



# Applying 3M Graphic Films With Comply™ Performance

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## General Information

3M Graphic Films with Comply™ Performance make it easier than ever to achieve a high quality installation, especially if you are a new installer. This Instruction Bulletin only covers how to apply such films to a substrate.

Note: Obtain copies of the most recent product and instruction bulletins as listed in **3M Related Literature** at the end of this bulletin. Read all recommended bulletins before making a graphic.

Contact your 3M sales representative to learn more about all of the Comply performance films now available.

## What Is Comply Performance?


Comply performance adds a unique characteristic to the film adhesive that enables faster application with very few air bubbles, whether it is applied by professional or amateur installers. Films with Comply performance have a network of microstructure air channels in the adhesive. These channels allow air to escape laterally beneath the film. An air bubble trapped under the film can be rubbed out easily and usually does not require making an air release hole with an air release tool or pin.

## Understanding Levels Of Adhesion

The amount of adhesion attained by films with Comply performance can be categorized in three levels: *initial bond*, *functional bond* and *ultimate bond*. Although these films typically require less application pressure than conventional graphic films, the pressure must be sufficient for the film to bond properly to the application surface.

- **Initial bond** occurs while you are applying the film to the application surface. At this time, there is only enough adhesion to hold the graphic to the application surface. In cooler temperatures, more pressure is needed during application.
- **Functional bond** usually occurs within a few minutes of application at 60°F (16°C) or warmer. At this time, there is enough adhesive strength to allow the removal of premask or to transport a vehicle to which the film is applied. In cooler temperatures, the functional bond takes longer to achieve.
- **Ultimate bond**, which is the maximum adhesive strength the film achieves, can take a few days up to a few months depending on the substrate and temperature. An unpainted aluminum substrate takes a shorter time and a painted aluminum substrate takes a longer time. A hotter environment takes a shorter time and a cooler environment takes a longer time.

## Health and Safety

 <b>Caution</b>
<p>When handling any chemical products, read the manufacturers' container labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information.</p> <p>To obtain MSDS sheets for 3M products:</p> <ul style="list-style-type: none"> <li>• By fax, call 1-800-364-0768 in the US and Canada or 1-650-556-8417 for all other locations.</li> <li>• Electronically, visit us at <a href="http://www.3m.com/msds">http://www.3m.com/msds</a>.</li> <li>• By mail, or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501.</li> </ul> <p>When using any equipment, always follow the manufacturers' instructions for safe operation.</p>

## Caution

Any activity performed for a long period of time in an awkward position or with a high amount of force is potentially a risk for causing musculoskeletal strain, pain or injury. When applying graphics, follow these practices to improve comfort and avoid injury:

- Alternative your tasks during the application.
- Schedule regular breaks.
- Perform stretches or do exercises to improve circulation.
- Avoid awkward reaching.

## Application

Note: We recommend that you also read Instruction Bulletin 5.5, *Application, general procedures for interior and exterior dry applications* and Instruction Bulletin 5.4, *Application, special applications and vehicles*.

### 1. Prepare the application surface.

A clean, dry application surface is extremely important to ensure proper bonding of the adhesive to the application surface. Refer to Instruction Bulletin 5.1 for important details on surface preparation.

### 2. Observe the recommended application temperature for film, air and substrate. Refer to the film's product bulletin for details.

- Air, film and application surface temperature are important; they must match the characteristics of the adhesive and film being applied.
- Lower temperatures inhibit good adhesion which increases the risk of a graphic adhesion failure.
- The film you have selected may have a broad application temperature range (consult the film's product bulletin). 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 the functional bond to be achieved. (See Understanding Levels of Adhesion for a definition of functional bond.)
- For the fastest and easiest application, a minimum temperature of 60°F (16°C) is recommended.

### 3. Select your installation tools and techniques.

3M Graphic Films with Comply™ Performance can be applied using either traditional or new tools and techniques. Several new tools are now available that are comfortable to use and increase the speed and ease of graphics application. Read more about this in **Tools and Techniques** on page 3.

### 4. Apply the graphic. These are the same procedures you use with conventional squeegees.

#### *Key Points for a Good Application*

- Be sure the air, film and substrate are within the temperature range recommended for the film.
  - Use adequate pressure. Experiment with a pressure that is comfortable for you using the desired application tool. Make sure that the graphic firmly adheres to the substrate. A pre-masked graphic requires additional pressure.
  - Overlap all strokes by about 50%.
- a. Locate where to position graphic and mark the spot using small pieces of masking tape.
  - b. If the graphic is large, tape it into position securely with masking tape and use a masking tape hinge as instructed in Instruction Bulletin 5.5.
  - c. If the graphic is less than 9 square feet, remove the entire liner. Position the graphic on the marked points using light thumb tacking pressure similar to other 3M™ Controltac™ Plus Films.

Note: Keep your fingers away from the edges of the adhesive as much as possible.

- d. Squeegee the film using moderately firm, *overlapping* strokes, making sure the applicator is flat with the substrate along the entire length of the stroke.
- ### 5. Remove air bubbles and tenting around rivets. This step is usually done after the application tape is removed.
- a. **Air bubbles** in an installed graphic can be removed easily. Just apply pressure to the middle of the bubble with your thumb and rub out toward the bubble edges. The air will disperse along the adhesive channels. There is no need to make air release holes unless the air bubble is extremely large. In that case, use an air release tool and remove the air using conventional techniques.
  - b. **Tenting around rivets** can be handled in one of two ways:
    - (1) If there is a lot of tenting around the rivet head, press down on the rivet head with your thumb or a hard gold squeegee in a sleeve, and force the air away from the rivet and into the adhesive air channels.
    - (2) Use an air release tool and either a rivet brush or the 3M™ Magic Pad and a heat source. See **Tools and Techniques** on page 3.

6. Final squeegeeing: always perform this CRITICAL final step.

### Final Squeegeeing

is one of the most important factors in **Preventing Premature Graphic Failure** due to edge lifting.

- Wait at least several minutes after the application to allow the adhesion to build to the functional bond level.
- Remove the application tape, if there is any.
- Resqueegee all graphic edges, overlaps and seams using firm pressure. Use a gold squeegee with a low friction sleeve.

Note: Re-squeegeeing the edges before the adhesive has reached the functional bond level can create large bubbles under the graphic or cause wrinkles.

## How to Check for Adequate Adhesion

Ambient temperature plays an important role in adhesion. The warmer the ambient temperature is, the less time it takes the film to achieve adequate adhesion. Temperatures below the recommended low application temperature may take significantly longer, even days, to achieve adequate adhesion.

Until you are comfortable applying the film in various environmental conditions and using any new application methods or tools, we recommend doing this quick test to be sure there is no air trapped under the graphic:

- Wait for several hours after application so the adhesive has definitely reached functional bond level.
- Using a hard, gold squeegee with a low friction sleeve, rub a small, inconspicuous section of the graphic using firm pressure.
- If air bubbles larger than about 1/2 inch (1.3 cm) diameter are generated during this test, the application method and/or the temperature used was not adequate. However, there are two ways to improve adhesion.
  - Wait several more hours before putting the graphic into service. As described in **Understanding Levels of Adhesion** on page 1, adhesion increases with time so re-squeegeeing is usually not needed.
  - If the graphic must be put into service right away, we recommend carefully re-squeegeeing it (use a gold squeegee) with greater pressure. In addition, the application of heat to the film can increase adhesion.

## Tools and Techniques

### Traditional Tools

3M Graphic Films with Comply™ Performance can be applied using traditional tools and techniques. See Instruction Bulletins 5.4 and 5.5.

Traditional tools include:

- 3M™ Applicator PA-1 (Gold)
- 3M™ Low Friction Sleeve SA-1
- 3M™ Air Release Tool ART-1
- 3M™ Rivet Brush RBA-1
- Heat gun or other heat source

### New 3M™ Power Grip Tools

The power grip tools represent the first major change in applicator tools to come along in many years. These tools are comfortable to use and they increase the speed and ease of graphics application.

Included in this line are:

#### *For Use ONLY with 3M Graphic Films with Comply Performance*

- 3M™ Power Grip Applicator CPA-1
- 3M™ Power Grip Magic Pad Rivet Applicator CMP-1

#### *For Use with All 3M Graphic Films*

- 3M™ Power Grip Multi-Pin Rivet Air Release Tool MPP-1
- 3M™ Power Grip Rivet Brush Applicator RBA-3

### Proper Method for Holding and Using Power Grip Tools

Power grip tools are consistent with ergonomic design. To obtain the maximum benefit they offer for comfort and effective use, please follow these simple guidelines for holding the tools and controlling wrist and arm movement.

- When using a heat gun, wear a cotton glove on the hand that holds the tool.
- Grip the tool as shown in each of the following illustrations.
- Hold the tool as though it is an extension of your arm.
- Keep the tool perpendicular to the surface to avoid distorting the film and causing wrinkles.
- Keep your wrist straight during use.
- Use full arm movements when using either applicator.
- Use full forearm movement when using the air release tool or rivet brush.

## General Techniques

As with any technique, the skill of the installer can make a big difference. However, with 3M graphic films with Comply Performance, most installers can achieve high quality results on a relatively simple application. In addition, installers can usually complete the job in less time than with most other films.

- Use the conventional methods for positioning and hinging the graphics as described in Instruction Bulletin 5.5.
- Be sure to use more pressure when applying graphics that have an application tape.
- Using uniform overlapping strokes with proper film handling to prevent wrinkles.

### **Caution**

Contact with heat sources such as heat guns and torches may cause burns. To avoid burns:

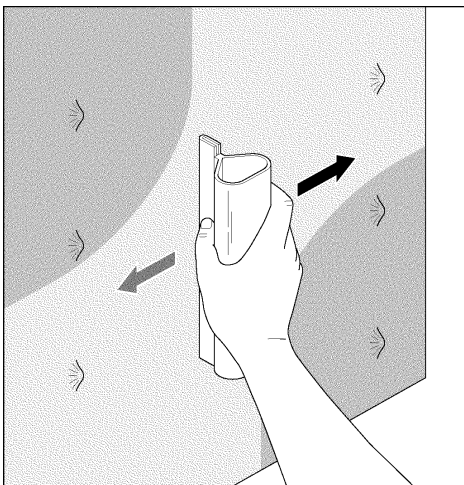
- Keep all body parts away from the heat source.
- Wear gloves to prevent contact with heat.

## 3M™ Power Grip Applicator CPA-1

Note: This tool is not designed for applying film to corrugated or highly contoured surfaces.

Applicator CPA-1 is for use *ONLY* with 3M graphic films with Comply performance. They may be used on flat surfaces with or without rivets. Refer to Figure 1 for the following steps.

1. Grip the tool as shown.
2. Work from the center of the graphic out.
3. Apply even pressure.
4. Use overlapping strokes to adhere the film to the substrate.



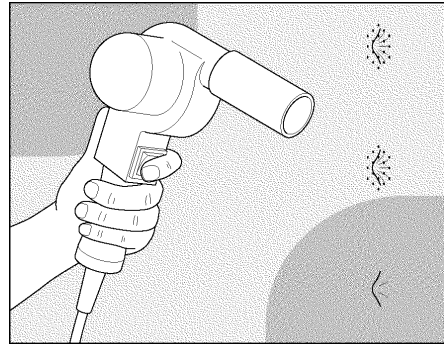
CG-240A

**Figure 1. Using the Power Grip Applicator CPA-1**

## 3M™ Power Grip Magic Pad Rivet Applicator CMP-1

1. Use the Power Grip Multi-Pin Rivet Air Release Tool MPP-1 or a single pin Air Release Tool 391X to puncture the film around the rivet.
2. Heat the rivet with a heat gun. See Figure 2.

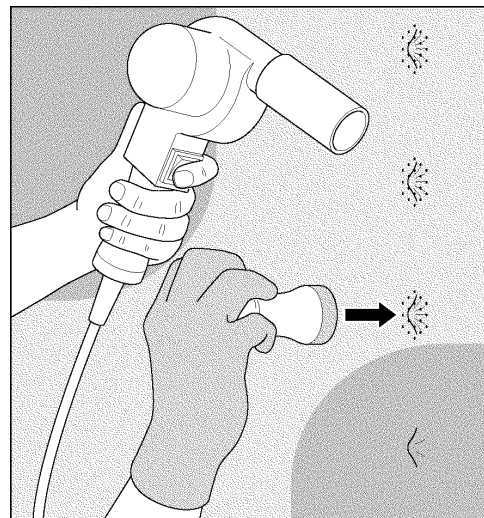
Note: When using the magic pad, you must heat the film more than you would heat it when using a rivet brush.



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**Figure 2. Heating a Rivet**

3. When one rivet is sufficiently heated:
  - a. Direct the heat toward the next rivet while immediately using the magic pad on the first rivet.
  - b. Wearing a heat-resistant glove, grip the tool as shown. See Figure 3.
  - c. Firmly press the pad directly over the rivet and hold for 1 or 2 seconds to mold the film around the rivet. **DO NOT TWIST THE TOOL.** See Figure 3.



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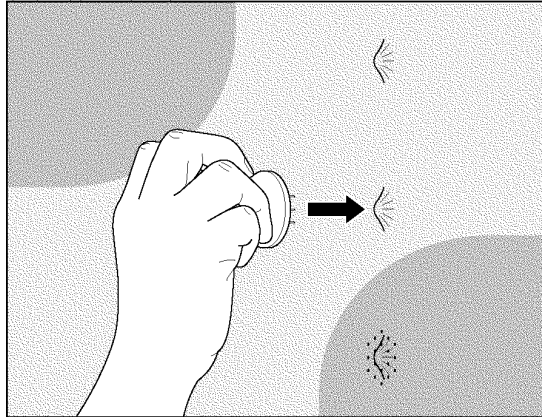
**Figure 3. Using a Power Grip Magic Pad Rivet Applicator CMP-1**

### 3M™ Power Grip Multi-Pin Rivet Air Release Tool MPP-1

#### 3M™ Power Grip Rivet Brush Applicator RBA-3

Air release tool MPP-1 makes multiple holes around a rivet with one strike. Rivet brush RBA-3 works air out from under the film and conforms it around the rivet. You can use either of these tools for any film application, and you can use them in conjunction with other air release tools and rivet brushes.

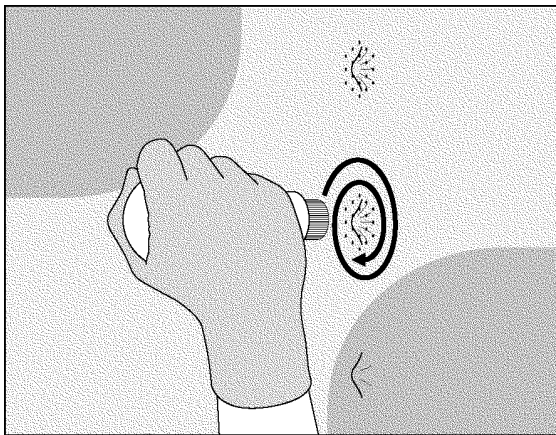
1. Remove and retain the black cover of the air release tool MPP-1. Grip the tool as shown. Strike the area around the rivet once. Do NOT twist the tool. See Figure 4.



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**Figure 4. Using a Power Grip Multi-Pin Rivet Air Release Tool MPP-1**

2. Grip rivet brush RBA-3 as shown. Then, start a circular brushing motion around the outer edges of the air release holes. See Figure 5.

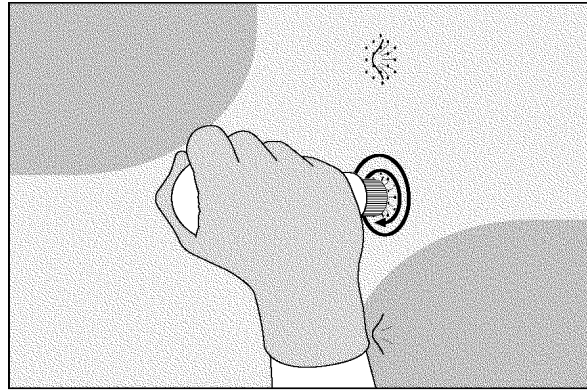


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**Figure 5. Using Power Grip Rivet Brush Applicator RBA-3**

3. Continue brushing as you narrow the circle to the area immediately over the rivet. This conforms the film to the rivet. See Figure 6.

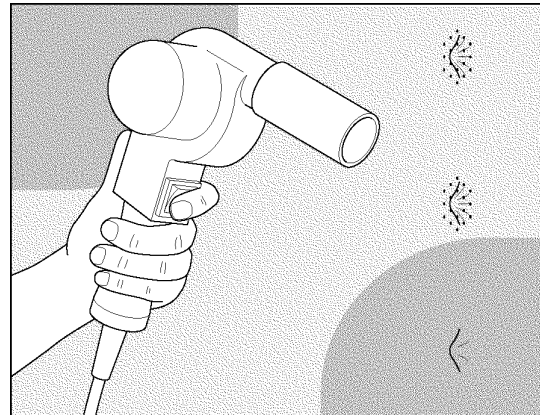
Note: Remove any application tape.



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**Figure 6. Narrowing the Brushing Circle**

4. Heat the rivet with a heat gun. Repeat Steps 2, 3. See Figure 7.



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**Figure 7. Heating the Rivet**

## Warranty and Limited Remedy

The information contained and techniques described herein are believed to be reliable, but 3M makes no warranties, express or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. 3M shall not be liable for any loss or damages, whether direct, indirect, special, incidental or consequential, in any way related to the techniques or information described herein.

## 3M Related Literature

Listed below is related 3M technical literature that may be of interest. You may view and print these Bulletins from our Web site at [www.scotchprint.com](http://www.scotchprint.com), or order them via our Fax-on-Demand (FOD) system. Call one of these phone numbers to order the desired bulletins, and specify the FOD document number provided in the chart.

United States or Canada: 1-800-364-0768  
International: 1-651-732-6506

Subject	Bulletin No.	FOD No.
<b>Instruction Bulletins</b>		
Application, substrate selection, preparation and substrate-specific application techniques	5.1	7001
Application, special applications and vehicles	5.4	7004
Application, general procedures for interior and exterior dry applications	5.5	7005
Applicator's quick reference guide for vehicle film	5.35	7035
Application: special considerations for auto graphics	5.36	7036
Storage, handling, maintenance, removal	6.5	8505
<b>Warranties</b>		
<b>Worldwide 3M™ MCS™ Warranty Packet</b> <i>(includes all Commercial Graphics MCS Warranties)</i>		9503
Worldwide 3M™ MCS™ Warranty Overview-Folder		9504
3M™ MCS™ Graphics Warranty for Fleet Vehicle Applications <i>(includes overview)</i>		9506
Auto Graphics Warranty		9509
3M Bus Graphics Policy and Warranty Statement	75-5100-1315-6	



### Commercial Graphics Division

3M Center, Building 220-6W-06  
PO Box 33220  
St. Paul, MN 55133-3220 USA  
General Info. 1-800-374-6772  
Technical Info. 1-800-328-3908  
Fax 1-651-736-4233

Fax-on-Demand 1-800-364-0768 US/Canada or 1-651-732-6506 International  
Fax-on-Demand document: 7031  
[www.scotchprint.com](http://www.scotchprint.com)

### 3M Canada

P.O. Box 5757  
London, Ontario  
Canada N6A 4T1  
1-800-265-1840  
Fax 519-452-6245

### 3M México, S.A. de C.V.

Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México, D.F. 01210  
52-55-52-70-04-00  
Fax 52-55-52-70-22-77

### 3M Puerto Rico, Inc.

Puerto Rico Industrial Park  
P.O. Box 100  
Carolina, PR 00986-0100  
787-620-3000  
Fax 787-750-3035

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