



Dual-Color Film Series 3635-200

a 3M Light Management Film

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 (patent pending).

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 have an effect 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 to expand your options even further.

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

Recommended Types of Graphics and End Uses

These end uses are recommended for this film and may be covered by the 3M™ MCS™ Warranty. Certain restrictions may apply; please read the entire bulletin for details.

- First or second surface application to acrylic, polycarbonate and high temperature copolyester sheet, channel letters and sign faces
- First surface application to selected 3M flexible substrates

Limitations of End Uses

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

Unsuitable End Uses for This Film

- Application to non-vertical surfaces
- Second surface application to flexible substrate
- Use on any surface where an obstruction of view would present a hazard
- Thermoforming

Compatible Products

Refer to the durability tables for 3M™ MCS™ Warranty for the proper combination of inks and films.

3M Inks

- 3M™ Screen Printing Ink Series 1900
- 3M™ Screen Printing UV Ink Series 9800

Films and Substrates

- 3M™ Scotchcal™ Translucent Graphic Film Series 3630
- 3M™ Diffuser Films 3635-30 and 3635-70
- 3M™ Light Enhancement Film 3635-100
- 3M™ Panaflex™ Awning and Sign Facing 945GPS
- 3M™ Panagraphics II Flexible Substrate
- 3M™ Panagraphics III™ Wide Width Flexible Substrate
- Flat acrylic, polycarbonate*, high temperature copolyester sheet

* 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.

Characteristics

All values given are typical for unprocessed film unless noted otherwise and are not for use in specifications. Processing film may change certain values. If you have questions about your construction, contact the Technical Service help line at 1-800-328-3908.

Physical Characteristics

Characteristic	Description
Color	<p>Film 3635-200: perforated film in your color choice with a matte surface</p> <p>Film 3635-210: white perforated film with a matte surface</p> <p>Film 3635-222: black perforated film with a matte surface</p>
Film thickness	<p>Without adhesive: 5.5 mil (0.13 mm)</p> <p>With adhesive: 6 to 6.5 mil (0.15 to 0.17 mm)</p>
Adhesive type	Pressure sensitive
Adhesive color	<p>Film 3635-210: white</p> <p>Film 3635-222: clear</p>
Liner	White kraft paper
Tensile strength	5 pounds/inch at 73°F (0.9 kg/cm at 23°C) <i>minimum</i>
Chemical resistance	<p>Resists mild alkalis, mild acids, and salt</p> <p>Excellent resistance to water (<i>this does not include immersion</i>)</p>

Application Characteristics

Characteristic	Description
Finished graphic application recommendation	<p>Surface type: Flat without rivets</p> <p>Substrate type: Acrylic, polycarbonate, high temperature copolyester sheet; Panaflex awning and sign facing</p> <p>Application temperature: 60°F (16°C) <i>minimum air and substrate</i></p>
Adhesion 24 hours after application	<p>Acrylic panels First surface of Panaflex sign facing: 3 pounds/inch (0.5 kg/cm).</p>
Applied shrinkage	0.015 inch (0.4 mm)
Temperature range after application	-65° to +225°F (-60° to +107°C)
Removal	Permanent

Warranty Information

See the 3M Graphics Center Warranty Brochure for the complete warranty and remedy details. The warranty given in the Product Bulletin that is current at the time you purchased the film is the one that 3M will honor.

3M™ MCS™ Warranty

for Finished Graphics

3M MCS Warranty Finished Graphic Constructions and Durability

U.S. Vertical Exposure (in years)						
Graphic Type	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
Film	None		1900	9800		
3635-200*	5	5	5	5	5	5
3635-210	5	5	5	5	5	5
3635-222	5	5	-	-	-	-

* Visual appearance of screen printing on custom colors is not warranted.

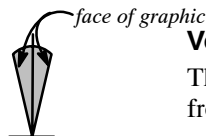
Formulas for Other U.S. Warranted Durabilities

Use the warranted durability for your construction if exposed in a U.S. vertical orientation and use the following formulas to determine other durabilities.

Exposure	Percentage of U.S. Vertical Exposure	Example
Desert Southwest Vertical	70% (0.7)	0.7 x 5 years = 3.5 years

Warranty Notes

Terms



Vertical Exposure

The face of the graphic is $\pm 10^\circ$ from vertical.

Desert southwest exposure. Graphics exposed to solar energy more than half of the time in Arizona, New Mexico and the desert areas of California, Nevada, Utah and Texas. A detailed map is available upon request.

Signs. Graphics applied outdoors and exposed to the elements.

Graphic Performance Life

The actual performance depends on the:

- Use of the correct 3M compatible products
- Ink formulation
- Adequate ink drying or UV curing
- Selection and preparation of the substrate
- Surface texture
- Application methods
- Angle and direction of sun exposure
- Environmental conditions
- Cleaning or maintenance methods

Application Outside the U.S.

Contact the 3M organization for that country.

Application to Glass

3M accepts no liability for glass breakage when using this film for window graphics. See Instruction Bulletin 5.1 for details.

Graphics Made with Components Not Sold or Recommended by 3M

The 3M MCS warranty does not cover finished graphics made with other manufacturers' inks, film, graphic protection and/or application tapes, except as noted in this Bulletin. The user is solely responsible for the graphic appearance, performance and durability of graphic constructions that include non-3M graphic products.

Warranty and Limited Remedies

The following is made in lieu of all other express or implied warranties, including any implied warranty of **merchantability** or fitness for a particular purpose or implied warranty arising out of a course of dealing, custom or usage of trade: all 3M products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this Product Bulletin. 3M will replace or refund the price of any 3M materials that do not meet this warranty within the specified time periods. These remedies are exclusive. **In no case shall 3M be liable for any direct, indirect, or consequential damages, including any labor or non-3M materials charges.**

See the Graphics Market Center Warranty Brochure, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

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.

Formulations and processing conditions can affect ink durability. Refer to the Product and Instruction Bulletins for your ink for limitations and proper usage.

Overlaps

While keeping the dual-color film oriented in the same direction, make an overlap by using two rows of holes.

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.

See page 4 for illustrated examples of how to use this film.

About the Color in the Construction Option Illustrations

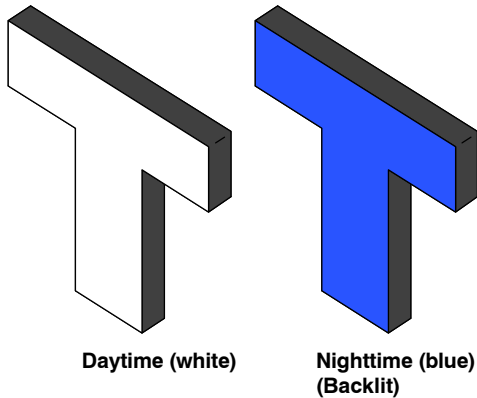
Some of the following illustrations have color in them. To see the color, which helps understand how 3M™ Dual-Color Film works, please view the bulletin by opening it on the Internet and then, if desired, printing to a color printed. See 3M Related Literature on page 6 for how to get to our Internet site.

Construction Option 1 with White Dual-Color Film

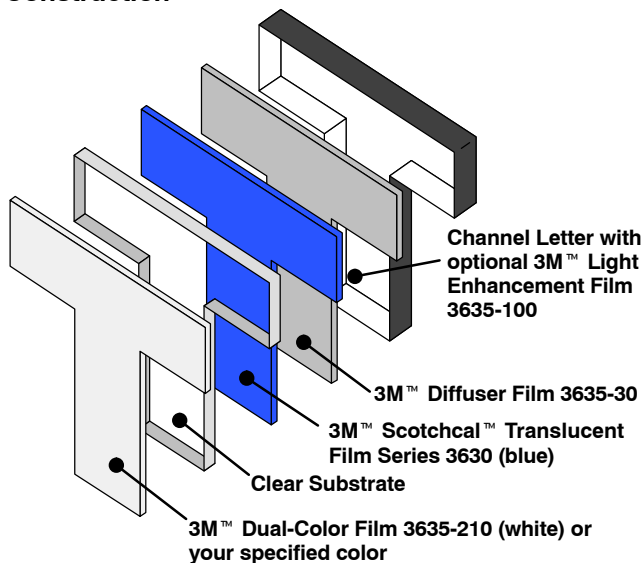
This construction typically provides the best daytime color density using white or your specified dual-color film.

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

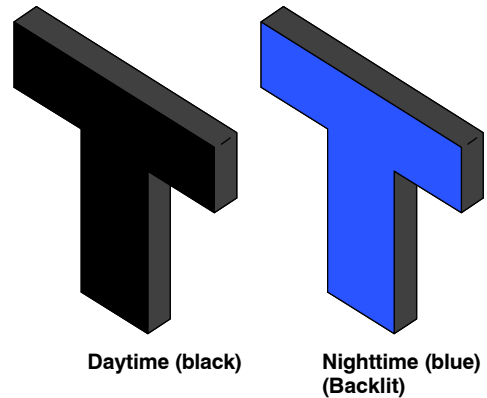


Construction Option 2 with Black Dual-Color Film

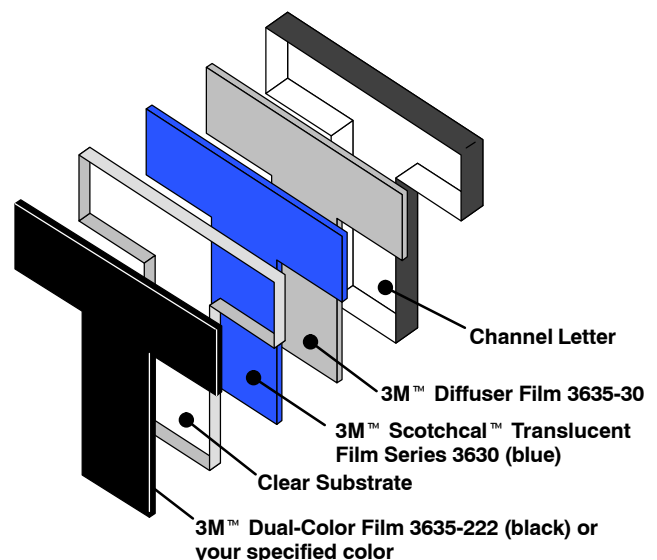
This is the same construction as Option 1 except it uses black or your specified dual-color film.

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



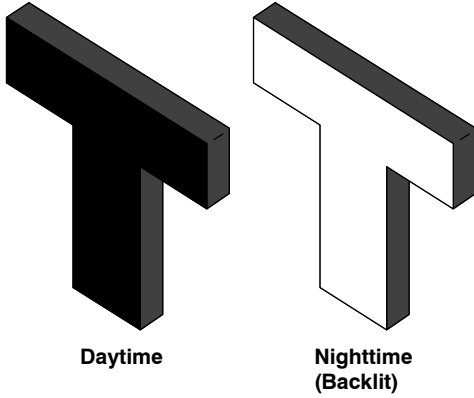
Construction



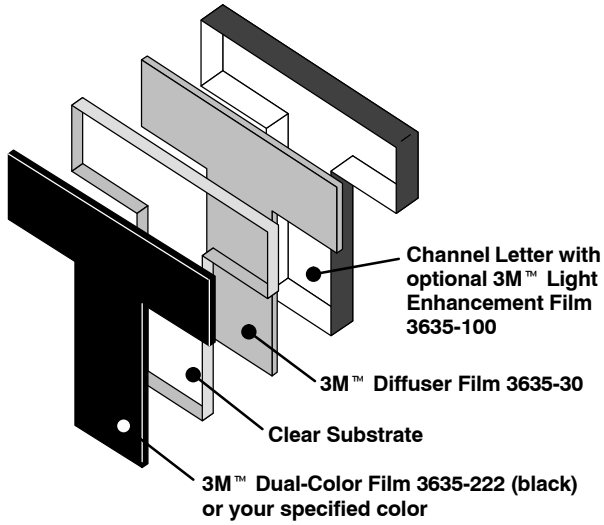
Construction Option 3 - No Color

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

Effect



Construction

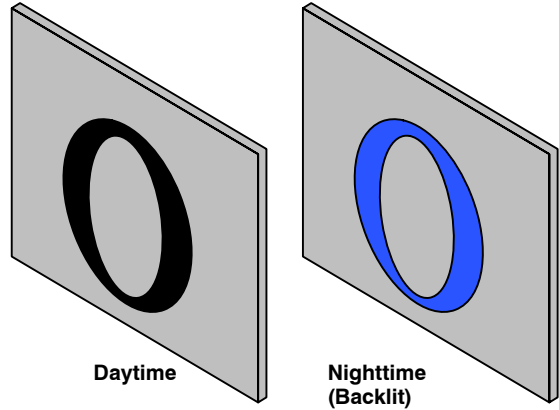


Construction Option 4 - Flexible Substrate

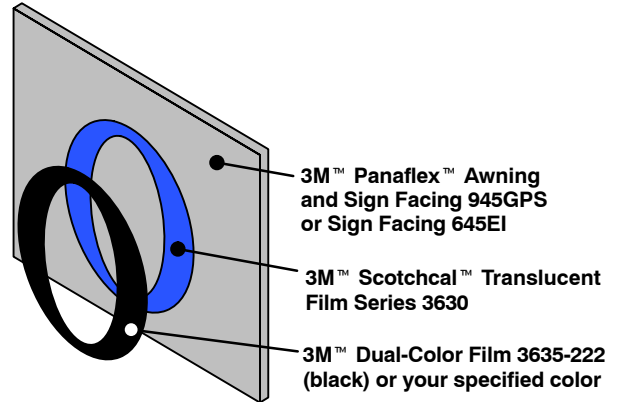
This option uses 3M™ Panaflex™ Awning and/or Sign Facing 945GPS as a substrate. Film can be applied only to the first surface of this substrate.

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, Storage, and Shipping

Activity	Recommendation
Shelf life	Total shelf life: 2 years Up to 2 years unprocessed, OR process within 1 year and apply within 1 year of processing
Storage conditions	<ul style="list-style-type: none"> • 80°F (27°C) maximum • Out of sunlight • Clean dry area • Original container • Bring the film to print room temperature before using
Shipping finished graphics	Flat, or rolled printed side out on 6 inch (15 cm) or larger core; this helps prevent the liner and premasking tape from wrinkling or popping off

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:

- By fax, call 1-800-364-0768 in the US and Canada or 1-650-556-8417 for all other locations.
- Electronically, visit us at www.3M.com/MSDS.
- 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.

Attention:

Authorized Graphics Manufacturers

Visit our password-protected website for exclusive product information. Certain restrictions apply.

1. Go to www.3mgraphics.com.
2. Select a country.
3. Click *Login* on upper left side of screen.
4. Click Register.
5. Enter authorization code: **CGD_SGN**.
6. Complete the information and submit. An e-mail will be sent when your authorization is completed.

3M Related Literature

Before starting any job, be sure you have the most current Product and Instruction Bulletins.

The information in 3M Product and Instruction Bulletins is subject to change. Current Bulletins, as well as a list of all Bulletins updated within the last three months, are available at www.3mgraphics.com or through our Fax-on-Demand system. Any warranty, if offered, is based on information in the appropriate Bulletin(s) that was current at the time you purchased the 3M products. The following Product and/or Instruction Bulletins provide the information and processes you need to properly make the graphics described in this Bulletin.

Fax-on-Demand phone numbers:
United States or Canada: 1-800-364-0768
International: 1-651-732-6506

Subject	Bulletin No.	FOD No.
Product Bulletins		
3M™ Panaflex™ Awning and Sign Facing 945GPS	945	4006
3M™ Panagraphics™ II Intermediate Flexible Substrate	P2	4010
3M™ Panagraphics™ III Wide Width Flexible Substrate	P3	4012
3M™ Scotchcal™ Translucent Graphic Film Series 3630	3630	3009
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	3010
3M™ Light Enhancement Film 3635-100	3635-100	3025
3M™ Screen Printing Ink Series 1900	1900	2501
3M™ Screen Printing UV Ink Series 9800	9800	2513
Instruction Bulletins		
Design of graphics	2.1	5501
Design of cabinets for light boxes and channel letters	2.4	5504
Screen printing with UV ink series 9800 - line color - 4-color	3.20 3.21	6020 6021
Screen printing with ink series 1900 - line color - 4-color	3.11 3.12	6011 6012
Scoring and cutting	4.1	6501
Using 3M application tapes; premasking and prespacing for films	4.3	6503
Application, substrate selection, preparation and substrate-specific application techniques	5.1	7001
Application, general procedures for interior and exterior dry applications	5.5	7005
Application, flat rigid plastic signs, translucent pressure sensitive and changeable films	5.7	7007

Subject	Bulletin No.	FOD No.
Application of translucent films to 3M™ Panaflex™ Awning And Sign Facing 945GPS	5.9	7009
Storage, handling, maintenance, removal	6.5	8505
Warranties		
3M Graphics Market Center Warranty Brochure		9503

Scotchprint is a register trademark of 3M.

3M, MCS, Panaflex and Scotchcal are trademarks of 3M.

Bulletin Change Summary

All references to PETG changed to high temperature copolyester sheet.

This was added to page 3 regarding overlaps: While keeping the dual-color film oriented in the same direction, make an overlap by using two rows of holes.

Warranty table (page 2) incorrectly limited the warranted durability to Indoor: it is for indoor and outdoor exposure. Other formatting and organization changes were also made.



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