

# 3M™ Dichroic Film

Color Shift Products

Technical Data Sheet: DF  
Release A, Effective March 2013

DF–Chill & DF–Blaze  
DF–A–Chill & DF–A–Blaze

*Film Only*  
*Printable Film with Adhesive*

## 1. Product Description

### A. General Description

3M™ Dichroic Films DF and DF-A (the “Product”) are available in cool (Chill) and warm (Blaze) colors. The brilliant color shift the viewer sees—which is visible from both sides of the Products—is influenced by the environment in which the Products are used, including the lighting, the viewing angle and the mounting surface color. The Products are a premium grade, multi-layer polymeric film that is non-metallic, non-conductive, and non-corrosive. Both colors are available in a version without adhesive and in a printable version with a pressure sensitive adhesive (PSA) protected by a liner.

### B. Product Uses

The Products are not intended for use where UV or abrasion resistance is needed, such as on perimeter glass or conference room glass.

### C. Color Descriptions

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

The “Blaze” Products shift colors in the warm tones of cyan/blue/magenta and red/gold color regions of the spectrum.

## 2. Characteristics

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

### A. Product Construction

Characteristic	Value
Facestock	PET (Product has alternating layers of polyester and acrylic with a polyester top surface.)
Base Film Thickness	Blaze: 1.3 mils (33 μ) Chill: 1.15 mils (29 μ)
Adhesive (Product DF-A only)	
Adhesive Type	Acrylic PSA
Thickness	0.9 mils (22 μ)
Liner Type	50# Kraft paper
Liner Thickness	3.2 mils (81 μ)
Topcoat (Product DF-A only)	Yes
Roll Size	
Product DF	28 inches x 30 linear yards (71cm x 27.4m) 56 inches x 30 linear yards (142cm x 27.4m)
Product DF-A	27 inches x 30 linear yards (61cm x 27.4m) 54 inches x 30 linear yards (137cm x 27.4m)
Core Size	6 inches (15cm)
Splices per Roll	2



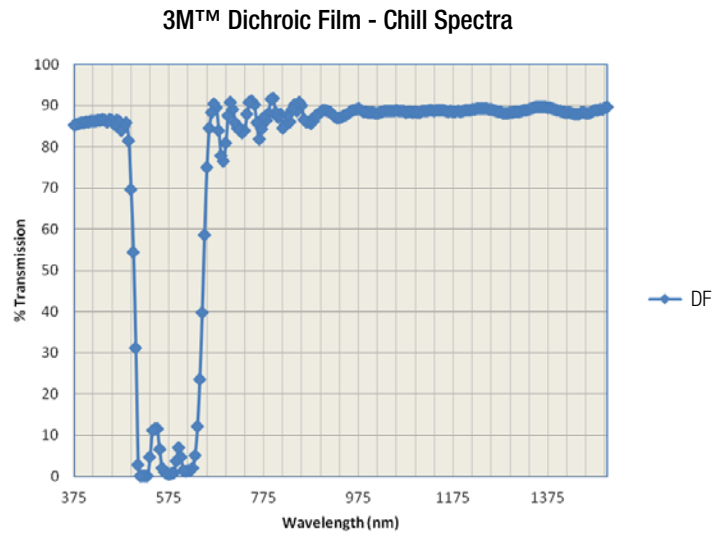
**B. Typical Performance Properties and Characteristics of Base Film**

Characteristic	Blaze	Chill
Transmissive Color <sup>1</sup>	Cyan/Blue/Magenta	Blue/Magenta/Yellow
Reflective Color <sup>1</sup>	Red/Gold	Gold/Blue
Bandwidth <sup>2</sup> Left Bandedges Right Bandedges	590 nm 740 nm	500 nm 700 nm

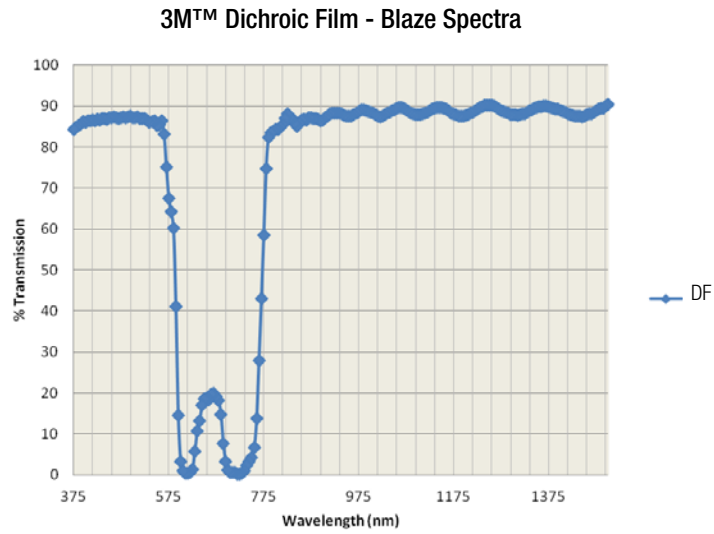
<sup>1</sup> Varies by viewing angle. Color shift is visible from both sides of the Product.

<sup>2</sup> Absorbs below 400 nm.

**C. Typical Spectral Response for DF Products in the Chill Spectra**



**D. Typical Spectral Response DF Products in the Blaze Spectra**



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### 3. Environmental Performance

These Products are not recommended for exterior use. Protection from UV radiation wavelengths is required.

Abrasion and scratch resistance is similar to products made of PET (polyethylene terephthalate, commonly called polyester). To maximize product effectiveness:

- use it in a location where it can be protected from abrasion.
- apply a hard coat lamination to help protect from abrasion.

Avoid contact with aromatic hydrocarbons and chlorinated hydrocarbons, which can damage the Product.

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### 4. 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 it may be used.

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### 5. Processing Options

- Emboss
  - Die cut
  - Surface treat
  - Coat to be heat sealed
  - Coat with adhesive
  - Mold into plastic
  - Print (DF-PA Products only)
  - Thermoform
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### 6. Cleaning

Use a mild detergent and water solution and a clean, soft cloth.

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### 7. 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.

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## 8. Limited Warranty and Limited Remedy

### A. Limited Warranty

1. 3M warrants that a Product will be free from defect in manufacture ("3M Warranty") on 3M's Product shipment date ("Warranty Period"). EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, THE 3M WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, RIGHTS OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY, 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 APPLICATION METHODS.

2. 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 Warranty and does not warrant any Other Product Information.

3. 3M has no obligation under the 3M 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 Technical Data Sheet and in all Other Product Information; (c) damaged through contact with a person or thing, misuse, accident, neglect, or other action by anyone other than 3M; or (d) exposed to excessive heat, humidity, dirt or UV light.

### B. Limited Remedy

If any Product is proven not to have met the 3M Warranty on the buyer's receipt, 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.**

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## 9. 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 PRODUCT BULLETIN/TECHNICAL DATA SHEET, OR OTHER PRODUCT INFORMATION, REGARDLESS OF THE LEGAL OR EQUITABLE THEORY ON WHICH SUCH DAMAGES ARE SOUGHT.

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