

3M™ Dichroic Finishes

DF-Chill & DF-Blaze

Film Only

DF-A-Chill & DF-A-Blaze

Film with Adhesive and Printable Top Coat

Technical Data Sheet

Revision B, November 2013

Replaces Release A, March 2013

Product Description

3M™ Dichroic DF and DF-A (the “Product”) are available in cool (Chill) and warm (Blaze) colors. The brilliant color shift the viewer sees, 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 DF version without adhesive and in a DF-A version with a printable top coat and a pressure-sensitive adhesive (PSA).

Product Uses

3M™ Dichroic DF and DF-A Products are intended for general decoration. The DF-A Products have a general purpose adhesive suitable for many substrates, including plastics and metals. The DF-A Products also have a printable top coat that can provide improved printability using many printing techniques.

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

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.



3M™ Dichroic - Blaze



3M™ Dichroic - Chill

Characteristics

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

Product Construction

Characteristic	Value
Surface of Film	Polyester (Product has alternating layers of polyester and acrylic with a polyester top surface.)
Base Film Thickness	DF Blaze: 1.3 mils (33 micron) DF Chill: 1.15 mils (29 micron)
Adhesive (DF-A Product only) Adhesive Type Total Product Thickness	Acrylic PSA DF-A Blaze: 2.2 mils (55 micron) without liner DF-A Chill: 2.05 mils (51 micron) without liner
Liner Type Liner Thickness	50# Kraft paper 3.2 mils (81 micron)
Topcoat (Product DF-A only)	Yes (DF-A Products have a printable top coat)
Roll Sizes DF Products DF-A Products	28 in. x 30 yds. (710mm x 27.4m) 56 in. x 30 yds. (1420mm x 27.4m) 27 in. x 30 yds. (690mm x 27.4m) 54 in. x 30 yds. (1370mm x 27.4m)
Core Size	6 inches (15mm) diameter



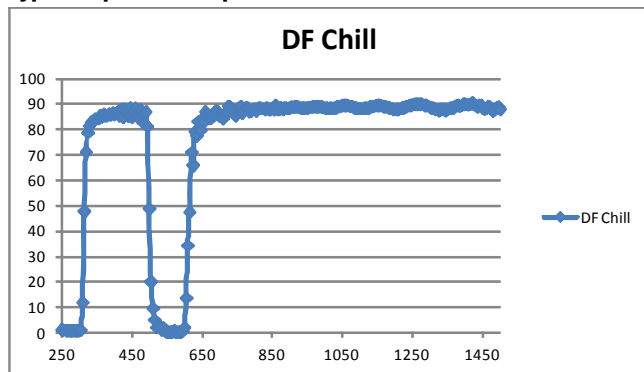
Typical Performance Properties

NOTE: The values in these tables are typical, and are based on test data deemed reliable but are not warranted.

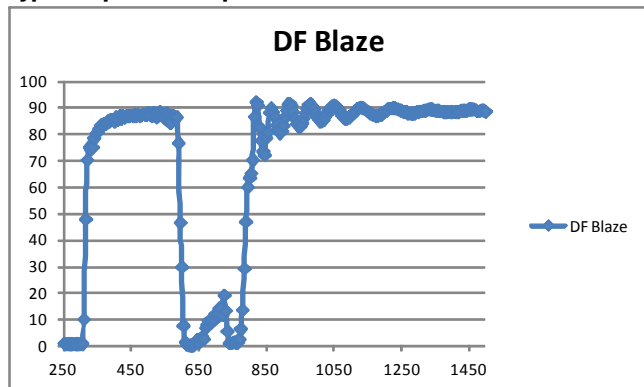
Characteristic	DF and DF-A Blaze	DF and DF-A Chill
Transmissive Color ¹	Cyan/Blue/Magenta	Blue/Magenta/Yellow
Reflective Color ¹	Red/Gold	Gold/Blue
Bandwidth ² Left Band Edges Right Band Edges	590nm 795nm	500nm 615nm

1. Varies by viewing angle. Color shift is visible from both sides of the Product.
2. Absorbs below 400nm.

Typical Spectral Response for DF Chill Product



Typical Spectral Response for DF Blaze Product



Environmental Performance

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

Abrasion and scratch resistance is similar to other products made of 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.

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.

Processing Options

The customer must test and approve the Products for use in each application.

- Laminate
- Emboss
- Die cut
- Surface treat
- Coat to be heat-sealed
- Coat with adhesive
- Mold into plastic
- Print (DF-A Products only)
- Thermoform

Cleaning

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

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.

Limited Warranty and Limited Remedy

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.

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.

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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