

Commercial Solutions Division

# 3M™ Dichroic Glass Finish DF-PA Chill & Blaze

## 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.

Product Line	Color Shift Products	DF-PA Chill	Color blue/magenta/yellow in transmission and gold/green/blue in reflection. Hard top coat, with adhesive.
		DF-PA Blaze	Color cyan/blue/magenta in transmission and red/gold in reflection. Hard top coat, with adhesive.

## Product Characteristics

These are indicative values for unprocessed products.  
Contact your 3M representative for a custom specification.

Physical & Application	Material	PVC-free, multi-layer polymeric film with hard coated polyester top film	
	Surface finish	glossy	
	Thickness (film)	Chill	112 µm (0.11 mm)
		Blaze	117 µm (0.12 mm)
	Adhesive type	Acrylic, pressure-sensitive, permanent	
	Adhesive appearance	clear	
	Liner	Silicone Coated Polyester	
	Adhesion	33.1 N/25 mm	FTM 1: 180° peel, substrate: glass; cond: 24 h 23°C/50%RH
	Application method	wet	
	Applied shrinkage	< 0.3 mm	FTM 14
	Application temperature (minimum air and substrate)	+12°C to +38°C	for flat surfaces
	Service temperature (after application)	-40°C to +65°C	(not for extended periods of time at the extremes)
	Surface type	flat, glass only	

**Electronic Cutting** 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.

**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.

**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.

**Storage Shelf life** Use within two years from the date of manufacture on the sealed original box. Use within one year after opening the box.

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

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

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

## Durability

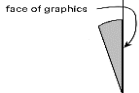
The durabilities mentioned in the table below are the results of illustrative lab tests. The values show the best performance expected from these products, provided that the film will be processed and applied professionally according to 3M's recommendations.

The durability statements do not constitute warranties of quality, life and characteristics.

The durability of products is also influenced by:

- the type of substrate and thorough preparation of the surface (with Isopropylalcohol)
- application procedures
- environmental factors
- the method and the frequency of cleaning

**Unprocessed film** The following durability data are given for unprocessed film only!

**Exposure types** Vertical:  The face of the graphic is ±10° from vertical.

**Interior:** Interior means an application inside a building without direct exposure to sunlight.

**Interior application** Film applied to the indoor side of exterior wall glass  
interior 7 years

Film applied interior without exposure to UV light  
10 years

**Vertical outdoor exposure** Film applied to exterior wall glass  
5 years

## Limitations of End Uses

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs to recommend other products.

- Film applied to
- other surface than glass
  - other than flat glass
  - surfaces that are not clean and smooth
  - in between two sheets of glass

- Important Notice
- 3M Commercial Solutions products are not tested against automotive manufacturer specifications!
  - The film is not printable due to a scratch resistant coating.
  - 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.
  - Dichroic DF-PA is designed for on-site installation to glass. Storage of glass with applied film should be avoided.  
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.

## Maintenance and Cleaning

Regular cleaning will help maintain the Product's appearance. The Product may be cleaned beginning 30 days after installation.

Clean the Products 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.

## Important Safety Remark

Application to glass

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.

## 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.

As outdoor graphics age, natural weathering occurs causing a gradual reduction in gloss, slight color changes, some lifting of the graphic at the edges or around rivets, and ultimately a minor amount of cracking.

These changes are not evidence of product failure and are not covered by a 3M warranty.

### Additional information

Visit the web site of your local subsidiary at [www.3Mgraphics.com](http://www.3Mgraphics.com) for getting:

- more details about 3M™ MCS™ Warranty and 3M™ Performance Guarantee
- additional instruction bulletins
- a complete product overview about materials 3M is offering



### Commercial Solutions Division

Hermeslaan 7  
1831 Diegem, Belgium

Responsible for this technical bulletin

3M Deutschland GmbH  
Carl-Schurz-Str. 1  
41453 Neuss, Germany

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