



Hand Application Instructions for Scotchlite™ Reflective Films with Controltac™ and Comply™ Performance Adhesive

Information Folder 4.2

March 2001

Replaces IF 4.2 dated June 1997

Health and Safety Information

Read all health hazard, precautionary, and first aid statements found in the Material Safety Data Sheet, and/or product label of chemicals prior to handling or use. Electronically, visit us at www.com/us and select MSDS search.

Description

3M™ Scotchlite™ Removable Graphic Film with Comply™ Performance Series 680CR (Series 690 is being replaced by 680CR) provides an excellent bond to most clean, wax-free, dry, relatively non-porous weather resistant surfaces. The adhesive is protected by a liner that is white, easy-release, and lay-flat. It is removed at the time of application.

3M™ Controltac™ Adhesive has been designed to facilitate the positioning of the film by allowing it to be moved freely on the application surface. The “detergent and water” application method is neither necessary nor recommended.

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 micro-structure 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. Comply performance also has the Controltac feature.

All instructions must be read and followed to ensure optimum product performance.

Storage

Unapplied film should be stored in a cool, dry place, and applied within one year after date of receipt. If a roll is removed from the shipping carton, it should be suspended horizontally on a rod

running through the core. If emblems or signs are applied to a backing and stored before use, they must be stored in a dry place, preferably on edge, to avoid possible damage to film and/or backing because of stack pressure or trapped moisture. If applied emblems or signs must be stacked, stack height should be kept to a minimum and a slip-sheet used against each face in the stack. Use recommended slip sheet, or the film liner with the plastic, unprinted side against the face of the emblem.

Tools

1. Plastic Applicator, PA-1 (Blue or Gold) (Available from 3M)
2. Clean cloth and recommended cleaning solvent
3. Low friction sleeve
4. Air release tool

Temperature

The markings can be applied when air and application surface temperatures are above the minimums specified in the following table. Surfaces may be heated with a heat gun to raise the temperature. If applied at temperatures above 100°F (38°C) care must be taken to avoid pre-adhesion.

Film	Minimum Application Temperature	
Series 680	50° F	10° C
Series 690*	50° F	10° C
Series 680CR	40° F	4° C

* To be replaced by Series 680CR.

Surface Preparation

All surfaces must be considered contaminated and cleaned with detergent and water to remove dirt and water-soluble contaminants. Surfaces must also be wiped with a solvent to remove oil, grease, and wax. 3M™ Scotchlite™ Thinner 311, toluol, xylol, lacquer thinner, cyclohexanone, mineral spirits, and VM&P Naptha are solvents that may be used. Test the solvent on the surface in an inconspicuous area before cleaning. Dry the surface completely with paper towels, a heat gun, or by air. The surface must be completely dry before the sheeting is applied.

For detailed information on the selection and preparation of application surfaces, see Information Folder 4.3.

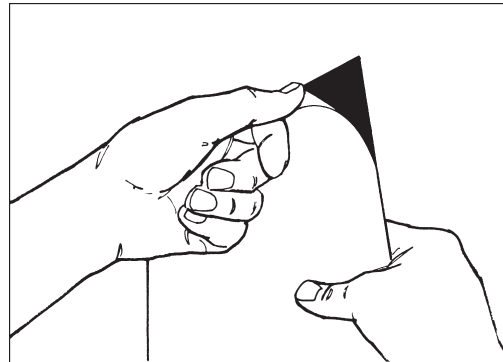
Understanding Levels of Adhesion

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.

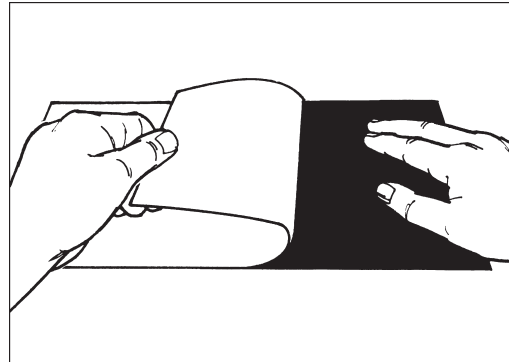
- **Initial bond** occurs while you are applying the film to the application surface. At this time, there is only enough adhesion to hold the graphic to the application surface. In cooler temperatures, more pressure is needed during application.
- **Functional bond** usually occurs within a few minutes 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.

Controltac™ Application Procedure

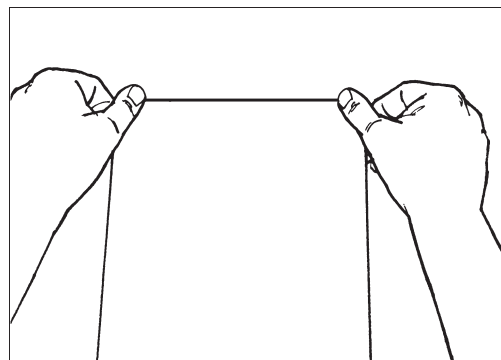
1. Wipe the face of the film and the plastic applicator (squeegee) with a soft cloth to remove any surface dust.



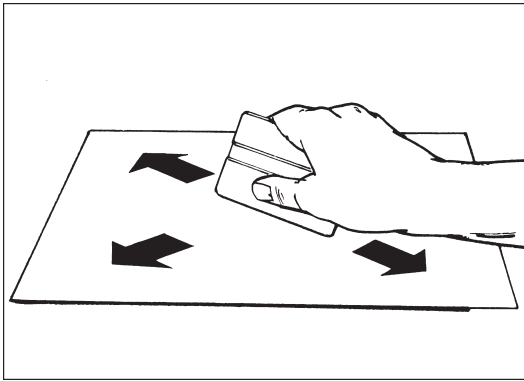
2. Bend the film corner toward the front face with the ball of the thumb or fingernail to lift the liner's corner.



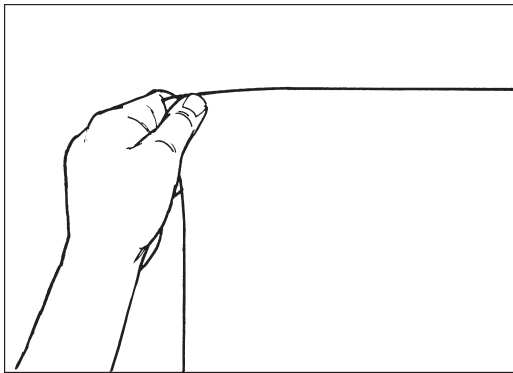
3. Place the film face down on a clean, dust-free surface and remove the liner by pulling it back upon itself, starting with the lifted corner.



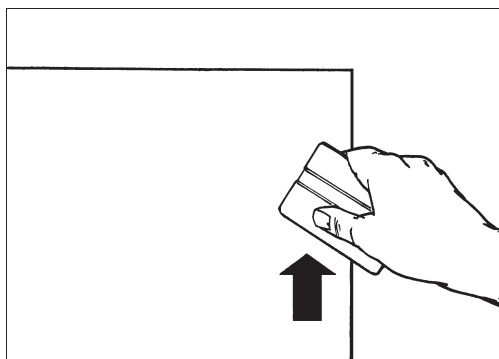
4. Gently position the film on the application surface. The film can be repositioned on the surface until pressure is applied. Prevent pre-adhesion by avoiding any pressure on the film. When properly aligned, tack the emblem in place using finger pressure at two points on the upper edge. If realignment is required, snap the emblem free of the surface and reposition.



5. When the film is properly positioned, press to the surface with the squeegee using firm, overlapping strokes. Start at the center and push the air out to the closest edge. Hand or finger application will trap air if substituted for the squeegee.



6. When nearing the points on the upper edge that are lightly tacked down, lift them up from the surface and squeegee them down as the application proceeds to the edges. This will prevent wrinkles at the tack points.
7. If any pre-mask is present, remove it by pulling the premask back over itself at a 180° angle.
8. Inspect application for bubbles and/or areas not completely applied. Squeegee the trapped air into a smaller, tighter bubble. Pierce the bubble near one edge with a pin. Squeegee the air out towards the pinhole.



9. Resqueegee the edges with very firm pressure. **THIS IS VERY IMPORTANT!**

Comply™ Application Procedures

1. Prepare the application surface.
A clean, dry application surface is extremely important to ensure proper bonding of the adhesive to the application surface.
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.)
3. Select your installation tools and techniques. 3M Graphic Films with Comply™ Performance can be applied using traditional tools and techniques.
4. Apply the graphic. These are the same procedures you use with Controltac™ application.

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 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
 - c. Squeegee the film using moderately firm, overlapping strokes, making sure the applicator is flat with the substrate along the entire length of the stroke.
 - d. Resqueegee all edges: always perform this CRITICAL final step.

Registry Marks

As an aid for aligning and registering emblems on surfaces prior to application, registry marks may be made on the top or side edge with a lead pencil, marking pen, or small pieces of masking tape.

Multiple Piece Emblems

1. Side to side - Multiple piece emblems to be applied side to side should be applied starting at the rear of the vehicle. Each subsequent piece should overlap the last piece approximately 1/4" to 1/2" (6-12mm).
2. Top to bottom - For emblems applied top to bottom, the top section should always overlap the bottom section 1/4" to 1/2" (6-12mm).

Edge Sealing

If edge sealing emblems, striping, and letters is specified in the product bulletin for the sheeting being used, seal at all edges and seams using the recommended edge sealer. Apply edge sealer with a felt dauber, hand brush, or sponge.

Special Applications

For special application purposes such as application to corrugated, riveted or curved surfaces, contact your 3M representative for details.

Notes on the Use of the Plastic Applicator

1. Hand or finger application must never be substituted for plastic applicators (squeegees).
2. The squeegee used must be firm and free of nicks. The corners should not be rounded or worn down.
3. Always firmly squeegee the air out to the closest edge. This will minimize air bubbles and stretching of the sheeting.
4. The squeegee should tilt at an angle in the direction of application to effectively remove air.

Literature Reference

IF 4.3 Surface Preparation for 3M™ Scotchlite™ Reflective Films

FOR INFORMATION OR ASSISTANCE

CALL:

1-800-553-1380

Fax-on-Demand in the U.S. and Canada:

1-800-887-3238

Internet:

www.3M.com/tcm

3M assumes no responsibility for any injury, loss or damage arising out of the use of a product that is not of our manufacture. Where reference is made in literature to a commercially available product, made by another manufacturer, it shall be the user's responsibility to ascertain the precautionary measures for its use outlined by the manufacturer.

Important Notice

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, express or implied.

Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith.

Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.



Traffic Control Materials Division

3M Center, Building 225-5S-08
P.O. Box 33225
St. Paul, MN 55133-3225
www.3M.com/tcm

3M Canada

P.O. Box 5757
London, Ontario N6A 4T1

3M México, S.A. de C.V.

Av. Santa Fe No. 55
Col. Santa Fe, Del. Alvaro Obregón
México, D.F. 01210



40% Pre-consumer waste paper
10% Post-consumer waste paper

© 2001, 3M IPC. All rights reserved.
75-0300-9020-5