Storage, Handling, Maintenance and Removal of Films and Sheetings

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How To Use This Bulletin Effectively

This bulletin gives you:

- Basic procedures for storing, handling, maintaining, and removing films and sheetings manufactured by 3M Commercial Graphics Division. These procedures help maximize the life of the graphic.

For the best results:

- DO NOT use these procedures for 3M™ Panaflex™ Awning and Sign Facings. Refer instead to Instruction Bulletin 6.1, *Cleaning and Repairing Decorated Awnings and Sign Facings.*
- Use the proper removal technique to enhance the efficiency of film and sheeting removal.

Terms

Substrate: the material to which a graphic is applied.

Surface: the typography or physical characteristics of the substrate, such as flat, textured or corrugated.

Film: In this bulletin, the term “film” refers to both film and sheeting, unless otherwise noted.

Health and Safety

⚠ Caution

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.

⚠ 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.

Storage

Unapplied Graphics

- Store graphics in a clean dry area.
- Store graphics away from direct sunlight, excessive atmospheric moisture or humidity.
- Store graphics at ambient temperatures less than 38°C (100°F) and a relative humidity less than 80%.
- Apply graphics to a substrate within the time period specified in the product bulletin of the product(s) you are using.

Rolls

- Store rolls horizontally in the shipping carton.
- Store rolls that have been removed from the carton by suspending them horizontally from a rod or pipe placed through the core.

Cut Sheets

- Store cut sheets lying flat.
- Do not stack cut sheets face-to-face.
- Do not apply pressure to stacks of cut sheets.
- Wrap stacks of cut sheets with polyethylene film and seal with tape to prevent moisture absorption by the liner, which can cause the sheets to curl or ripple.

Fabricated Sheets: Screenprinted or Electronically Imaged

- Store and ship sheets lying flat or rolled onto a core.
  - For rolling screen printed graphics, use a core with a diameter of 125 mm (5 inch).
  - For rolling electronically imaged graphics, use a core with a diameter of 6 inch (150 mm) or larger.
  - Wrap the graphic onto the core, graphics-side out. This helps prevent graphics or premask tape from popping off the liner.
- Do not stack cut sheets face-to-face.
- The final colour and/or overprint clear must be completely dry before packaging.
- When slip-sheeting is necessary, use 3M™ Scotchcal™ Easy Release Liner Paper SCW-33 with the shiny side facing the printed graphic. Slip sheeting between graphics is not necessary unless:
  - The protective liner has been printed by the customer.
  - The film has a heat-activated adhesive.

Applied Graphics: On Panels, Sheet Metal, Plastic Sheet, etc.

- Protect each layer with 3M™ Easy Release Liner SCW-33 so the shiny side faces the printed graphic.
- If the substrate has been printed or decorated on two sides, protect each side with the liner paper.
- Large graphics should also be padded to reduce the risk of damage.
- Store applied panels on edge.
- Avoid banding, crating or stacking, and corrugated cardboard dividers, all of which put severe pressure on applied graphics.
- Store indoors and keep dry until ready to use. If the packaged graphics become wet, remove the slip sheeting and padding immediately, lay the graphics flat, and allow to dry. Repackage using new, dry materials.

Handling

Applied graphics must be handled carefully during shipment and installation to prevent damage to the face of the graphic.

Remove Premask Tape Before Exposing Graphic To Sunlight

Always remove any premask or application tape from the graphic immediately after application. Premask tape left on the graphic after application can quickly and permanently adhere to the graphic when exposed to sunlight.

Temporarily Covering Installed Graphics

If it is necessary to temporarily cover installed graphics, which is sometimes called “bagging”, use caution to avoid damaging the graphics.

- You may use:
  - Porous cloth covers that are folded over the graphic edges and secured to the back of the graphic work well for one-sided graphics.
  - If porous cloth covers are used for two-sided graphics, secure the cloths to one another, not to the graphic.
  - 3M™ Scotchcal™ Changeable Film Series 3500 may be temporarily applied over other 3M brand, permanent films that have a higher adhesion to the substrate than film 3500 has to the permanent film.

Note: DO **NOT** “bag” any graphic applied to 3M™ Panaflex™ Awning and Sign Facing.

- Avoid using:
  - Any type of tape, which can quickly and permanently bond to the graphic.
  - Paper or plastic covers, due to possible plasticiser migration.
  - Ropes or wire fasteners, which may abrade the graphic.

Maintenance

⚠ Caution

Before handling any chemical products, always read the container label and the MSDS.

For Cleaning Graphics with an Overlaminate Film

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline.)

For Cleaning Graphics with an Overprint Clear

Use a wet, non-abrasive cleaner that contains NO solvents and NO alcohol and has a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline.)

Power Washing Exterior Graphics

Power washing, or pressure washing, may be used. However, aggressive washing can damage the graphic. Two common types of damage are:

- Excessive pressure during power washing can damage the graphic by allowing water to get underneath the graphic. Water lessens the adhesion of the graphic to the substrate allowing the graphic to lift or curl. These problems are magnified by wind. This is a critical problem for perforated window graphic film.

⚠ Caution

Loose graphics could tear away from a moving vehicle or from a building and cause an obstruction to motorists and pedestrians. After washing, check all the graphics carefully for edge lifting and repair, remove or replace damaged graphics.

To avoid edge lifting or other damage to the graphics, follow these important steps:

- Use a spray nozzle with a 40° wide spray pattern.
- Be sure the spray nozzle includes a nozzle protector (tip guard).
- Use a pressure of 2000 psi or less.
- If the system is heated, limit the water temperature to 180°F (82°C) or less.
- Hold nozzle at least 12 inches (300 mm) away from and perpendicular (90° +/- 10) to the graphic.
- Do not direct the water stream at a sharp angle to the edge of the graphic.
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⚠ Caution

To reduce the risk of serious injury from high pressure spray:

- Do not place your hand or body near the nozzle or the spray.
- Do not direct the spray toward anyone else.

Automatic Washing Equipment

Automatic washing equipment may be used, but it is recommended these three points are kept in mind:

- Brushes or flails can catch a loose edge of the graphic and cause further damage to the graphic.
- Brushes or flails can dull the finish of the graphic.
- Incorrectly adjusted or unsuitable equipment can scratch, abrade or damage the graphic surface.

Hand Washing Exterior Graphics

1. Flush the graphic with clean water to remove loose dirt particles. A trigger-type hose nozzle is convenient for this purpose.
2. Use a mild liquid detergent and water solution and wash the graphic with a soft brush, rag or sponge
   - Wash thoroughly from the top down.
   - Avoid abrading the graphic by unnecessary scrubbing.
   - After applying the cleaning solution, keep a steady stream of water flowing on the graphic to wash away dirt particles.
3. Rinse the entire graphic thoroughly with clean water. Allow to dry naturally.

Removing Difficult Contaminants

Some contaminants may remain after following the normal cleaning procedures. Most contaminants can be removed using one of these methods. Other cleaning products and methods should be used only on a customer test-and-approve basis.

1. To remove tar, oil, diesel smut or bituminous material:
   - Wipe with a rag dampened with kerosene, mineral spirits, heptane, or VM&P naphtha. Do not use other solvents.
   - Wash immediately with detergent and water, then rinse with clean water.
2. To remove pollen and fungus:
   - Wash the graphic with a 3 to 5% sodium hypochlorite (full-strength household bleach) solution or mild liquid detergent and water.
   - Rinse with clean water immediately.

3. To remove crayon, lipstick, or similar materials:
    - Select an appropriate solvent and test it in an inconspicuous area to ensure it removes the contaminant without damaging the graphic. This must be done on a customer test and approve basis.
    - Wash immediately with mild liquid detergent and water, then rinse with clean water.
4. To remove most common types of graffiti from 3M™ Scotchcal™ 639 Anti-Graffiti film and 3M™ Scotchgard™.Protector Graphic Film 8050 (but not other unprotected films).
    - Apply 3M™ Graffiti Remover System on to Scotchcal 639 film with a paintbrush, roller, rag or sponge. The viscosity of the liquid has been optimised for vertical surfaces and will not run off.
    - Allow 3M Graffiti Remover System to dry for 1 to 5 minutes after application.
    - Wipe off the surface with a rag and rinse with water.
    - Finally rinse with water or use a high pressure steam cleaner after removal of the graffiti.
    - In case of stubborn graffiti marks repeat the procedure.

Hand Washing Interior Graphics

1. Use a mild liquid detergent and water solution and wash the graphic with a soft brush, rag, or sponge.
    - Wash thoroughly from the top down.
    - Avoid abrading the graphic by unnecessary scrubbing.
2. Wipe the graphic with a water-soaked brush, rag or sponge to wash away the detergent and dirt.
3. Dry the graphic with clean toweling.
4. Refer to **Removing Difficult Contaminants**, above, if necessary.

Graphic Repair

Sometimes graphic damage can be repaired; however, **repaired graphics are not warranted**. These procedures are for information only.

Damage to Face of Graphic

1. Trim and clean loose areas of film before patching.
2. Use a film or sheeting with pressure-sensitive adhesive, if possible. The color or gloss of the new material will vary slightly due to weathering of the original material.
3. Cut the patches so they overlap all sides of the damaged area by at least 6.4 mm (1/4 inch).
4. Position the patch over the damaged area.
5. Hold in place at the top with a strip of Scotch™ Masking Tape.
6. Remove the paper liner.
7. Squeegee firmly into place using a plastic applicator.
8. Use heat such as from a heat gun to heat all edges of the patch, and then re-squeegee all edges.

Edge Damage

1. Trim loose edges back to the point where the adhesive is firmly adhered to the substrate.
2. Apply edge sealing, if desired. Edge sealant may help prevent further damage if the lifting is caused by aggressive washing conditions. Refer to the film Product Bulletin for the appropriate edge sealer.

Removal Factors

The terms removable and permanent simply indicate how easy or difficult it is to remove the film and how much adhesive remains on the substrate.

For the best results, removable films should be removed within the time period specified in the film's Product Bulletin. Permanent films can be removed with varying degrees of difficulty and success at almost any time.

Removal rates for graphic applications are conditioned upon:
(A) substrates that were in good condition at the time of the application, (B) use of 3M's recommended removal methods: and, (C) notification to 3M no later than five business days after the attempted removal so that 3M may assist in or verify the removal method.

The ease with which a graphic can be removed depends on nine primary factors. Any one of these factors can significantly affect the speed and ease of removal. Different combinations of factors cause different results. For example, if one of two identical graphics is exposed to more UV light than the other (Factor 8) over the same period of time, the graphic exposed to the most UV light may be more difficult to remove.

It is important to understand and assess each of these factors before estimating the time, labor and related costs for removal.

1. Properties of the Film

3M offers a variety of films to meet various end uses. Generally, these materials can be categorized into five physical types and four adhesive types.

Physical Types

- 50 micron (μM) (2 mil) plastic
- 100 micron (μM) (4 mil) plastic
- 3M™ Scotchlite™ and Scotchlite™ *Plus* Sheetings
- Paper
- Urethanes, extruded vinyl

Note: Thicker plastic films and films with an overlaminate are the easiest to remove since they will not break and tear under most conditions.

Adhesive Types

There are two categories of adhesive, removable and permanent. Whether a material is removable is largely, but not exclusively, a function of the adhesive.

- **Removable** materials can be removed with little or no heat. These films may leave less than 30% adhesive residue.
- **Permanent** materials are not designed to be removed. However, they can be removed with the use of heat and/or chemical aids. If they are removed, they may leave significantly more than 30% adhesive residue.

Note: 3M™ Controltac™ Graphic Marking System for Curtain Sided Vehicles Series 190 cannot be removed without damage to the substrate.

2. Type of Substrate/Surface

- The type of substrate/surface to which a particular film or sheeting is applied can affect both the initial adhesion and ultimate adhesion.
- Graphics applied to a flat surface are easiest to remove. Surfaces with rivets are more difficult, and corrugated surfaces are usually even more difficult.
- Some substrates are not designed to have graphics removed, and attempting to remove graphics may damage the substrate. These substrates include unpainted wallboard and some flexible materials.
- Removal is not warranted from substrates that have coatings such as anti-reflection and scratch resistance. Film removal may damage such substrates.

3. Temperature

Film becomes brittle in colder weather, which causes it to break into small pieces during removal. For the best results, remove film when the temperature is above 10°C (50°F). Generally, the higher the temperature, the better the results.

4. Condition of the Substrate at Application

Removing graphics from substrates that were not in good condition at the time of application may result in substrate damage. We recommend discussing any concerns with your customer if you suspect that damage will result.

- Slightly oxidized (not chalked), painted substrates actually develop a much higher adhesion than newly painted substrates. Such substrates have a texture similar to anodized, bare aluminum, which promotes higher adhesion. Graphic removal may require more effort.
- However, highly oxidized substrates, such as chalked paint, have poor adhesion and graphics may remove more easily.
- Graphics that were applied to damaged or unsound painted substrates, may on removal create further substrate damage.
- Graphics that were applied to a painted substrate that is subsequently damaged in service, may on removal create further substrate damage.
- Graphics that were applied to freshly painted substrates, before the paint had sufficient time to cure, make removal difficult. Substrate damage may also occur.

5. Type and Amount of Ink

The type and amount of ink used affects the elongation and tear characteristics of printed film.

UV-cured inks tend to be harder and more durable than solvent inks. Thicker and/or more durable inks stretch less so that graphics tear more easily during removal.

6. Type of Overlaminate or Overprint Clear

Adding an overlaminate film or overprint clear (an ink) further affects the elongation and tear characteristics of a graphic. An overlaminated film is thicker and, therefore, easier to remove.

7. Age of the Graphic

Older graphics become brittle and their adhesion to the substrate increases with time. Both of these conditions make removal more difficult.

8. Outdoor Exposure

Exposure to higher temperatures and UV light (sunlight) affects removal. Prolonged exposure to these elements can make the film brittle, changing its tensile strength. This film may tear and break easily, making removal very slow and tedious.

9. Cut, Torn and Damaged Film

Film tears along any cuts or damage so it tends to pull off in small pieces rather than large ones. This makes removal very slow and tedious.

Removal Methods

⚠ Caution

Before handling any chemical products, always read the container label and the MSDS.

Also

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

Before starting to remove a graphic, read **About Angle of Pull-off** and **Speed of Removal** and **About Using Heat Sources**. These sections apply to all removal methods.

If you do not know the characteristics and history of the graphic, try the simplest removal techniques first. The techniques are listed in order from easiest (1) to most difficult (4).

About Angle of Pull-off and Speed of Removal

The angle at which you pull off film is important. It depends on the film and may affect the amount of adhesive residue that remains on the substrate. Changeable films usually require a high angle, such as pulling the film back onto itself. A low angle is recommended for 3M™ Scotchcal™ Perforated Window Graphic Films and 3M™ Scotchlite™ Sheetings. Sometimes the pull-off angle affects the amount of adhesive residue. Experiment with the angle until you get the best removal results. See Figure 1.

The speed, or rate, at which you pull off the graphic can affect how much adhesive residue remains on the substrate. Some films can be pulled off quickly, or "snapped" off. Brittle films can sometimes be peeled off slowly.

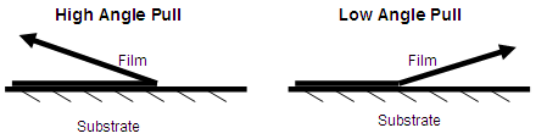


Figure 1: Angle of pull-off

⚠ Caution

Heat or open flames may contribute to a flash fire or burns. Follow these precautions when using a heat source for flame treating.

- Read and follow the instructions supplied with the heat source.
- Avoid personal contact with the heat source. Wear heat-resistant gloves and safety glasses.
- Do not use heat sources near solvent mixtures or residues, or where solvent vapors may be present.

⚠ Caution

Always provide adequate ventilation to remove emissions that result from the heat of removal Failure to provide adequate ventilation can result in operator exposure.

About Using Heat Sources

Heating a graphic eases removal of almost any film, even films that can typically be removed without aids. Heat softens the adhesive, reducing the pull-off force needed.

The applicator/remover must determine the appropriate tools, techniques and safety precautions for each situation.

For most situations, almost any heat source that can raise the applied graphic temperature to 160° to 200°F (72° to 93°C) can be used. Exposure to the sun may be sufficient. Other sources include heat lamps, hot water, industrial heat guns, steamers, hand torches and weed burners.

Each tool has limitations: heat sources that develop higher BTU can heat larger areas more quickly, but are less safe to use. They also may oxidize or burn painted areas around the graphic, and may emphasize any shadow left where the graphic was.

Use care not to scorch, burn or otherwise damage the film or substrate when using heat.

Window Graphics

Certain substrates require lower heat. They are:

- For DuPont Lucite® SAR and GE Plastics Lexan® MRG windows, heat the substrate only to 21° to 38°C (70° to 100°F).
- For glass, heat is not required if the glass window panels are warmer than 60°F (16°C).

1. Unaided Removal

Changeable films can be removed without any aids within the time period specified in the film's product bulletin.

1. Use a razor, knife or air release tool to lift up a corner of the graphic.
2. Pull the graphic from the substrate. Changeable films usually require a high pull-off angle.
3. If the removal is done in cooler temperatures, heating the graphic and/or cutting it into 300 to 380 mm (12 to 15 inch) wide strips makes removal even easier. Be careful not to damage the substrate.

2. Heat-aided Removal

Removable films usually come off with just the aid of heat within the time period specified in the film's product bulletin.

1. Review the section, About Using Heat Sources.
2. Use a razor, knife or air release tool to lift up a corner of the graphic.
3. Pull the graphic from the substrate. Removable films usually require a low pull-off angle. Some films can be "snapped" off in sections.
4. Cut the graphic into 300 to 380 mm (12 to 15 inch) wide strips to make removal even easier. Be careful not to damage the substrate.

3. Chemically-aided Removal

When a combination of removal factors results in a higher than normal adhesion to the substrate, chemical aids may be needed for removable films.

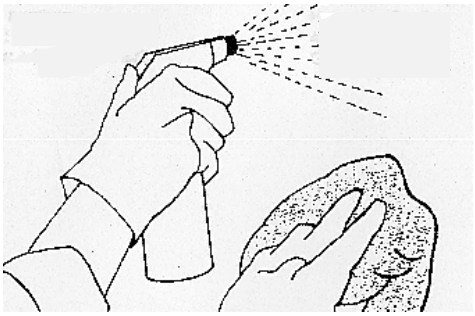
There are several chemical approaches available, many of which require special precautions to use in a safe, environmentally-responsible manner. The user must obtain, read, and follow the MSDS sheet for any chemical used.

Some chemicals may damage the substrate or its finish. Always test the chemical in a small, inconspicuous area, allowing the chemical to remain on the graphic for the recommended length of time. Remove the film and check for substrate damage.

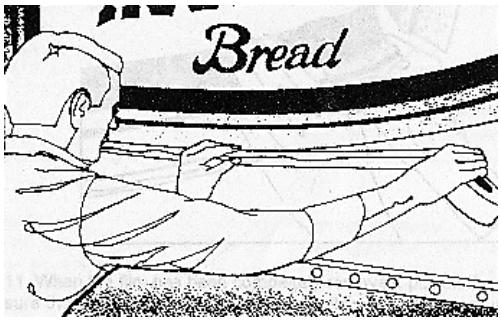
3M Graphic Remover System

3M™ Graphic Remover System is a film/adhesive remover intended specifically for the removal of 3M™ Controltac™ 180, and Scotchcal™ 100 Film. The 3M Graphic Remover System will also remove screen printed graphics made from these materials.

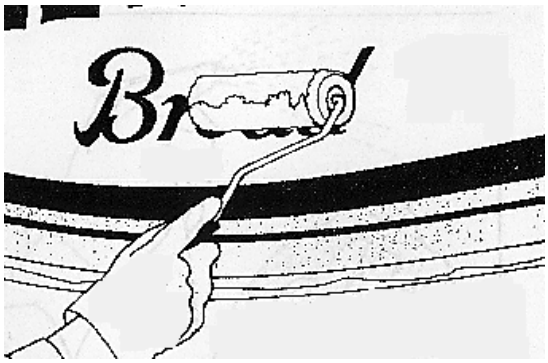
1. Make certain that you have all the required equipment as listed in the equipment list. Follow all recommended safety procedures according to the MSDS and container label.
2. Clean the surface and marking with detergent and water. Dry the surface thoroughly before proceeding.



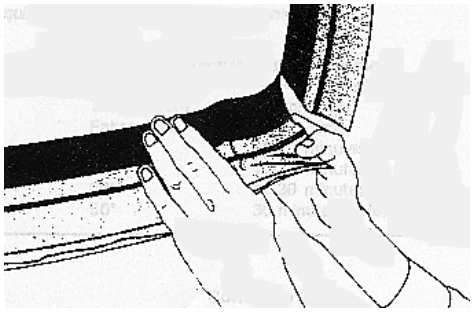
3. To minimise clean-up of film remover the following method should be used: Mask the surface around markings and make a 'drip trough' with masking tape or cardboard to prevent residue dripping onto surfaces around the marking.



4. Make certain that the application surface temperature is at least 10°C (50°F). If it is 29°C (85°F) or above, move the vehicle to a shaded area and allow to cool down.
5. Make certain that film being removed is one of the materials recommended above.
6. Using a paint brush or roller, thoroughly coat the marking with a thin layer of 3M Graphic Remover System. Keep the container covered when not in use to prevent too rapid evaporation of solvent.



7. Allow the film remover to dry for at least 15 to 30 minutes after application. Cooler temperatures will require additional drying time.
8. Test for removability by grasping a corner of the film and pulling from the surface at an angle of less than 90° with gentle / moderate force. The film should stretch like rubber while being removed; if it is brittle, stop, apply a second coat, let dry and proceed with the removal.

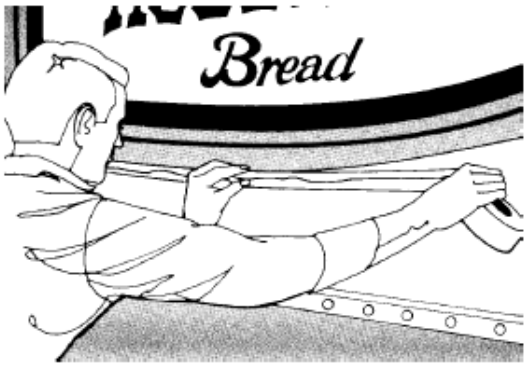


9. When the film has been completely removed, pull off the masking tape. Make sure that the film / stripper residue is collected and that no waste material enters the drainage system.
10. Remove remaining adhesive residue with a rivet brush.
11. Clean the entire surface with a solvent wipe, followed by a wash with detergent and water. Dry the surface.
12. Failure to properly wash and remove all excess adhesive remover will adversely affect the adhesion of new markings applied to the surface.

3M™ Controltac™ Film Remover R-221 and Adhesive Remover R-231

This remover system is designed specifically for removing 3M™ Controltac™ Graphic Films with or without Comply™ Adhesive that is unprinted or printed with solvent ink. This includes all variations of films 180, 180C, IJ180, IJ180C, 8620 and 8620C. It is not effective on graphics printed with UV inks.

1. Follow the manufacturer's safe handling instructions, including wearing appropriate protective equipment such as rubber gloves and safety goggles.
2. Clean the graphic surface with mild detergent and water. Dry thoroughly.
3. Mask around the graphic. This helps protect the substrate from damage.
4. Make a drip tray using wide masking tape that has been doubled over and adhered directly below the graphic. This prevents residue from dripping around the graphic.



5. Thoroughly coat the graphic with film remover R-221, using a paint brush or roller. The coverage rate should be 150 square feet per gallon.
6. Allow to dry for at least 15 minutes at room temperature or warmer. Leave it on for a longer time in cooler temperatures.
7. Test removability by grasping a corner of the graphic and pulling it from the surface at a low angle--less than 90 degrees. The film should come off with low to moderate force. It should stretch and remove easily.
   - If the film is still too brittle, apply a second coat, let dry, and repeat the removal test.
   - If the film removes easily, continue with Step 7.
8. Remove the masking tape but leave the drip tray in place. Spray adhesive remover R-231 onto areas where there is adhesive residue.
9. Allow the liquid to penetrate for 30 to 60 seconds.
10. Remove the adhesive by scraping with a plastic applicator or rivet brush. Wipe the loosened residue with a cloth saturated with adhesive remover. Repeat this procedure as needed.
11. Remove the drip tray.
12. Clean the entire surface with a solvent wipe and follow with a mild detergent and water wash.
13. Dry the surface.

⚠ **Warning:**

Repaired or re-sprayed paint surfaces may be adversely affected by a chemical remover system. Customers are advised to test the 3M Graphic Remover System on a discreet area of paint work which is the same as the eventual application surface prior to use. 3M does not accept liability for any damage to such surfaces.

4. Mechanically-aided Removal

Most mechanical removal techniques result in substrate damage. Tools such as scrapers, abrasive wheels and particle blasting devices are difficult to control in a way that removes only the graphic. These tools may be considered if the substrate will be repainted or refinished after removal.

The 3M™ Scotch-Brite™ Graphics Removal Discs 6855 and 6856 may be used to remove vinyl graphics. These disks will not damage the substrate if it has a high quality, well anchored, fully cured paint. The disc mounts on a high speed hand drill with a special chuck, 3M™ Roloc™ Disc Pad Holder 5408. The disk burnishes off the graphic material. It is well suited for removing small stripes and lettering. Because it does not have a large surface contact area, it is not recommended for large graphics.

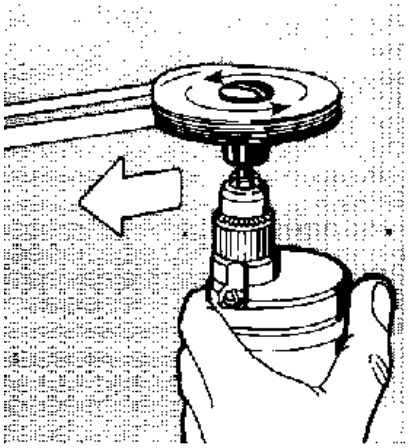


Figure 3. Using a 3M™ Scotch-Brite™ Graphics Removal Disc

Removing Adhesive Residue from the Substrate

Some adhesive residue may be left on the substrate after removing the film. Many adhesive removal products are available. Always read and follow the MSDS sheet for the product you use.

Some of the adhesive removal products 3M sells are:

- 3M™ Citrus Based Industrial Cleaner
- 3M™ Scotchcal Adhesive Remover
- 3M™ Controltac™ *Plus* Adhesive Remover R-231
- 3M™ Graphic Remover System

✓Important Note

Local air quality regulations may regulate or prohibit the use of surface preparation and cleaning materials based on solvent (VOC) content. Consult your local air quality regulations.

General Residue Removal Steps

These steps may vary depending on the product you are using.

1. Read the manufacturer's instructions for the adhesive remover product. Use the product only as directed and only in a well-ventilated area.
2. Follow the manufacturer's safe handling instructions, including wearing appropriate protective equipment such as rubber gloves and safety goggles.
3. Test the remover by applying in an inconspicuous area to make certain that it does not damage the substrate.
4. Apply the remover as directed and allow the prescribed time for the chemical to penetrate the adhesive.
5. Remove the softened adhesive by scraping with a plastic applicator or rivet brush.
6. Pick up the loosened adhesive with a cloth saturated with the adhesive remover.
7. Repeat steps 4 through 6 as needed.
8. After the residue is removed, clean the entire surface with a solvent wipe and then wipe dry with clean toweling before the solvent evaporates.
9. Wash the entire substrate with a solution of detergent and water.
10. If you are applying a new graphic, dry the substrate thoroughly with a clean, lint-free towel.

Disposing of Removed Graphic Material

⚠ Caution

Adhesive or film removers, and solvent wipes or film wetted with the removers, should be incinerated in a permitted hazardous waste incinerator. Since regulations vary, consult the applicable regulations or authorities before disposal.

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.

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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.

Commercial Graphics Department
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