



# Application and Removal of Dichroic Glass Finish DF-PA

## Instruction Bulletin

### General Product Uses

3M™ Dichroic Glass Finish DF-PA film offers a way to create unique, ever-changing color to many interior building surfaces. Influenced by the color of the light, this transparent film provides a dichroic color effect, meaning it appears to change color when viewed at various angles. The “Blaze” films shift colors in the warm tones of cyan/blue/magenta and red/gold color regions of the spectrum. The “Chill” films shift colors in the cool tones of blue/magenta/yellow and gold/blue color regions of the spectrum. The PVC-free film has a clear, pressure-sensitive adhesive that can be applied to glass. A hard coated surface layer helps resist scratching during normal use.

#### Suitable Uses

- 3M Dichroic film is designed to be applied to interior flat glass surfaces.

#### Unsuitable Uses

- Lamination to plastic materials is not recommended! However, lamination to plastic materials is possible. Certain plastics depending on their age and type of material can exhibit outgassing, which can lead to small air bubbles appearing between the film and the substrate. If you do wish to laminate to a plastic substrate, 3M advises that you contact your plastic material supplier to obtain low-outgassing materials and perform a trial installation on the material before production.
- Printing on the film.
- Application to unsmooth surfaces, such as those with frosted or textured finishes and other than flat glass.
- Application to a colored or printed substrate that could either impede good adhesive “wet out” during installation, or affect the installed appearance of the film in an unacceptable manner.

#### Cutting

3M Dichroic films are polyester based, multilayer films designed for application as single sheets rather than cut shapes.

Electronic Cutting is not recommended, however, should you wish to electrocut this material 3M would advise:

- Ensure the blades are as always as sharp as possible to reduce the risk of damage to the film edge during cutting.
- Avoid cutting sharp corners as these can tear during the application process.
- Test any application tape used to ensure that this does not cause the film layers to separate during installation.
- When weeding check removability of small pieces - being a multilayer film, separation can occur when weeding, which could increase weeding time on small parts.

### Application Precautions

- Do not apply stickers or seals to the film or write on it with markers.
- When jointing films, there could be a slight difference in appearance in color, etc., depending on the product lot, so do not use products from different lots next to each other.
- The surface of the film could be damaged by burrs on the ruler used during joint. Be sure to use a ruler that has no burrs. Further, take such measures as putting masking tape on the back of the ruler.
- Some types of glass may crack as a result of the high temperature caused by the glass's material properties and application conditions. To ensure a safe application, calculate the probability of this thermal crack prior to the installation.

### Application

#### Inspect the Application Surface

Examine the surfaces where the 3M™ Dichroic Glass Finish DF-PA film will be applied to ensure they are free of defects, imperfections, texture, color or printing, that will affect the intended appearance of the installed film. Document such problems in writing and notify the owner or architect prior to installing the film.

## Check the Application Surface for Coatings

Many windows have invisible coatings on them that interfere with adhesion. Use the following procedure to identify and eliminate such coatings. Be sure your customer understands and agrees with this procedure.

- Place drops of water on several areas of the substrate. Water beads indicate that the glass has a coating that must be removed for good film adhesion.
- Use a cleaner to remove the coating. Follow the manufacturer's instructions. Rinse and dry.
- Check again for water beading. If there is no beading, clean the substrate.

## Preparation of Application Area

- Cover interior finishes near the application area to protect them.
- If possible, turn off or cover the heating or air conditioning units and ventilation ducts in the application area prior to starting the application.
- For the best bonding conditions, the recommended application temperature is 12 °C - 38 °C and the application surface should be at room temperature or higher. In the lower end of this range, additional application pressure on the film can encourage better adhesive bonding. Attempting to install the film at temperatures below the recommended range can cause the adhesive to become so firm that it will not develop maximum contact with the substrate.

## Cleaning of the Application Surface

To enhance the application and appearance, clean and dry the application surface thoroughly.

1. Place drop cloths or plastic sheeting and absorbent towelling below the application surface to protect areas such as sills, sashes and flooring from drips of application solution.
2. Apply application solution to application surface using pressure sprayer tank.
3. Scrape the application surface, as needed, to remove dirt and other contaminants.  
Note: Do not scrape plastic substrates as this will cause scratches that may show through the film.
4. Thoroughly rinse the application surface using the pressure sprayer tank and squeegee the entire surface, wiping the window squeegee after each stroke.
5. Dry the edges of the application surface and frame thoroughly.  
Note: Apply the film immediately after cleaning the application surface. Any dirt or contaminants which settle on the surface after cleaning will inhibit adhesion and may be visible after application.

## Preparation of Application Solution

Prepare a water and liquid detergent solution to use for applying the finish. It should have a concentration of approximately 0.1% to 0.2% detergent. Pour this solution into your sprayer.

- High detergent concentration can cause the squeegee and finish to slip, resulting in insufficient application pressure.
- Low detergent concentration can cause the finish to stick, or prevent the squeegee from traveling smoothly across the finish, which results in an inconsistent application and leaves excess water behind.

## Application of film

1. Measure the application area and then cut the film approximately 5 cm wider and 5 cm longer than the application area.
2. Remove the liner, making sure the exposed adhesive does not contact any contaminated surfaces.
3. Lightly spray the exposed adhesive with the wetting solution. Use just enough solution to allow the the film to be easily positioned on the substrate.
4. Working at a top corner of the substrate, align one edge of the film approximately 1.5 mm from the outer vertical and horizontal edge. If you start the application in the upper left corner, that means the excess film will be at the bottom and right.
5. Lightly spray the film side of 3M™ Dichroic Glass Finish DF-PA with wetting solution.
6. Starting at the top and working down, and using a clean, nick-free squeegee, use light, overlapping strokes to apply the film and remove all wetting solution. Wipe the squeegee blade with a clean cloth, and mop up excess wetting solution as you work down the film. Check to make sure you maintain a good alignment.
7. To trim the excess film, first cut the corners diagonally just outside the finished size, then cut the excess horizontal and vertical film. This method helps prevent the film from creasing while trimming. All film edges must be neatly and squarely cut at a uniform distance of 1.5 mm to 3 mm from the window sealant (if applicable) or outer edges of the substrate. Use a clean, sharp blade and change it frequently to ensure you do not snag or rip the film.
8. Lightly spray the film with the wetting solution. Resqueegee the film, this time using firm overlapping strokes, and again wiping the blade often and mopping up excess wetting solution.

9. To dry the edges of the film and ensure good edge adhesion, wrap a lint-free towel around the edge of a standard squeegee, e.g. 3M™ Gold Squeegee PA-1-G and squeegee around all edges of the film.
10. Wipe the frame dry.
11. Inspect the installation to ensure a good appearance. Look for bubbles, ragged cuts, etc.
12. Clean the work area and dispose of leftover film, liner, cleaning cloths, solutions, protective covers, etc. in the proper way.

## Maintenance

Regular cleaning will help maintain the appearance of 3M™ Dichroic Glass Finish DF-PA. The film may be cleaned beginning 30 days after application.

Clean the film gently with only clean, nick-free tools and wipe only in one direction. Do not use ammonia, chlorine, or organic-based cleaning products, polishing or cleaning compound, sponges, brushes or electric polishing equipment.

- If there is dust and grit, wipe it off with a soft, damp cloth.
- If it is soiled, but not gritty, use water and squeegee.
- If there is heavier soil, use a mild liquid detergent and water solution, then clear water, and wipe gently with a cloth wipe.

## Removal

Remove 3M™ Dichroic Glass Finish DF-PA by lifting one edge and pulling it off at a sharp angle – about 135 degrees – with smooth, even tension. A scraper may be used to lift the edge and to remove adhesive residue on the surface without a heat gun and or chemicals.

It may also be helpful to cut the film into strips about 5 centimeters wide and then pull off each strip. Use a razor blade with safety handle.

## Remarks

This bulletin provides technical information only.

**Important Notice** All questions of warranty and liability relating to this product are governed by the terms and conditions of the sale, subject, where applicable, to the prevailing law.

Before using, the user must determine the suitability of the product for its required or intended use, and the user assumes all risk and liability whatsoever in connection therewith.

**Safety** Risk of glass breakage due to thermal expansion.

When glass is exposed to direct sunlight, it absorbs heat. If covered by a printed film, glass will absorb more heat. Heat absorption can create thermal stress, resulting in glass breakage (also called thermal cracking), which can cause personal injury and property damage.

**Additional Information** Visit the web site <http://www.3M.eu/ArchitecturalMarkets> for getting:

- additional instruction bulletins
- a complete product overview about materials 3M is offering.



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