



Light Management Films

3M™ Dual-Color Film Series 3635-200

Description

3M™ Dual-Color Film Series 3635-200 is part of 3M's family of light management products. Two components of this unique film contribute to providing maximum color clarity and backlit brightness both day and night: the Dual-Color perforation pattern and the light management adhesive.

Use Dual-Color film to create the special effect of a color/image by day (non lighted) and a different color by night (backlit). This is achieved when a background color/image glows through the perforations in the dual color film. From a typical viewing distance for large format graphics, viewers will notice little or no perforation pattern. However, the colors and the construction option you use will affect on how visible the perforation pattern is.

Dual-Color film is available in black or white or a customer-specified color. Contact your 3M sales representative for details. It is designed to be used with 3M™ Scotchcal™ Translucent Graphic Film Series 3630. The white Dual-Color film can also be screen printed with 3M™ Screen Print Inks Series 1900/9700UV to expand your options even further.

Several constructions options and the results they create are illustrated later in this bulletin.

Applications and Uses

3M™ Dual Color Film Series 3635-200 is intended for use in creating durable, permanent Dual-Color backlit channel letter, signs and displays. Any other applications are NOT warranted by 3M or covered by the worldwide 3M™ MCS™ Warranty unless 3M gives its prior written approval for the application.

- As a first or second surface application to acrylic, polycarbonate and PETG (glycol-modified polyethylene terephthalate) channel letters and sign faces
- As a first surface application to 3M™ Panaflex™ Awning and Sign Facing 945GPS or 3M™ Panaflex™ Sign Facing 645EI

Limitations of Uses

We do not normally warrant other applications, but please contact us to discuss your needs or let us suggest other 3M products.

Specifically, we do not warrant this film for the following:

- Application to non-vertical surfaces
- Second surface application to Panaflex Awning And Sign Facing 945GPS or sign facing 645EI
- Use on any surface where an obstruction of view would present a hazard
- Thermoforming

Compatible Products

- 3M™ Panaflex™ Awning and Sign Facing 945GPS
- 3M™ Panaflex™ Sign Facing 645EI
- 3M™ Scotchcal™ Translucent Graphic Film Series 3630
- 3M™ Diffuser Films 3635-30 and 3635-70
- 3M™ Light Enhancement Film 3635-100
- 3M™ Screen Printing Ink Series 1900
- 3M™ Screen Printing Ink Series 9700UV
- Flat acrylic, polycarbonate*, PETG (glycol-modified polyethylene terephthalate)

* Film series 3635-200 typically adhere to solar-grade polycarbonate substrate. However, some lots of this substrate may inhibit the adhesion of these films. Contact 3M Commercial Graphics Technical Service (see page 6) if you are having difficulty with this combination. See Instruction Bulletin 5.1 for additional information.

Polycarbonate substrates may require drying by baking before use. Refer to the manufacturers' instructions.

Note: For the full product names of the 3M products listed on this page, please see page 1.

Product Line

Property	Description
Color	Film 3635-210: white perforated film with a matte surface Film 3635-222: black perforated film with a matte surface
Film thickness	0.14 mm vinyl (without adhesive) 0.152 to 0.165 mm (with adhesive)
Adhesive type	Pressure sensitive
Adhesive color	Film 3635-210: white Film 3635-222: white
Minimum application temperature	16°C (60°F)
Liner	78 pound, white kraft paper
Application surfaces	Flat without rivets
Application substrates	Acrylic, polycarbonate, PETG (glycol-modified polyethylene terephthalate); Panaflex awning and sign facing

Effective Performance Life

The effective performance life is based on field experience and exposure tests conducted throughout the United States. When the graphics are processed and used according to the 3M recommendations, they should have the performance life shown in the table below. The actual performance depends on:

- The correct combination of film, ink formulation, and ink drying methods
- Selection and preparation of the substrate
- Application methods
- Exposure conditions
- Cleaning methods

Warranted Durability

Film	Vertical Exposure face of graphic is vertical + 10° 		
	Zone 1 years	Zone 2 years	Zone 3 years
3635-200 (your specified color)	7	5	3
3635-210	7	5	3
3635-222	7	5	3

Fabrication

This Bulletin does not contain detailed printing, processing, or application procedures. Refer to the 3M Related Literature section for further information.

Screen Printing

Because film series 3635-200 has perforations, or holes, the screen printer must periodically insert scrap paper to clear the screen of buildup when screen printing this film.

Light Enhancement Film 3635-100

Light enhancement film can be used to line the channel letters for increased sign luminance. Refer to the 3M Related Literature section for further information.

Construction Options

How Creative Can I Be?

The construction options provided here give the basic guidelines for creating effective backlit channel letters, signs and displays. You can expand the options by experimenting with these as well as creating your own unique ideas. Here are just a few additional ideas:

- Switch the position of the translucent film and diffuser film.
- Screen print an image on film 3635-210. The image is visible during the day but with the creative use of blackout film and an additional layer of translucent film, you can have a totally different looking sign when backlit at night.
- Substitute selected areas of a translucent 3M film with cut out letters of dual color film series 3635-200. Place yet another color behind the Dual-Color film.

About the Color in the Construction Option Illustrations

Some of the following illustrations have color in them. To see the color, which helps understand how 3M™ Dual-Color Film works, please view the bulletin by opening it on the internet and then, if desired, printing to a color printed.

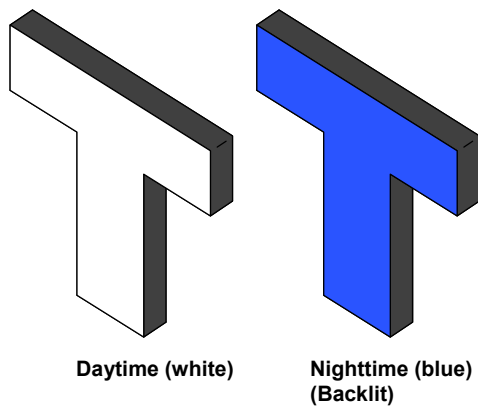
See 3M Related Literature on page 6 for how to get to our Internet site.

Construction Option 1 with White Dual-Color Film

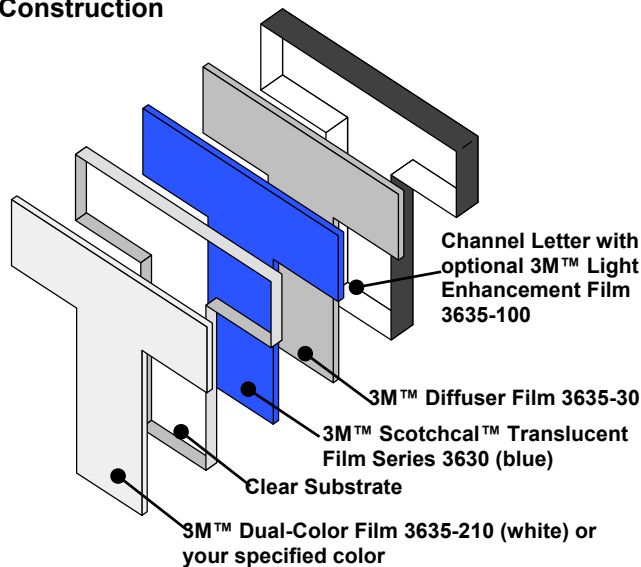
This construction typically provides the best daytime color density using white or your specified Dual-Color film.

Note: If you are not viewing this in color, the Nighttime example shows the channel letter as glowing blue, which is created by using blue film from series 3630.

Effect



Construction

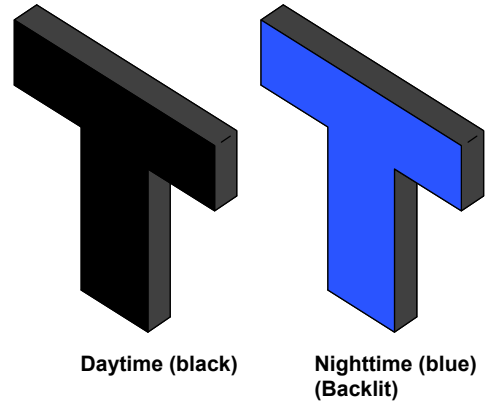


Construction Option 2 with Black Dual-Color Film

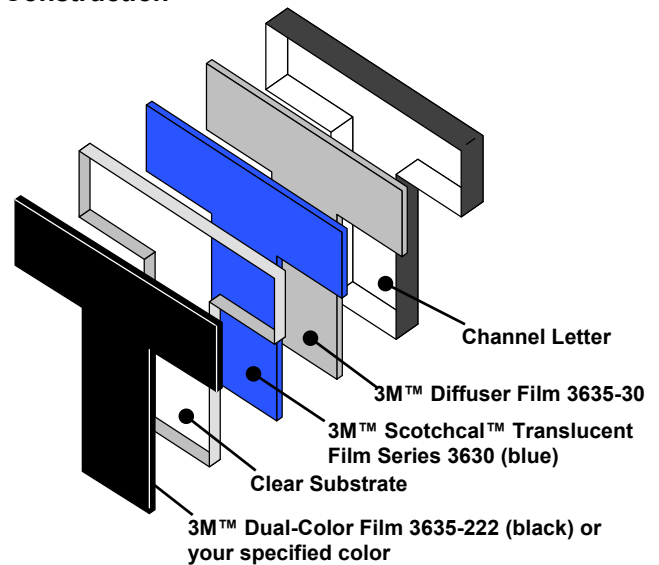
This is the same construction as Option 1 except it uses black or your specified Dual-Color film.

Note: If you are not viewing this in color, the Nighttime example shows the channel letter as glowing blue, which is created by using blue film from series 3630.

Effect



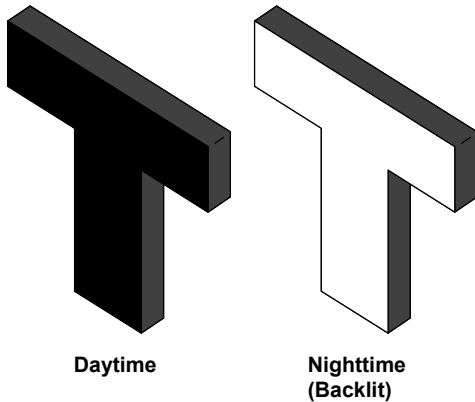
Construction



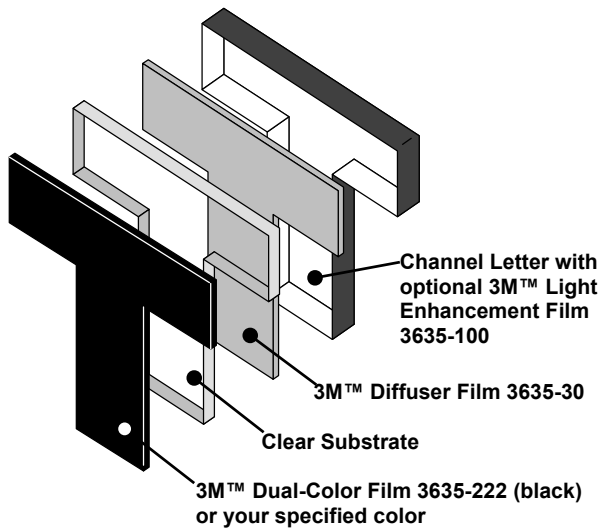
Construction Option 3 - No Color

This is the simplest option for channel letters that appear black during the day and glow white at night.

Effect



Construction

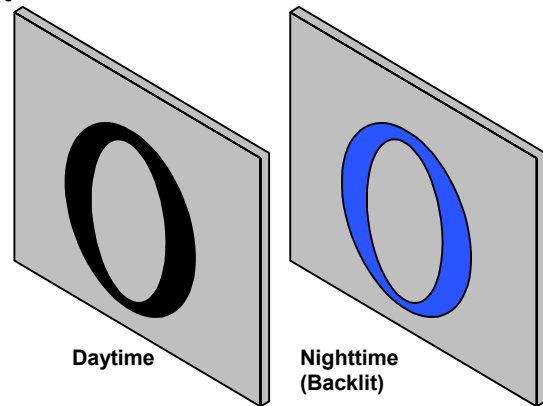


Construction Option 4 – Flexible Substrate

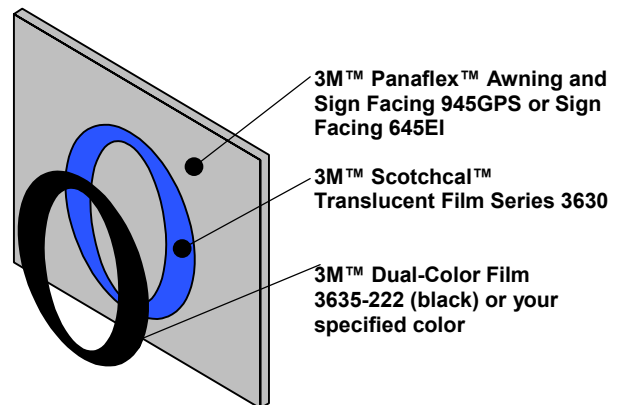
This option uses 3M™ Panaflex™ Awning and/or Sign Facing as a substrate. Film can be applied only to the first surface of this substrate.

Note: If you are not viewing this in color, the Nighttime example shows the channel letter as glowing blue, which is created by using blue film from series 3630.

Effect



Construction



Thermoforming

Customer specified colors of Dual-Color film series 3635-200 is not recommended or warranted.

Shelf Life, Shipping, and Storage

- Unprocessed films have a shelf life of two years after receipt from 3M. Processed film has a shelf life of one year. However, the total shelf life of a graphic before and after processing cannot exceed two years.
- Store the film in a clean, dry area in the original container.
- Store the film out of the direct sunlight and at less than 38°C (100°F).
- To ship this type of graphic, roll it, film side out, onto a core that is 6 inches (15 cm) or larger in diameter. These methods help prevent the film from wrinkling or popping off the liner.

Chemical and Physical Properties

The values given are typical for undecorated (as purchased) films 3635-210 and 3635-222. For a custom specification, contact your 3M sales representative.

Physical Properties

Property	Metric Units	English Units
Thickness (film and adhesive)	0.10 to 0.13 mm	4 to 5 mil
Tensile strength (minimum)	0.9 kg/cm at 23°C	5 pounds/inch at 73°F
Service temperature range	-60° to +107°C	-65° to +225°F
Applied shrinkage	0.4 mm	0.015 inch

Adhesion

The adhesion to acrylic panels and to the first surface of the Panaflex sign facing is 0.5 kg/cm (3 pounds/inch).

Chemical Resistance Characteristics

- Resists mild alkalis, mild acids, and salt.
- Excellent resistance to water.

Health and Safety

Caution

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

To obtain MSDS sheets for 3M products:

- Electronically visit us at www.3M.com/MSDS.
- Contact your 3M sales representative.

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

Important Notice

This bulletin provides technical information only.

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.

3M Related Literature

Listed below is related 3M technical literature that may be of interest.

Subject	Bulletin No.
Product Bulletins	
3M™ Panaflex™ <i>Enhanced Image</i> Sign Facing 645EI	600
3M™ Panaflex™ Awning and Sign Facing 945GPS	945
3M™ Scotchcal™ Translucent Graphic Film Series 3630	3630
3M Light Management Films -3M™ Blockout Films 3635-20B, 3625-22B -3M™ Diffuser Films 3635-30, 3635-70 -3M™ Day/Night Films 3635-91	3635
3M™ Light Enhancement Film 3635-100	3635-100
3M™ Screen Printing Ink Series 1900	1900
3M™ Screen Printing Ink Series 9700UV	9700

Subject	Bulletin No.
Instruction Bulletins	
Design of graphics	2.1
Design of cabinets for light boxes and channel letters	2.4
Screen printing with ink series 9700UV - line color - 4-color	3.4 3.13
Screen printing with ink series 1900 - line color - 4-color	3.11 3.12
Scoring and cutting	4.1
Using 3M application tapes; premasking and prespacing for films	4.3
Application, substrate selection, preparation and substrate-specific application techniques	5.1
Application, general procedures for interior and exterior dry applications	5.5
Application, flat rigid plastic signs, translucent pressure sensitive and changeable films	5.7
Application of translucent films to 3M™ Panaflex™ Awning And Sign Facing 945GPS	5.9
Storage, handling, maintenance, removal	6.5
Warranties	
Worldwide 3M™ MCS™ Warranty of products	

For Further Assistance

For help on specific questions relating to 3M™ Light Enhancement Film 3635-200, or any other 3M Commercial Graphics Division products, contact your local 3M Technical Service representative or

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