



Instruction Bulletin 5.31(UK)

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Applying 3M Graphic Films With Comply™ Performance

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.

Be sure to read the appropriate Product Bulletins for details about each film. All Product and Instruction Bulletins mentioned in this bulletin can be ordered through our Fax-on-Demand system. See **3M Related Literature** near the end of this bulletin for details.

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 a hole with an air release tool or pin.

Understanding Levels Of Adhesion

The amount of adhesion attained by 3M graphic 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.

Tools

- 3M™ Applicator PA-1 (Gold)
- 3M™ Low Friction Sleeve SA-1
- 3M™ Power Grip Applicator CPA-1
- See Step 3.b on page 2 for other optional application tools

Health and Safety

Caution

When handling any chemical products, read the manufacturers' container labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information.

To obtain MSDS sheets for 3M products, you may contact our Toxicology/Product Responsibility Department on 01344 858000.

When using any equipment, always follow the manufacturers' instructions for safe operation.

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

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.

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.

a. Traditional tools and techniques

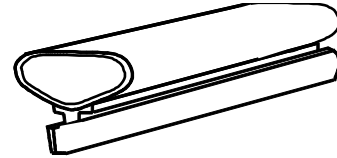
3M Graphic Films with Comply™ Performance can be applied using standard techniques and tools. Conventional techniques for positioning and hinging the graphics can also be used. These techniques are described in Instruction Bulletins 5.4 and 5.5.

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

b. Non-traditional tools and techniques

Films with Comply performance also allow installers to use non-traditional methods and tools to achieve fast, quality installations. Installers have had good results using non-traditional tools such as a wallpaper brush, a felt squeegee, a felt eraser or a paint roller. These tools produce a wider stroke than a standard squeegee, but can still achieve an adequate bond. A premasked graphic will, however, require more application pressure. Using non-conventional tools still requires uniform overlapping strokes with proper film handling to prevent wrinkles.

3M™ Power Grip Applicator CPA-1



The power grip applicator CPA-1 is a new, non-traditional tool that is available from 3M. It is for use *only* with films having the Comply performance feature. Here are some of the advantages of this tool:

- Increases the speed and ease of graphics application
- Encourages installers to use wider strokes and full arm movement
- 7.5 inch, palm-shaped plastic handle grip is easy to hold
- Wide synthetic felt squeegee adheres large areas of film with each stroke
- For flat surfaces with and without rivets

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

4. Apply the graphic. These are the same techniques 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 and firmly adheres the film 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 small-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.
 - d. Squeegee the film using moderately firm, *overlapping* strokes, making sure the applicator is flat with the substrate along the film's entire length.

5. Remove air bubbles and tenting around rivets.
 - 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:
 - Use a conventional air release tool and rivet brush as described in Instruction Bulletins 5.4 and 5.5.
 - Press down on the top of the rivet head and force the air away from the rivet and into the adhesive channels. Finish conforming the film over the rivet by using a hard, gold squeegee, with a low friction sleeve, to press the film down tightly around the rivet head. Heat should be used to more permanently set the film around the rivet, especially with thicker films.
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 premask, if there is any.
- Resqueegee all graphic edges, overlaps and seams using firm pressure. Use a hard, 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 recommend low application temperature may take significantly longer, even days, to achieve an 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 you 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 with greater pressure.

Warranty and Limited Remedy

This bulletin describes a technique. The information contained herein is 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. To the extent allowed by law, 3M 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.

3M Related Literature

Listed below is related 3M technical literature that may be of interest.

Subject	Bulletin No.
Instruction Bulletins	
Substrate selection and preparation	5.1
Special Applications and Vehicles	5.4
General procedures for Dry Applications	5.5

Health & Safety

Refer to the package label and the Material Safety Data Sheet for health, safety, and handling information on the products referenced in this bulletin. For 3M products, if necessary, you may contact our Toxicology/Product Responsibility Department on 01344 858000.

Important Notice to Purchaser

The 3M products described in this publication are covered by a 3M warranty and limitation of liability.

3M's warranty provides that if 3M finds that goods are defective in material or workmanship they will be replaced or the price refunded at 3M's option but note that 3M does not accept liability for other direct losses (except for personal injury or death) or consequential losses relating to defective products or from information supplied by 3M.

Purchasers and users of 3M products, and not 3M supplying companies, are always solely responsible for deciding on the suitability of the 3M product for their required or intended use.

Technical Assistance

For help on specific questions relating to 3M Commercial Graphics Division Products, contact your local Technical Service Representative.

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