proceed to apply the film with a plastic squeegee. After this stage has been completed remove the application tape. Gently push the air out of the entrapment by hand using gloves or with a soft squeegee. Apply heat to the film around each individual rivet with a heat gun until the film softens. It is advisable to use a temperature range of 35° to 50°C. Push the film further into shape around the rivet with the thumb (using gloves) or an Avery blue felt edged squeegee. Eventually the film can be moulded around the rivet head by means of a brush, using circular movements. Be aware to apply the pressure of the brush on the film only at room temperature to avoid scratching the surface. Complete the application by applying hot air to the film using a temperature range of 80° to 90°C. Check and re-squeegee the edges of the rivets of the applied film or graphic, where required.

### **Wet Application Method**

This application method is recommended for flat surfaces only. Do not use on concave, convex or compound shaped surfaces.

By wetting the surface with a 1% detergent solution in water the film can be positioned on the substrate without adhering to it. The detergent liquid provides slideability and positionability to the pressure sensitive film until the water has been removed. A plastic squeegee can be used for the removal of the water layer. Start squeegeeing from the centre towards the edges of the film or graphic and gradually increase the applied force until all the water has been removed. Repeat this process several times.

The advantage of the wet application method is that during application the film can be applied without the use of an application tape. However adhesive build-up via this application method will take much longer than under dry conditions. In general this means longer application times for certain areas since drying has to occur prior to the finishing of a job. If an application tape has been used on the film it is advisable to check on the build-up of adhesion at the edges in order to determine the right moment for removal of the tape. This time span can be from 1 hour up to 6 hours, depending on the type of substrate, the wetness of the application tape, etc. Too early removal may cause lifting of the film from the substrate and consequently permanent surface imperfections or bubbles may be introduced.

#### **Note:**

- *On riveted, concave and compound shaped surfaces the wet method should not be used. Water will be encapsulated which is impossible to be removed totally at a later stage often causing lifting of the film in rims, edges and compounded curves.*
- *On convex surfaces the delay in adhesive build-up may jeopardise the overall performance of the product during its final product utilisation.*

## Warranty and Limited Remedy

***IMPORTANT: MPI 1003 SC is not warranted for application into deep recesses including commercial van window recesses. The above information is provided as a guide only.***

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.

For ICS Warranty coverage an application is to be forwarded to Avery on a case-by-case basis for evaluation.

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.

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 Graphics representative.