

### Product Description

3M DICHROIC Glass Finish DF-PA (the “Product”) offers a way to create unique, ever-changing color to many interior building surfaces. Influenced by the color of the substrate, this transparent Product provides a dichroic color effect, meaning it appears to change color when viewed at various angles. The “Blaze” Product shift colors in the warm tones of cyan/blue/magenta in transmission and red/gold color regions of the spectrum in reflection. The “Chill” Product shift colors in the cool tones of blue/magenta/yellow in transmission and gold/blue color regions of the spectrum in reflection. The Product has a clear, pressure-sensitive adhesive that can be applied to glass. A hard-coated, protective surface layer helps resist scratching during normal use. These decorative Products can be used in vertical applications on the surface of interior glass, including the interior of an outside glass wall (the “Interior Applications”).

### Featured Benefits

Expected Performance Life is 7 years for vertical, indoor applications on non-perimeter glass.

### Product Characteristics

The following characteristics are typical values for the Products. These are based on test data deemed reliable, but are not warranted.

Characteristic		DF-PA Blaze	DF-PA Chill
<b>Material</b>	<b>Protective Layer</b>	Hard-coated Polyester	
	<b>Base Film</b>	Multi-layer Polymeric	
	<b>Adhesive</b>	Pressure-sensitive acrylic, permanent	
	<b>Release Liner</b>	Silicone-coated polyester	
<b>Thickness</b>	<b>Film + Adhesive</b>	5.2 mils (132 microns) without Release Liner	5.0 mils (127 microns) without Release Liner
	<b>Release Liner</b>	3.9 mils (100 microns)	
<b>Roll Size</b>		48 in. X 32.8 yds. (1220mm x 30m)	
<b>Film Color</b>		Cyan/Blue/Magenta in transmission Red/Gold in reflection	Blue/Magenta/Yellow in transmission Gold/Blue in reflection

**Product Performance**

All of the data are calculated as theoretical value and compiled with existing data. Product performance data is based on test data deemed reliable, but not warranted.

Characteristic	DF-PA Blaze	DF-PA Chill
<b>Adhesion 24 hours after application*</b>	Glass 7 lb./in. (33 N/25mm) Acrylic 5 lb./in. (23 N/25mm) Polycarbonate 3 lb./in. (13 N/25mm)	
<b>Fire Resistance</b>	When used in Interior Applications on glass, Products have the National Fire Protection Association Class A (as defined in NFPA 101 "Life Safety Code" Test Method ASTM E84).	

\* Test specimens were applied to the substrate and conditioned at 68 F (20 C), then peel tested at 180 degree at a tensile speed of 12 inches (300 mm) per minute.

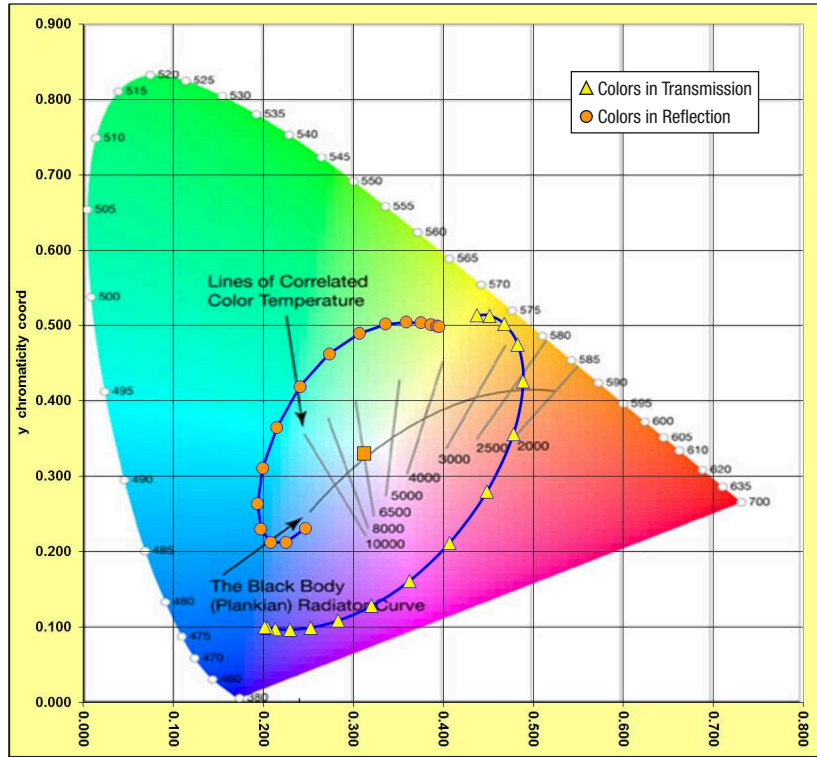
**Optical Performance Characteristics**

Characteristic	DF-PA Blaze	DF-PA Chill	
<b>Transmissive Color<sup>1</sup></b>	Cyan/Blue/ Magenta	Blue/Magenta/ Yellow	
<b>Reflective Color<sup>1</sup></b>	Red/Gold	Gold/Blue	
<b>Spectral Data<sup>2</sup></b> Left Band Edges Right Band Edges	590nm 795nm	500nm 615nm	
<b>Shading Coefficient</b>	0.70	0.77	
<b>Solar Heat (%)</b>	<b>Reflectance</b>	25	21
	<b>Transmittance</b>	57	62
	<b>Absorbance</b>	13	15
<b>Visible Light (%)</b>	<b>Reflectance</b>	22	78
	<b>Transmittance</b>	77	17
<b>UV (%)</b>	<b>Transmittance</b>	2.6	2.4

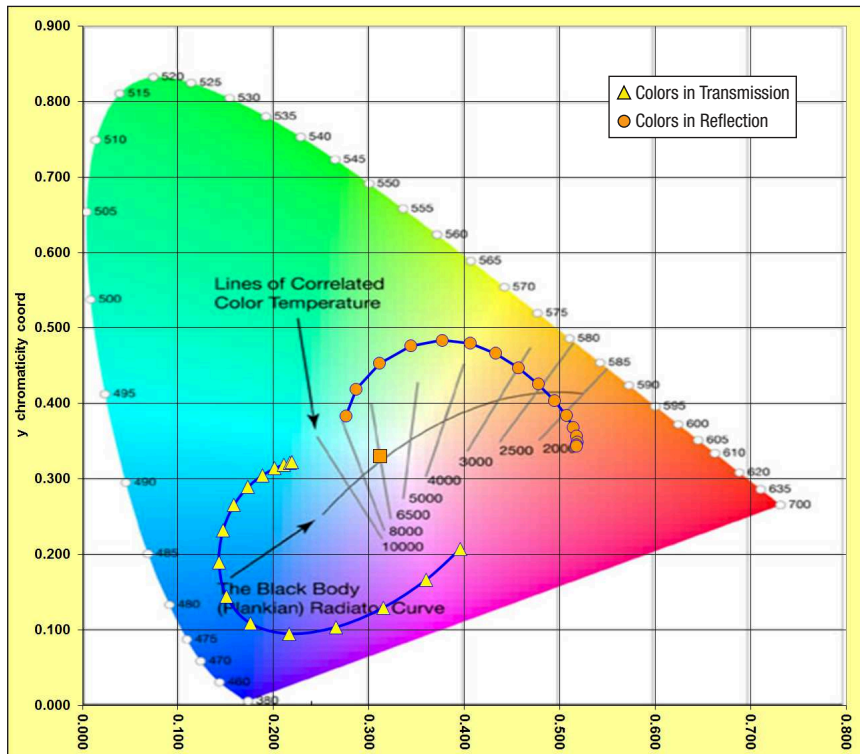
1. Varies by viewing angle. Color shift is visible from both sides of the Product.

2. ASTM Test: E1164-94 / E387-95

Typical Spectral Response for DF-PA Chill Product



Typical Spectral Response for DF-PA Blaze Product



## Product Use

The user is solely responsible for evaluating and determining whether these 3M Products are suitable and appropriate for any particular use or manufacturing process in which they may be used.

## Application and Removal Guidelines

Avoid scratching, denting, or stretching the Product during installation.

The values in these tables are typical, and are based on test data deemed reliable but are not warranted. See the 3M DICHROIC Glass Finishes Installation Guide for additional information.

Characteristic	Value
Application Surface Type	Flat
Application Surface Material	Glass, acrylic, polycarbonate
Application Location	Interior Applications
Application Temperature	60°F - 100°F (16°C - 38°C) air and application surface
Application Method	Wet application
Applied Product Shrinkage	Nominal
Applied Product Exposure Temperature	-40°F - +149°F (-40°C - +65°C)
High Humidity Environments	Products are not recommended for Interior Applications where condensation consistently occurs.
Product Removal	Low heat, or 3M Adhesive Remover Citrus Base and scraper

**NOTE:** 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 hair dryer to soften the adhesive, peel back slowly, then heat and remove the next section.

## Processing Options

### Digital Cutting

This Product is believed to be suitable for use with most digital cutting equipment, but the customer must test and approve with their equipment to determine suitability.

### Printing

This Product is not designed for printing on the surface. If the customer chooses to print on the Product, the customer must test and approve with their equipment to determine suitability.

## Shelf Life and Storage

### Shelf Life

Apply the Product within 2 years of the date of purchase. The storage conditions specified in this document must be maintained for full shelf life.

### Storage Conditions

- 40°F - 90°F (4°C - 32°C)
- Away from direct sunlight and high humidity
- Clean, dry area
- Original container with end caps, in the plastic sleeve, stored horizontally, a maximum of 6 cartons high
- Bring the Product to room temperature before application

## Cleaning and Maintenance

**NOTE:** The Product may be cleaned beginning 30 days after installation.

Regular cleaning will help maintain the Product's appearance. Use only clean, nick-free tools and wipe gently 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.

## Health and Safety



### CAUTION

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety and environmental information. To obtain SDS sheets for 3M products go to [3M.com/SDS](http://3M.com/SDS), or by mail or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501.

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



### **WARNING: Risk of Glass Breakage Due to Thermal Expansion**

Glass surfaces exposed to sunlight will absorb heat. A glass surface covered by a film with high opacity or dark-colored ink, including films with small areas of high opacity or dark-colored ink, will absorb more heat. Heat absorption can create thermal stress that results in glass breakage, or thermal cracking. This can cause personal injury and property damage. 3M specifically does not recommend using a film with high opacity or dark-colored ink on glass surfaces with significant exposure to sunlight.

## Technical Information

Technical information and data, recommendations, and other statements provided by 3M are based on information, tests, or experience which 3M believes to be reliable, but the accuracy or completeness of such information is not guaranteed. Such technical information and data are intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. The typical values shown should not be used for the purpose of specification limits. If you have questions about this Product, contact the Technical Service helpline at 1-888-650-3497.

For more information or to order samples, please visit [3M.com/DICHROIC](http://3M.com/DICHROIC).

## Change History

### Rev E (15-SEPT-2015):

- Added Expected Performance Life
- Updated Shelf Life and Storage section
- Updated warranty.
- Added document title and revision to footer and other minor formatting changes.

**WARRANTY**

**Products**

3M DICHROIC Glass Finishes DF-PA Chill and DF-PA Blaze (the "Product").

**3M Basic Product Warranty**

The Product(s) specified in this document are warranted to be free of defects in materials and manufacture ("3M Basic Product Warranty") at the time of shipment ("Warranty Period") by 3M or its authorized distributor.

**Limited Warranty**

- For Products used in Interior Applications in the continental United States, 3M makes the following warranty (the "3M Limited Warranty") for the applicable time period stated below ("Warranty Period"), which will begin on the earlier of: (a) Product installation date; or (b) six months after 3M's Product shipment date.

The Product will have no significant discoloration, cracking, swelling or other similar visual defects for the applicable time period below:

Application		Warranty Period
Interior Applications	Excluding building perimeter glass	5 years
	Building perimeter glass	3 years
Exterior application surfaces		3M Basic Product Warranty only (see above)
Plastic application surfaces		

- For a buyer's convenience, 3M may provide engineering or technical information, recommendations, installation instructions, and other information or materials relating to Product ("Other Product Information"), but 3M makes only the 3M Basic Product Warranty and the 3M Limited Warranty and does not warrant any Other Product Information.
- 3M has no obligation under the 3M Basic Product Warranty or the 3M Limited Warranty as to Product that has been: (a) modified, altered or processed in any manner; (b) stored, applied, installed, or used in a manner other than that 3M recommends in this document and in all Other Product Information; (c) dam-

aged through contact with a person or thing, misuse, accident, neglect, or other action by anyone other than 3M; (d) improperly installed, including, without limitation, installation after the expiration the Product's shelf life or installation without proper surface preparation, or (e) exposed to excessive heat, humidity, dirt or UV light.

- EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, THE 3M BASIC PRODUCT WARRANTY AND 3M LIMITED WARRANTY ARE MADE IN LIEU OF ALL OTHER WARRANTIES, RIGHTS OR CONDITIONS, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY, SATISFACTORY QUALITY, FITNESS FOR A PARTICULAR PURPOSE AND THOSE ARISING FROM A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. THE BUYER IS RESPONSIBLE FOR DETERMINING IF A PRODUCT IS SUITABLE FOR ITS PARTICULAR PURPOSE AND ITS APPLICATION METHODS.
- 3M must receive any 3M Basic Product Warranty or 3M Limited Warranty claim in writing no later than 10 business days after (a) the end of the Warranty Period or (b) the discovery of the 3M Warranty claim, whichever is earlier.

**Limited Remedy**

If any Product is proven not to have met the 3M Basic Product Warranty or the 3M Limited Warranty within the applicable Warranty Period, then THE BUYER'S EXCLUSIVE REMEDY AND 3M'S SOLE OBLIGATION, WILL BE AT 3M'S OPTION, TO REPLACE THAT PRODUCT QUANTITY OR REFUND THE APPLICABLE PURCHASE PRICE.

**Limitation of Liability**

3M WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO A BUYER FOR DIRECT (other than the Limited Remedy stated above), SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS) IN ANY WAY RELATED TO A PRODUCT, THIS DOCUMENT, OR OTHER PRODUCT INFORMATION, REGARDLESS OF THE LEGAL OR EQUITABLE THEORY ON WHICH SUCH DAMAGES ARE SOUGHT.

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