

# Avery® Instructional Bulletin 1.6

## Printing, Processing and Application of Interior Wall Graphics

### 1.0 Overview

As with any application there are specific considerations necessary for wall graphics. Products or application materials not specifically addressed in this bulletin or in related bulletins are NOT recommended or warranted by Avery Dennison.

**IMPORTANT:** Documentation of application date, material lot number and application conditions (temperature, substrate, etc.) is required to support warranty claims in the event of graphic failure.

### 2.0 Recommended Films, Printers & Graphics Protection

The following films are recommended and approved for use on interior wall graphics:

#### 2.1 Long-term Solvent & UV Inkjet Applications (up to 4 – 7 years )

##### 2.1.1 MPI Media

- MPI 1005 Gloss white cast film (Grey Permanent adhesive)
- MPI 2000 Gloss white polymeric calendered film (Permanent adhesive)
- MPI 2003 Gloss white polymeric calendered film (Grey Repositionable)
- MPI 2003 EZ RS Low Gloss Polymeric calendered film ( removable adhesive)
- MPI 2004 Easy Apply Gloss Polymeric calendered film ( removable adhesive)
- MPI 2010 / 2012 Satin white polymeric calendered film (Permanent adhesive / Grey removable)
- MPI 2720 Satin white polymeric calendered film (Permanent adhesive)
- MPI 2721 Satin white polymeric calendered film (Removable adhesive)
- MPI 2722 Satin white polymeric calendered film (Grey Permanent adhesive)
- MPI 2601 Wall Graphic Film - Satin White polymeric calendered film (Removable Adhesive)

##### 2.1.2 Graphics Protection

- DOL 1000 Gloss transparent cast overlamine
- DOL 1100 Matt transparent cast Vinyl overlamine
- DOL 2000 Gloss transparent polymeric calendered overlamine
- DOL 2100 Matt transparent polymeric calendered overlamine
- DOL 2200 Lustre / Satin transparent polymeric calendered overlamine

#### 2.2 Short-term Solvent & UV Inkjet Applications (up to 1-3 years)

##### 2.2.1 MPI Media

- MPI 3000 PP Gloss white monomeric calendered film (Permanent adhesive)
- MPI 3001 PP Gloss white monomeric calendered film (Removable adhesive)
- MPI 3002 PP Gloss white monomeric calendered film (Grey removable adhesive)
- MPI 3000 Gloss white monomeric calendered film (Permanent adhesive)
- MPI 3021 Matt white monomeric calendered film (Removable adhesive)
- MPI 3111 Gloss white monomeric calendered film ( Removable adhesive)
- MPI 8112 Gloss white monomeric calendered film ( Removable Adhesive)

##### 2.2.2 Graphics Protection

- DOL 3000 Gloss transparent monomeric calendered overlamine
- DOL 3100 Matt transparent monomeric calendered overlamine
- DOL 3200 Lustre / Satin transparent monomeric calendered overlamine

### 2.3 Recommended Solvent Printers and Inks

- Reference Instructional Bulletin (TBA) "OEM Qualification Matrix, Durability Reference, & Troubleshooting Guide".

### 2.4 Recommended Overlaminates and Clearcoats

- Reference Instructional Bulletin (TBA) "OEM Qualification Matrix, Durability Reference, & Troubleshooting Guide".

### 3.0 Print Processing Procedures

For processing procedures of MPI Vinyl Films the following Instructional Bulletin:

- Instructional Bulletin (TBA) “OEM Qualification Matrix, Durability Reference, & Troubleshooting Guide”
- Instructional Bulletin 4.14 Printing & Finishing of Solvent Inkjet Graphics.

### 4.0 Consult Product Data Bulletin

Before starting the application be sure to consult the appropriate product data bulletin for information regarding minimum and maximum application temperatures, recommended substrates, and immediate service conditions before and after application. These factors are critical to a successful application and future graphic performance. Once assured that all factors are understood with respect to the product, and all factors comply with the product recommendations, cleaning and surface preparation can begin.

**NOTE:** Documentation of application date, material lot number, and application conditions (temperature, etc.) is required to support warranty claims in the event of graphic failure.

### 5.0 Surface Preparation

Proper cleaning and preparation of substrate prior to graphic application is critical to the success of the graphic. The following cleaning and surface preparation conditions must be followed prior to application. Failure to adhere to these requirements can cause adhesion loss and therefore reduce the durability and performance level of the printed graphic. The following conditions are relevant to properly prepared paint systems processed correctly per paint manufacturer specifications.

The required wall texture for successful graphic application and adhesion is smooth, properly primed, painted, and cured wallboard that has little or no surface variation.

**NOTE:** It is the responsibility of the end-user/applicator to ensure all painted substrates have been processed and cured per the paint manufacturer's requirements. Failure to follow paint manufacturer requirements can lead to graphic failures and/or removal problems.

These are general recommendation for painted surfaces. It is essential to follow manufacturer's directions for complete surface preparation and adequate drying/curing time prior to graphic or film application.

#### 5.1 Paint Surface Definitions

- Flat paints provide a non-reflective surface and they have a porous texture that can hold onto dirt and make cleaning more difficult. The porous surface of flat paint makes application of Adhesive films much more difficult due the inability to adhere to the surface. This causes the adhesion of the film to the painted surface to be greatly reduced causing premature failure of the graphic.
- Satin or low luster paints, are more lustrous than flat finishes. While these surfaces are not as porous as a flat paint the matting agents used in these paints can negatively affect the ultimate adhesion of the graphic.
- Semi-gloss paints provide a smooth somewhat shiny finish, which provides a good surface for graphics application.
- Glossy paints provide a smooth shiny finish, which provides a good surface for graphics application. Gloss painted surfaces are the best surfaces for graphics application.

#### 5.2 Non-Recommended Paint Surfaces

**CAUTION:** Avoid the use of the following paint finishes; always test adhesion and paint/ adhesive compatibility prior to production use.

- *Avoid using flat or matte finishes. The matting agents in these paints can reduce film adhesion and can cause the graphics to fail.*
- Avoid paints containing migratory agents, such as Teflon, chlorinated waxes and silicones, which may cause adhesion failure.
- Avoid heavily textured paints. The texture will allow the film to adhere only to the “high spots” greatly reducing the graphic adhesion, which could cause graphics to fail prematurely.
- Avoid all latex paints on wooden substrates.
- Avoid oil alkyd primers and enamels, as they are slow to dry and will adversely affect adhesion of a film.
- Avoid applying to wallpaper.

### 5.3 Paint and Painted Surface Precautions

- If applying film to a newly painted surface, follow all drying, and curing instructions provided by the paint manufacturer prior to surface preparation and film application.
- All air-drying paints should be allowed to dwell at near room temperature and humidity conditions for at least one week (7 days) prior to film application. Reference manufacturer's instructions for recommended cure time and sanding preparation (i.e. 240 grit) between coats.

NOTE: It has been documented that some paints can take months to fully cure.

- Chalked and otherwise weathered paint surfaces must be refurbished.
- Primer and paint should be compatible. Check with manufacturer for details.

NOTE: Always test adhesion and paint/adhesive compatibility prior to production use. Adhesion can be tested by applying a small strip of film in an inconspicuous area and allowed to dwell for 2-3 days. Before applying the test strip the wall should be properly prepared as outlined below. After the 2-3 day dwell period the film should be moderately difficult to remove without causing damage to the wall surface.

### 5.4 Inspecting, Cleaning, and Preparing the Substrate

The surface to which Avery Dennison™ films are applied must be completely clean, smooth, and dry before final preparation. Before graphics can be applied it is important to make sure the substrate is both in good condition and clean. Any contaminants such as dust, dirt, grease, or defects on the substrate such as loose paint can cause adhesion loss and therefore reduce the durability and performance level of the graphic.

#### 5.4.1 Inspect/ Repair Substrate

It is important to repair any wall damage and return it to like new condition. A wall that is not properly repaired could cause poor graphic adhesion or additional wall damage during removal of the graphic. Examples of an unsound wall surface include loose paint, damaged surface, cracks, or inconsistent surface.

Below are several examples of walls in need of repair.

- Holes in wall or incomplete patches – These areas will need to be patched, primed, and painted.
- Loose wallboard joints – These seams must be repaired.
- Too much texture in the paint – The surface may be smoothed down with sandpaper or scouring pad. Walls must be primed and painted after this is completed.
- Paint chipped, loose, flaking or peeling – Scrape away all loose paint and then prime and paint the surface.
- Moisture behind the wallboard – this can cause the wallboard paper to release. Pay special attention to areas prone to condensation such as walls surrounding cooling units, water pipes, overhead windows, or any water pipes that could drip on the graphic.
- Dust, dirt, or vehicle exhaust contamination on the wall – The walls must be clean and free from dust, dirt, grease and other contaminants before applying the graphics.
- Wallpaper that is not securely bonded to the wall in all areas – It is recommended that graphics not be applied over wallpaper.
- Contamination by other products on the wall that was not properly cleaned.
- Cuts made to the graphic during the installation that penetrates both the film and substrate.

#### 5.4.2 Cleaning

- Clean the wall prior to priming and painting.
- For most interior painted drywall surfaces simply wiping down the substrate with a clean lint free towel will be sufficient. However, some surfaces may require extra cleaning. If the surface is greasy using a solution of trisodium phosphate (TSP), mixed according to the manufacturer's directions, may be necessary. (TSP can be purchased at most hardware stores).
- For surfaces other than painted drywall remove all dirt and grime with a commercial synthetic detergent solution and warm water ( 2 drops per litre). Avoid detergents with lotions, waxes, creams, or oils. Be aware some window cleaners have waxes.
- Smooth poured concrete walls or concrete block walls (interior only)
  - It may be necessary to clean with a power washer or hand wash with a stiff brush and detergent and rinsed with clean water. This will help remove any grease or exhaust contaminants on the wall.
  - Dry the surface with clean, lint-free paper towels.
  - The surface should be allowed to thoroughly dry for at least 24 hours before graphics are applied.
  - After the surface has dried, it is recommended to brush the surface immediately before application to remove any dust or dirt that may have collected during the drying period.

- Textured Walls
  - Too much surface texture allows adhesive contact only with the high points of the wall, which does not provide sufficient contact for a proper application.
  - In some cases a cast film with an overlamine can be used on these surfaces. Using a heat gun and rivet brush to work the film into the crevasses.
  - The recommended wall texture for successful graphic application and adhesion is SMOOTH, properly primed, painted, and cured wallboard that has little or no surface variation.
  - Textured walls can be smoothed down using sandpaper or a scouring pad. After sanding the wall must be properly primed, painted and cured before the graphics are installed.

#### 5.4.3 Preparing Substrate/ Painting Recommendations

- For a smooth paint surface use a short nap roller (approximately 6mm), a sponge roller or spray unit to apply paint.
- Prime the wall with a primer that is compatible with the paint to be used. It may be necessary to apply two coats of primer to ensure good coverage. Reference manufacturer's instructions for recommended cure time and sanding preparation ( i.e. 240 grit) between coats.
- Paint the wall with a quality, semi-gloss or gloss paint. **NOTE: Do not use matt paint or paint with silicone, graffiti-resistant, texture or other additives that will cause our Avery decals to loose adhesion when applied to these paints.**
- Allow the final coat of paint to dry for at least 7 days (at ambient conditions) before applying graphics to the wall. Reference the paint manufacturer's instructions for actual cure time and curing temperature / Humidity recommendations for the paint.

**NOTE:** If the paint is not allowed to cure properly out gassing may occur. Out gassing takes place during the drying/curing process of the paint where certain gases are released. If a graphic is applied before the paint is allowed to cure these gasses will become trapped and can result in lifting, air bubbles and premature graphic failure.

- Do not apply graphics to any wall that does not have excellent paint to substrate bonding.

**NOTE:** If the paint or primer is not adequately bonded to each other or the substrate, then this can lead to pre-mature graphics failure, lifting, or upon any de-installation ( future removal of the graphics) the weak bonded layers could come away with the graphics.

- Post Cleaning – Final preparation of painted surfaces prior to wall graphics application. The painted substrate should be wiped with mild solvent i.e. IPA ( Isopropyl Alcohol) soaked lint free cloth, and cleaned off with a dry clean lint free cloth before the IPA has time to evaporate.

**NOTE:** When possible, Avery Graphics recommends using primer and paint from the same manufacturer, since the products are usually designed to work together. The goal is to achieve a good bond between the substrate, primer, and paint. Avery Graphics does not endorse any particular paint manufacturer. **It is also recommended test painted surface before applying graphic.**

## 6.0 Choosing the Correct Film

### 6.1 Calendered

Calendered films are designed for short to medium life applications where conformability of the film is not required making them ideal for smooth walls. Calendered films do exhibit memory for its original shape. Subsequently, when heating and stretching the film, shrinkage can be induced. As a calendered film shrinks some tenting and lifting can be expected in areas such as recessed areas of textured walls.

### 6.2 Cast

Cast films are designed for durable applications where conformability is a necessity. Cast films are recommended for textured or cinder block walls where conformability is needed. Cast materials can exhibit tenting when over stretched or heated. Reference the Product Data Bulletin for specific amounts of acceptable shrinkage.

## 7.0 Application Tools

- 50mm masking tape – for positioning
- Lint free cleaning cloths – for cleaning the substrate
- Tape measure – for positioning
- Air release tool – for removing air bubbles
- Marking pencil – for marking position of graphic
- Squeegee – for applying the graphic
- Rivet brush – for working film into textured surfaces. A 75mm rivet brush is ideal.
- Razor-knife (preferably one with break-off blades) – for trimming away excess vinyl
- Heat gun or propane torch – for heating the vinyl on complicated applications
- Surface Temperature Thermometer / IR Thermometer – for checking surface and ambient temperature

## 8.0 Temperature

Temperature plays an important role in how well a vinyl sticks to a substrate. Follow the guidelines toward minimum and maximum application temperatures and required service conditions before and after application. This information can be found in the Product Data Bulletins for each film being used.

- It is important to monitor both the ambient and surface temperature as both can have an affect on the application. Higher temperatures will make the film soft and more pliable. However, the high temperature also makes the adhesive more aggressive, which can lead to pre-tack and increased stretching if it is necessary to reposition the film. Lower temperatures will make the film more rigid and reduce the tack of the adhesive.

Ambient Air Temperature - Air temperature of environment (i.e. the room where application is taking place).

Surface Temperature - Temperature of wall (i.e. the surface where graphics are being applied).

## 9.0 Application Guidelines

**Note to graphics Installer:** The wall surface and texture directly impacts graphic adhesion and removal. It is important to know what type of film was used for the graphics about to be installed and make sure that the film is appropriate for the intended application.

### 9.1 Application Notes

- Premask/ Application Tape is not recommended for wall graphic applications.
- Before starting the application use masking tape to temporarily tape up all panels to ensure graphic size and position
- When handling the graphics be sure to hold the film as far into the graphic as possible, without wrinkling the film. This will help avoid transferring oil from fingers and dirt to the edges of the graphic, which could result in peeling edges or lifting, which can cause eventually adhesion problems.
- Use two hands when pulling the liner from the film, using care not to stretch the film. **NOTE: Always remove the liner from the graphic rather than the graphic from the liner.**
- Pull the squeegee or rivet brush across graphic. Pushing it will cause the film to stretch.
- Move the squeegee or rivet brush in a straight line-not in an arc.
- Use firm, overlapping strokes.
- Once the graphic is applied:
  - Firmly re-squeegee all of the graphics in particular the edges to help ensure good adhesion. This will reduce the risk of damage and lifting at the edges of the graphic.
  - Trim graphics 3mm to 6mm from inner and outer wall corners.
  - Finish the graphic by working a rivet brush in small circles around the entire outer 75mm of the graphic.



### 9.2 Application Method

When applying wall graphics the “dry application method” must be used. Do not use application fluid or the “wet method” during installation. Water or application fluid can cause damage to the wall and cause premature graphics failure

### 9.3 Overlap of Multi-Panel Graphics

Use a pencil, pen, or marking tape, to mark the graphic location on the application surface. If a chalk line has been used, replace all chalk marks with pencil or pen lines. Remove the chalk dust before applying the graphic. When overlapping multi-panel graphics the actual overlap should be at least 0.5 in.(13mm).

### 9.4 Application of Wall Graphics

The following instructions describe a step-by-step procedure for installing large premasked markings onto a wall. For questions regarding application procedures contact Avery Dennison's Customer Technical Support. Read through all of the application instructions and then choose the application method that best matches your graphic.

#### 9.4.1 Application of Large Vertical Panels

##### 9.4.1.1 Top Hinge

1. Measure and position the graphic using masking tape to hold it in place. It is a good idea to mark the position of the panel in case the graphic comes loose. Wherever possible make sure the graphic is completely smooth and taut.



2. Place a strip of tape along top edge of graphic.



3. Reach behind the graphic and carefully pull the liner back several inches to expose the adhesive.



4. Hold the graphic smooth and taut, away from the application surface with one hand and squeegee horizontally from the centre towards the outer edges. Continue squeegeeing, using firm overlapping strokes from the centre out, working away from the starting point. Pull the liner back as necessary.



5. Re-squeegee the entire graphic using very firm squeegee pressure, including all edges. Puncture any air bubbles with a straight pin and re-squeegee from the edge of the bubble towards the puncture.

#### 9.4.1.2 Centre Hinge

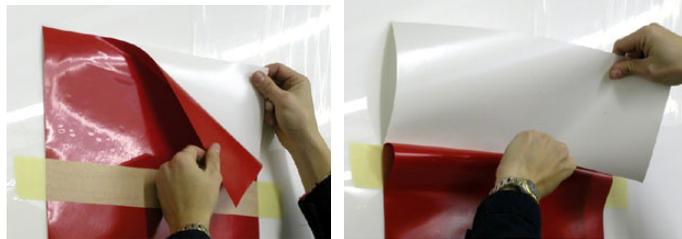
1. Measure and position the graphic using masking tape to hold it in place. It is a good idea to mark the position of the panel in case the graphic comes loose. Wherever possible make sure the graphic is completely smooth and taut.



2. Place a horizontal strip of tape at or near the centre of the graphic.



3. Separate the upper portion of the liner from the graphic and remove this section of the liner by cutting it with a scissors or razor knife. Use the knife at an angle to make avoid cutting into the wall surface or the graphic.



4. Apply the upper portion of the graphic first. Hold the top edge of the graphic smooth and taut away from the application surface with one hand and squeegee horizontally from the centre towards the outer edges. The first squeegee stroke should be just above the hinge where the adhesive has been exposed. Continue squeegeeing, using firm overlapping strokes from the centre out, working away from the starting point. .



5. Once the upper portion is applied remove the hinge so that the lower portion of the graphic can be applied.



6. Reach behind the graphic and carefully pull the liner back several inches to expose the adhesive.



7. Hold the bottom edge of the graphic smooth and taut, away from the application surface with one hand and squeegee horizontally from the centre towards the outer edges. Continue squeegeeing, using firm overlapping strokes from the centre out, working away from the starting point. Pull the liner back as necessary.



8. Re-squeegee the entire graphic using very firm squeegee pressure, including all edges. Puncture any air bubbles with a straight pin and re-squeegee from the edge of the bubble towards the puncture.

### 9.4.2 Application of Large Horizontal Panels

The process for applying a large horizontal panel is similar to applying a horizontal panel in that it is necessary to apply the graphic in sections. The hinge on this type of panel is vertical instead of horizontal.

#### 9.4.2.1 Centre Hinge

1. Measure and position the graphic using masking tape to hold it in place. It is a good idea to mark the position of the panel in case the graphic comes loose. Wherever possible make sure the graphic is completely smooth and taut.



2. Place a horizontal strip of tape at or near the centre of the graphic.



3. Choose which of the graphic you would like to apply first (left or right). Separate this side of the graphic from the liner and remove this section of the liner by cutting it with a scissors or razor knife.



4. Hold the edge of the graphic smooth and taut away from the application surface with one hand and squeegee horizontally from the centre towards the outer edges. The first squeegee stroke should be next to the hinge where the adhesive has been exposed. Continue squeegeeing, using firm overlapping strokes from the centre out, working away from the starting point. .



5. Once the first side is applied remove the hinge so that the opposite side can be applied.



6. Reach behind the graphic and carefully pull the liner back several inches to expose the adhesive.



7. Hold the bottom edge of the graphic smooth and taut, away from the application surface with one hand and squeegee horizontally from the centre towards the outer edges. Continue squeegeeing, using firm overlapping strokes from the centre out, working away from the starting point. Pull the liner back as necessary.



8. Re-squeegee the entire graphic using very firm squeegee pressure, including all edges. Puncture any air bubbles with a straight pin and re-squeegee from the edge of the bubble towards the puncture.

### 9.4.2.2 Side Hinge

1. Measure and position the graphic using masking tape to hold it in place. It is a good idea to mark the position of the panel in case the graphic comes loose. Wherever possible make sure the graphic is completely smooth and taut.



2. Reach behind the graphic and carefully pull the liner back several inches to expose the adhesive.



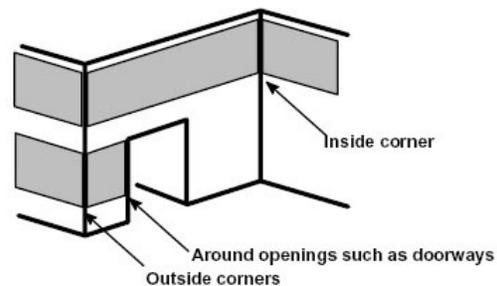
3. The tape will help to hold the graphic smooth and taut, away from the application surface, however it is helpful to use one hand to help keep tension on the film. With the other hand squeegee vertically from the centre towards the outer edges. Continue squeegeeing, using firm overlapping strokes from the centre out, working away from the starting point. Pull the liner back as necessary.



4. Re-squeegee the entire graphic using very firm squeegee pressure, including all edges. Puncture any air bubbles with a straight pin and re-squeegee from the edge of the bubble towards the puncture.

### 10.0 Trimming Requirements

- Areas of the graphic around doors, openings, outside and inside corners of walls, and high traffic areas are susceptible to damage. To reduce the risk of damage and lifting of the graphic, it is important to trim the graphic 3mm to 6mm from the edge of the graphic.
- After application and trimming it is necessary to brush the edges with a rivet brush to ensure good adhesion of the graphic edges.



### 11.0 Professional Application Services

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.

The larger and more complicated the graphic the greater the need for an experienced installer. An amateur installer should have no problem installing smaller poster-sized graphics, however the larger multi-panel graphics should be left to an experienced applicator.

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
- harsh environmental conditions (i.e. outdoor applications in high heat climates)
- remote geographic locations

## 12.0 Graphic Removal

**Avery Graphics does not warrant damage to the interior wall surface caused by removing film even if a removable adhesive was used. Removing a graphic can cause damage to the wall.** This is especially true if a permanent adhesive is used. Due to the variety of wall surfaces Avery Graphics cannot guarantee damage free removal. The amount of damage can be reduced or eliminated by following the inspection, cleaning and preparation guidelines provided at the beginning of this bulletin.

### 12.1 Removable Films

Removable adhesives are designed to make the film removal clean and easy within a warranted period. The removability of a film may vary depending on the substrate and how it was prepared. Reference sections 12.3 & 12.4 of this document for notes and tips on removing graphics.

### 12.2 Permanent Films

Permanent adhesives are designed to provide optimum adhesion to a variety of substrates. They are generally difficult to remove and may cause damage to some wall surfaces. Films with permanent adhesives are a good choice for textured wall surfaces.

### 12.3 Removal Notes

- Most graphics are easier to remove from a textured surface than a smooth surface since there is less adhesive contact.
- Not all films are designed to be removable, and no Avery graphic film is warranted for removal when directly applied to interior walls.
- Clean removal from any painted wallboard may be not possible, even when using a removable film. If the bond of the film to the paint is greater than the bond of the paint to the wallboard, the paint and possibly the paper covering on the wallboard could be damaged during graphic removal.
- Moisture that has penetrated wallboard will destroy the painted surface when graphics are removed. Remember that, especially in remodeling jobs, wallboard may have been placed over windows, cooling pipes, etc., that may produce moisture that is transferred to the wallboard.

### 12.4 Removal Tips

- Start at the top of the graphic and pull it away from the wall at a 120-180 degree angle.
- Do NOT use chemicals for interior wall graphic removals.
- Heat may be used if the substrate is not wallboard.
- If the substrate appears stained after graphic removal, it is usually the caused by poor quality paint, exposure to heat and light, migrating particles in the paint, and adhesive residue.
- To make removal easier graphics can be cut into 300-600mm strips. Take care not to cut the surface underneath.

## 13.0 Graphic Repair

If the wrong film is used, the substrate is improperly prepared or the edges were not properly finished during application the edges of the graphic may lift. If this occurs there are options for reattaching the lifted edges to extend the life of the graphic and improve appearance. **Note that these “fixes” are aggressive and may damage the application surface.**

- OPTION 1: Apply a strip of two-sided adhesive (the double sided tape for making banners will work well) to the backside of the graphic, as close to the edge as possible without having a reveal of the tape on the graphic print side. Reapply using a rivet brush.
- OPTION 2: Use liquid adhesives that cure and affix the graphics to the painted wall substrate.
- OPTION 3: Use mechanical fasteners such as staples.