

### Product Description

3M™ Dichroic Glass Finish DF-PA Film offers a way to create unique, ever-changing color to many interior and exterior 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 in transmission and red/gold color regions of the spectrum in reflection.

The “Chill” films shift colors in the cool tones of blue/magenta/yellow in transmission and gold/green/blue color regions of the spectrum in reflection.

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.

3M™ Dichroic film is designed to be applied to flat glass surfaces on-site.

Note: This document uses hyperlinks. Please follow the links for additional information.

### Recommended Types of Application and Use

- Interior and exterior applications — Conference rooms, lobbies, retail environments, partitions, verandas, private offices
- Application Surfaces — Use on flat glass

### Product Line

DF-PA Chill - Color blue/magenta/yellow in transmission and gold/green/blue in reflection.

DF-PA Blaze - Color cyan/blue/magenta in transmission and red/gold in reflection.

Expected Performance Life is 10 years for indoor, vertical applications, without exposure to UV-light.

Expected Performance Life is 7 years for indoor side of exterior wall glass, vertical applications.

Expected Performance Life is 5 years for exterior, vertical applications.

### Characteristics

These are typical values for unprocessed product. Processing may change the values.

#### Physical Characteristics

Characteristic	Value
Material	PVC-free, multi-layer polymeric film with hard coated polyester top film
Thickness (film)	Chill: 112 µm (0.11 mm) Blaze: 117 µm (0.12 mm)
Adhesive	Acrylic, pressure-sensitive, permanent
Liner	Silicone Coated Polyester
Adhesion FTM 1: 180° peel, substrate: glass cond: 24 h 23°C/50%RH	33.1 N/25 mm
UV-Block	3M™ Dichroic Glass Finish DF-PA films block at least 97% of the UV light. This among other factors helps to reduce the discolouring of furniture. Performance characteristics are based on test data deemed reliable, but not warranted.

## Application Characteristics

Characteristic	Value
Application Recommendation	Application Method: Wet Surface type: Flat, glass only Application Temperature, air and application surface: +12°C to +38°C
Removal	Removing the product too quickly can result in excessive adhesive left on the substrate. If necessary, heat a small section of the film with a heat gun to soften the adhesive, peel back slowly, then heat and remove the next section. No liability is given for ease or speed of removal of any graphic. Pay attention to adequate air and substrate temperature.

The values above are the results of illustrative lab test measurements and shall not be considered as a commitment from 3M.

## Flammability

Flammability standards are different from country to country. Ask your local 3M contact for details, please.

## Processing Options

Processing of 3M™ Dichroic Glass Finish DF-PA is on a user test and approve basis only. The user is responsible for results in all processing applications.

## Printing

3M™ Dichroic Glass Finish DF-PA is not printable due to a scratch resistant coating.

## Cutting

Electronic cutting, weeding and the use of application tape with 3M™ Dichroic Glass Finish DF-PA is not recommended! However, should you wish to electrocut this material, 3M™ Dichroic Glass Finish DF-PA must be used only on a user test and approve basis.

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.

See [3M Instruction Bulletin 4.1](#) for Sheeting, Scoring and Film Cutting details.

## Lamination

Lamination of 3M™ Dichroic Glass Finish DF-PA to plastic materials is not recommended!

However, lamination to plastic materials is possible. 3M™ Dichroic Glass Finish DF-PA must be used only on a user test and approve basis. 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.

## **Warranty Information**

### **3M Basic Product Warranty**

3M Graphics Products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in its applicable 3M Graphics Product Bulletin and as further set forth in the 3M Graphics Warranties Bulletin.

### **Limited Remedy**

3M recommended product end uses are listed in each 3M graphics product bulletin.

End uses not listed in the applicable 3M Graphics Product Bulletins are typically not eligible for 3M Graphics Warranties.

- For all product end uses (recommended or not recommended), user remains solely responsible for evaluating, testing and approving this 3M product and determining whether it is appropriate and suitable for customer's application.
- For non-recommended and/or non-warranted end uses or applications, users must assume any associated risks, and acknowledge that 3M has no liability for such end uses or applications.

Please contact your 3M representative with any questions about graphic applications, end uses, and warranties.

### **Limitations of liability**

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.

## **Application**

The application of colored or printed film onto glass with sunlight exposure can lead to glass breakage through thermal expansion of the glass. The local conditions must be examined for the danger of glass break by uneven heat absorption through sun exposure. Type of glass (insulation glass, float glass, LSG, toughened safety glass, semi-tempered glass, etc.), glass dimension, joint condition, flexibility of the sealant, quality of the edge finishing, geographical orientation and partial shadow during sun exposure are the determining factors. Light color designs and application on the outside of the window are to be preferred. A free non-applied framework of 4 mm around the entire window front can help to dissipate the absorbed warmth. According to common knowledge a thermal crack can occur at temperature differences of approx. 130°C (toughened safety glass), approx. 40°C (float glass) or approx. 110°C (semi-tempered glass). Coldest place is usually under the framework in the embedded joined window part, the warmest place is typically on the darkest place in the format. Because of the many above mentioned factors, glass breakage cannot be fully predicted, therefore 3M does not accept liability for glass breakage when using this film for window graphics.

## **Maintenance, Cleaning and Removal**

Regular cleaning will help maintain the appearance of 3M™ Dichroic Glass Finish DF-PA.

3M™ Dichroic may be cleaned beginning 30 days after installation.

- Clean 3M™ Dichroic 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.

## **Shelf Life, Storage and Shipping**

The shelf life as defined below remains an indicative and maximum data, subject to many external and non-controllable factors. It may never be interpreted as warranty.

The shelf life is never more than 2 years from the date of manufacture on the original box.

Storage conditions: +4°C to +38°C, out of sunlight, original container in clean and dry area.

Dichroic DF-PA is designed for on-site installation to glass. Storage of glass with applied film should be avoided.

Note: Point pressure on the surface of the applied film needs to be avoided as this will cause imprints on the film which are not removable.

## Health and Safety

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

Follow the link to obtain SDS sheets for 3M products on [3M.com/SDS](https://www.3m.com/SDS).

IMPORTANT! When using any equipment, always follow the manufacturer's instructions for safe operation.

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