



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 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 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 types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty. Please read the entire bulletin for details.

- First or second surface application to acrylic, polycarbonate and PETG channel letters and sign faces
- First surface application to 3M™ Panaflex™ Awning and Sign Facing 945GPS

Limitations of End Uses

We do not normally warrant other 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 Panaflex Awning and Sign Facing 945GPS
- Use on any surface where an obstruction of view would present a hazard
- Thermoforming

Compatible Products for 3M™ MCS™ Warranted Graphics

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
- 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.

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 helpline 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, PETG (glycol-modified polyethylene terephthalate); Panaflex awning and sign facing</p> <p>Application temperature: 60°F (16°C) <i>minimum</i> <i>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)

Characteristic	Description
Temperature range after application	-65° to +225°F (-60° to +107°C)
Removal	Permanent

Warranty Information

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

3M™ MCS™ Warranted Graphic Constructions

The warranty given in the Product Bulletin that is current at the time you purchased the film is the one that 3M will honor.

The warranties in this table are for graphics exposed in the U.S. in a vertical orientation. See **Warranty Notes** for how to determine other warranty combinations.

Warranted Durability		
Film	Ink	U.S. Vertical Exposure (in years)
		Indoor Signs
3635-200 3635-210 3635-222	Unprinted	5
3635-200* 3635-210	1900 <i>line and 4-color</i>	
3635-200* 3635-210	9800 <i>line and 4-color</i>	

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

See Warranty Notes on the next page.

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

Warranty Notes

Graphic Exposure Definition



face of graphic

Vertical Exposure

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

How to Determine U.S. Desert Southwest Warranties

All other outdoor warranties are based on a percentage of the vertical U.S. warranties given in the Warranted Durability Table. The calculation for determining these warranties is given below. Possible constructions are indicated in the warranty table. The examples are based on a vertical U.S. warranty of 5 years.

- **Warranty for U.S. Desert Southwest Exposure**
For 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.
 - **Vertical U.S. Desert Southwest**
70% (0.7) of the U.S. vertical warranty for your construction
Example: $0.7 \times 5 \text{ years} = 3.5 \text{ years}$

Warranty and Limited Remedy

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: 3M graphics materials 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. See the worldwide 3M™ MCS™ Warranty bulletin, which gives the terms and limitations of the warranty.

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.

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.

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.

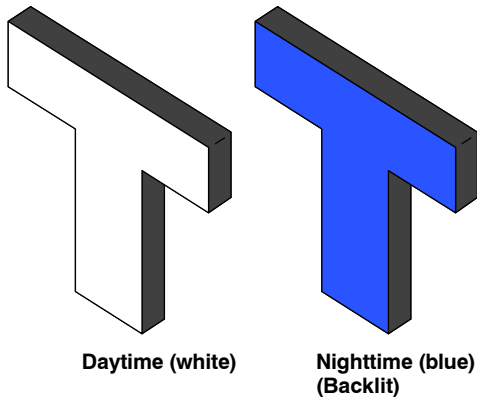
See 3M Related Literature on page 6 for how to get to our Internet site.

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

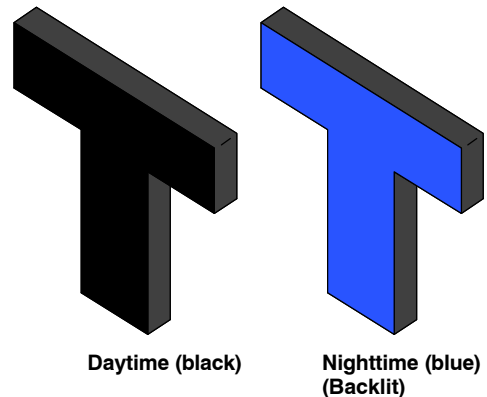


Construction Option 2 with Black Dual-Color Film

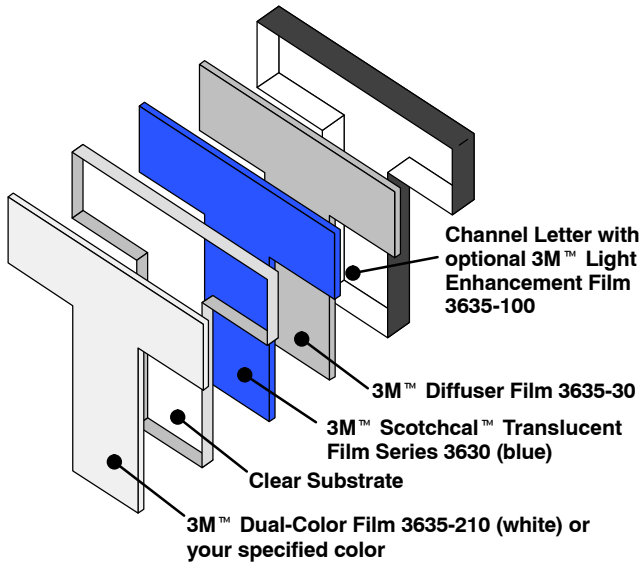
This is the same construction as Option 1 except it uses black or your specified dual-color film.

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.

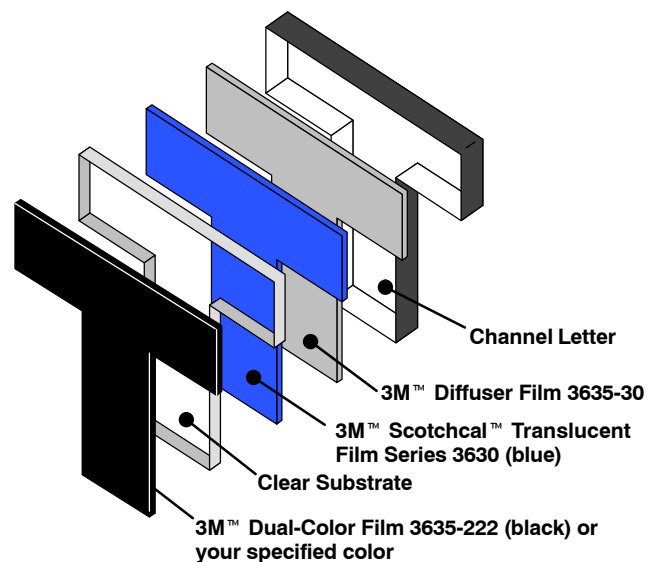
Effect



Construction



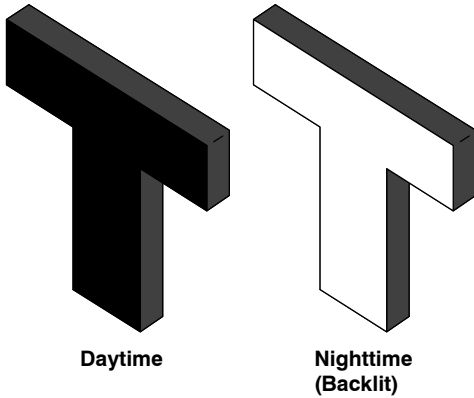
Construction



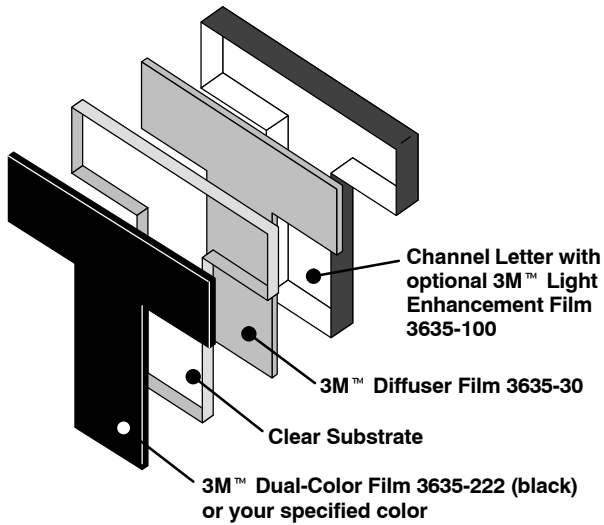
Construction Option 3 - No Color

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

Effect



Construction

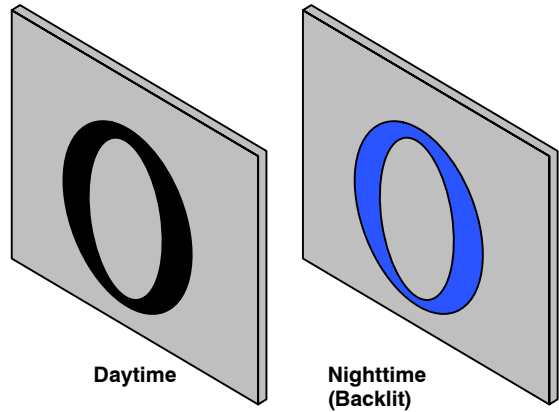


Construction Option 4 - Flexible Substrate

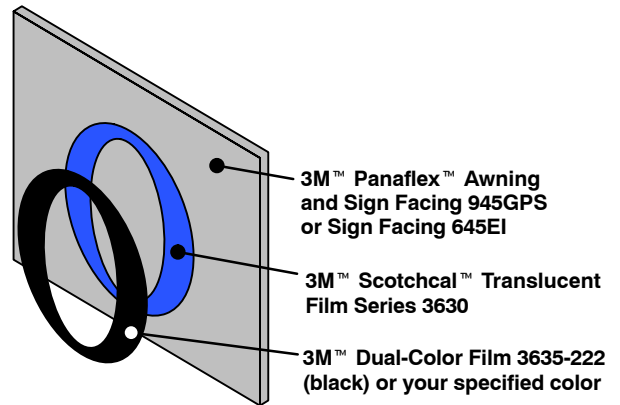
This option uses 3M™ Panaflex™ Awning and/or Sign Facing 945GPS as a substrate. Film can be applied only to the first surface of this substrate.

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.

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

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
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
<p>When handling any chemical products, read the manufacturers' container labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information.</p> <p>To obtain MSDS sheets for 3M products:</p> <ul style="list-style-type: none"> • 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 http://www.3M.com/MSDS. • By mail, or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501. <p>When using any equipment, always follow the manufacturers' instructions for safe operation.</p>

Attention:

Authorized Graphics Manufacturers

Visit our password-protected website for exclusive product information, profiles and services. Certain restrictions apply.

1. Go to www.scotchprint.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 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.scotchprint.com or through our Fax-on-Demand system. Any warranty, if offered, is based on information in the bulletin that was current at the time you purchased the 3M products. The following 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™ 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
Application of translucent films to 3M™ Panaflex™ Awning And Sign Facing 945GPS	5.9	7009
Storage, handling, maintenance, removal	6.5	8505

*Scotchprint is a register trademark of 3M.
3M, MCS, Panaflex and Scotchcal are trademarks of 3M.*

Bulletin Change Summary

Screen printing ink series 9700UV has been replaced by UV ink series 9800 with the same warranty.



Graphics Market Center

3M Center, Building 220-12E-04
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St. Paul, MN 55144-3220 USA
General Info. 1-800-374-6772
Technical Info. 1-800-328-3908
Fax 1-651-736-4233

Fax-on-Demand 1-800-364-0768 US/Canada or 1-651-732-6506 International
Fax-on-Demand document: 3032
www.3M.com/graphics

3M Canada

P.O. Box 5757
London, Ontario
Canada N6A 4T1
1-800-265-1840
Fax 519-452-6245

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