Product Description

- For Screen Printing and Solvent Inkjet Printing

Product Features

- Create the special effect of a color by day (non-lighted) and a different color by night (backlit)
- Dual-color perforation pattern lets background color display when backlit*
- Available in black, white, or a customer-specified color for a variety of lighting effects
- Exceptional color clarity and backlit brightness both day and night
- Pressure-sensitive adhesive designed specifically for light management applications
- Expected Performance Life of 7 years (unwarranted period for unprinted film with no graphic protection, applied to a flat, vertical, outdoor surface in a non-abusive environment)

*From a typical viewing distance for large format graphics, viewers will see little or no perforation pattern. However, the colors and construction used will have an effect on how visible the perforation pattern is.

Recommended Types of Graphics and End Uses

- Backlit channel letters, signs, and displays
- First or second surface application to acrylic, polycarbonate and hight temperature co-polyester sheet, channel letters and sign faces
- First surface application to selected 3M Flexible Substrates

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty. Refer to the base film or flexible substrate's 3M Product Bulletin for details on specific constructions and any 3M Warranty that may apply when using this product.

Recommended Compatible Products

Screen Printing Ink

- [3M™ Screen Printing Ink Series 1900 (Solvent)](#), line color and four color
- [3M™ Screen Printing Ink Series 1900 (Solvent)](#), line color and four color
- [3M™ Screen Printing UV Ink Series 9800](#), line color and four color

Films and Substrates

- [3M™ Scotchcal™ Translucent Film Series 3630](#)
- [3M™ Scotchcal™ Translucent Film Series 3730](#)
- [3M™ Diffuser Film 3635-30](#)
- [3M™ Diffuser Film 3635-70](#)
- [3M™ Envision™ Diffuser Film 3735-50](#)
- [3M™ Envision™ Diffuser Film 3735-60](#)
- [3M™ Light Enhancement Film 3635-100](#)
- [3M™ Panagraphics™ III Wide-Width Flexible Substrate](#)
- [3M™ Envision™ Flexible Substrate FS-1](#)
- [3M™ Blockout Film 3635-20B](#)
- [3M™ Blockout Film 3635-22B](#)
- [3M™ Day/Night Film 3635-91](#)

Graphic Protection

- [3M™ Scotchcal™ Luster Overlaminate 3619](#)
- [3M™ Scotchcal™ Matte Overlaminate 3620](#)
- [3M™ Scotchcal™ Gloss Overlaminate 3658G](#)
- [3M™ Scotchcal™ Matte Overlaminate 3660M](#)

Application Tapes

See [3M Instruction Bulletin AT-1](#) to determine what application tape is recommended for your film or finished graphic.

Other Products

- Flat, acrylic, polycarbonate*, high temperature co-polyester sheet

  * Film series 3635-200 typically adheres to solar-grade polycarbonate substrate. However, some lots of this substrate may inhibit the adhesion of these films. Contact Technical Service if you are having difficulty with this combination. See [3M Instruction Bulletin 5.1](#) for additional information.
  Polycarbonate substrates may require drying by baking before use. Refer to the manufacturers' instructions.

Certificate of 3M™ MCS™ Warranty

Graphic manufacturers who produce digitally printed graphics made with all 3M Graphics Products, including 3M Ink purchased through a qualified 3M Distributor or 3M Printing Partner, may register to be recognized with a Certificate of 3M™ MCS™ Warranty. Only graphic manufacturers having a current Certificate of 3M™ MCS™ Warranty are eligible to extend this warranty to their customers.

NOTE: For non-digitally printed Finished Graphics, check your eligibility for the 3M™ MCS™ Warranty by viewing the Warranty Period found within the Product Bulletin or using the warranty selector at [www.3mgraphics.com/warranties](#).

Characteristics

These are typical values for unprocessed product. Processing may change the values.
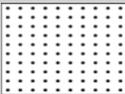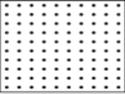
Physical Characteristics

Characteristic	Value
Thickness	Without adhesive: 4.5 mil (0.11 mm) With adhesive: 5.5 mil (0.14 mm)
Adhesive	Pressure-sensitive, permanent
Adhesive Color	3635-200; 3635-210: White 3635-222: Clear
Liner	3635-200; 3635-222: White Perforated Kraft Paper 3635-210: White Non-Perforated Kraft Paper
Tensile Strength	5 pounds/inch at 73 °F (0.9 kg/cm at 23 °C) minimum
Chemical Resistance	- Resists mild alkalis, mild acids, and salt - Excellent resistance to water (does not include immersion)

Application Characteristics

Characteristic	Value
Finished Graphic Application Recommendation	Surface type: Flat, without rivets Surface type: Acrylic, polycarbonate, high temperature co-polyester sheet; Panagraphics III flexible substrate or FS-1 flexible substrate Application temperature: 60 °F (16 °C) minimum air, substrate

Characteristic	Value
Adhesion, Typical *24 hours after application*	Acrylic panels First surface of Panagraphics III flexible substrate or FS-1 flexible substrate sign facing: 3 pounds/inch (0.5 kg/cm)
Applied Film Shrinkage	0.015 inch (0.4 mm)
Finished Graphic Exposure Temperature	-65 to +225 °F (-54 to +107 °C) (not for extended periods of time at the extremes)
Graphic Removal	Permanent

Film Color

Example	Film
	3635-200: Perforated film and liner in your color choice with a matte surface
	3635-210: White perforated film, non-perforated liner, with a matte surface, can be screen printed or ink jet printed with Solvent inks. See Warranty matrix for warranted printer/Ink combinations
	3635-222: Black perforated film and liner with a matte surface
	3635-157: Sultan Blue: Perforated film and liner

Warranty Information

Warranty Coverage Overview

The warranty coverage for eligible graphics is based on the user both reading and following all applicable and current 3M Graphics Product and Instruction Bulletins. The warranty period for eligible graphics is as stated in the 3M Graphics Warranties Matrices at the time that the film was purchased. Information found at 3MGraphics.com/warranties includes:

- 3M Graphics Warranties Bulletin
  - This bulletin contains information on limitations and exceptions, and warranty period reductions for 3M Graphics Warranties. The warranty period may be reduced and stipulations may apply for certain constructions, applications, and graphic exposures as covered in this Bulletin.
- 3M Graphics Warranties Selector
  - Use this selector to search for your vertical warranty period by product type, ink type, film name, and/or ink/printer platform.
- U.S. Desert Southwest Region Map
  - Use this map of hot, arid desert areas to determine if you are subject to reduced warranted durabilities.

The warranties set forth in this Bulletin are made in lieu of all other express or implied warranties, including any implied warranty of merchantability, fitness for a particular purpose, or arising out of a course of dealing, custom, or usage of trade.

3M Basic Product Warranty

3M Graphics Products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in its applicable 3M Graphics Product Bulletin and as further set forth in the 3M Graphics Warranties Bulletin.

Limited Remedy

The limited remedy applicable to each warranty is addressed in the 3M Graphics Warranties Bulletin found at 3MGraphics.com/warranties.

Limitation of Liability

Except to the extent prohibited by law, 3M SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO PURCHASER OR USER FOR ANY DIRECT (EXCEPT FOR THE LIMITED REMEDY PROVIDED HEREIN), INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LABOR, NON-3M MATERIAL CHARGES, LOSS OF PROFITS, REVENUE, BUSINESS, OPPORTUNITY, OR GOODWILL) RESULTING FROM OR IN ANY WAY RELATED TO 3M'S GRAPHICS PRODUCTS, SERVICES, OR THIS BULLETIN. This limitation of liability applies regardless of the legal or equitable theory under which such losses or damages are sought.

Warranty Period Matrices - Inkjet Printing - Vertical Exposure

See the 3M Graphics Warranties Matrices at 3MGraphics.com/warranties, for vertical warranty period information specific to your film.

Warranty Period Matrices - Screen Printing - Vertical Exposure

Table A. Warranty Period for Finished Graphics in a Standard U.S. Vertical Exposure.

Film*	Graphic Protection	SOLVENT Ink Series 1900		UV Ink Series 9800	
		OUT	IN	OUT	IN
3635-200 3635-210	1920DR	5	5	—	—
	1930	5	5	—	—
	9730UV	5	5	—	—
	9740i	5	5	5	5
	9800CL	—	—	5	5
3635-200 3635-210 3635-222	None	—	—	—	—

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

Warranty Period Matrices - No Printing- Vertical Exposure

Table B. Warranty Period for Finished Graphics in a Standard U.S. Vertical Exposure with No Printing.

Film*	Graphic Protection	No Printing	
		OUT	IN
3635-200 3635-210	1920DR	—	—
	1930	—	—
	9730UV	—	—
	9740i	—	—
	9800CL	—	—
3635-200 3635-210 3635-222	None	5	5

Reduced Warranty Period for Other Graphic Exposures

For other graphic exposures, determine the applicable reduced warranty period by multiplying the standard warranty period (in years) for your graphic construction as shown in the applicable warranty period tables by the percentage shown for the intended graphic exposure. See "Exposure Types" on page 3 of the 3M Graphics Warranties Bulletin for graphic exposure definitions.Warranty Period for Finished Graphics in a Standard U.S. Vertical Exposure.

If the Graphic Exposure is"	Use this Percentage of Vertical Exposure, Warranty Period	Calculation Examples
Desert Southwest Vertical	70%	0.7x 7 years = 4.9 years
U.S. Horizontal/Non-vertical	0%	0 x 4 years = 0 years

Additional Limitations

See the 3M Graphics Warranties Bulletin at 3MGraphics.com/warranties, for terms, additional limitations of your warranty, if any, information on reduced warranties for different exposures, and limitations of liability.

Factors that Affect Graphic Performance Life

The actual performance life of a graphic is affected by:
- the correct combinations of 3M-recommended graphics products.
- the ink formulation.
- complete ink drying or curing.
- selection, condition and preparation of the substrate.
- surface texture.
- application methods.
- angle and direction of sun exposure.
- environmental conditions.
- cleaning or maintenance methods.

Graphics Manufacturing

⚠ **CAUTION**

Before using any equipment, always read the manufacturer's instructions for safe operation.

Screen Printing

This film series has perforations. The screen printer must periodically insert scrap paper to clear the screen of buildup.

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

Inkjet Printing

Always read and follow the ink manufacturer's written instructions on usage.

Total Ink Coverage

The maximum recommended total ink coverage for this film is:
- **270%** when printed with all approved 3M solvent inkjet inks.

Do not exceed the recommended total ink coverage for the ink series used on this product. Having too high a total physical ink amount on the product results in media characteristic changes, incomplete drying, overlaminate lifting, and/or poor graphic performance.

Completely Dry Graphics

ⓘ **IMPORTANT NOTE**

Incomplete drying or curing can result in graphic failure including curling, increased shrinkage and adhesion failure, which are not covered under any 3M Graphic Warranty.

See the ink's 3M Product and Instruction Bulletin for more details.

Cutting

See [3M Instruction Bulletin 4.1](#) for Sheeting, Scoring and Film Cutting details.

ⓘ **IMPORTANT NOTE**

For best results use a clear substrate and a diffuser with Dual Color film. If the Dual color film is applied first surface apply the diffuser film second surface. Application of Dual Color film directly to a white substrate may tend to wash out the face color of the Dual Color film.

Construction Options

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:
- Screen print an image on film 3635-210. The image is visible during the day but with the creative use of blockout 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.

Light Enhancement Film 3635-100

Light enhancement film can be used to line channel letters for increased sign luminance. Refer to the "Application and Installation" on page 9 for further information.

Construction Option 1: White Dual-Color Film with Colored Translucent Film

This construction typically provides the best daytime color density using white or your specified dual-color film. See Figure 1.

ⓘ **IMPORTANT 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 or 3730.
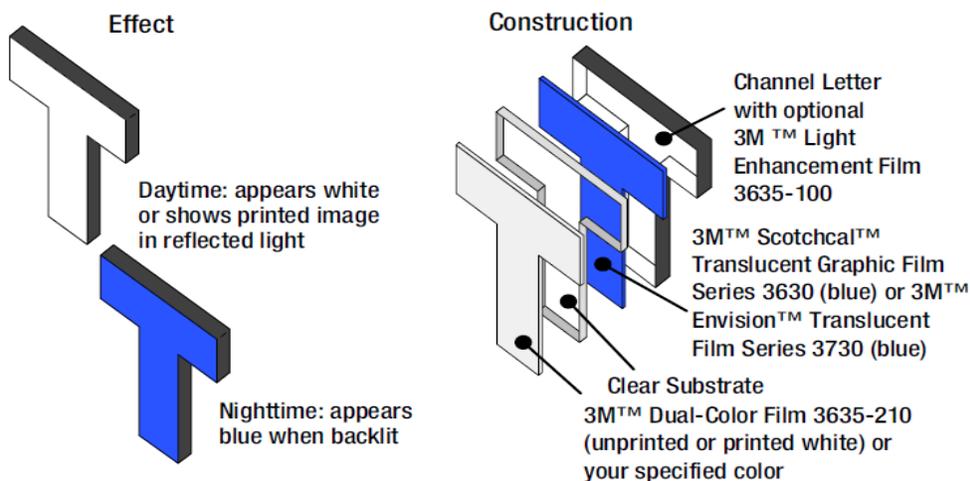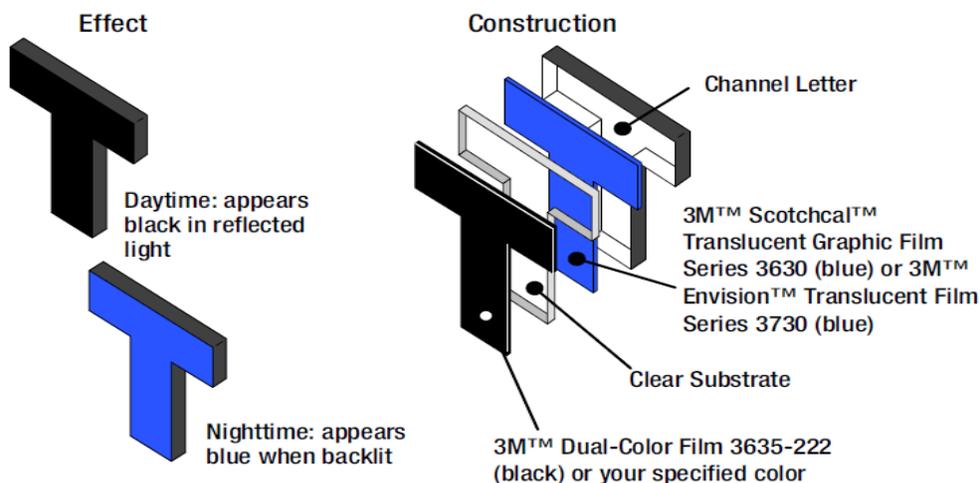

Figure 1. Construction Option 1, White Dual-Color Film (unprinted or printed)

Construction Option 2: Black Dual-Color Film with Colored Translucent Film

This is the same construction as Option 1 except it uses black or your specified dual-color film. See Figure 2.

ⓘ **IMPORTANT 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 or 3730.

Figure 2. Construction Option 2, Black Dual-Color Film

Construction Option 3: Black Dual-Color with No Color

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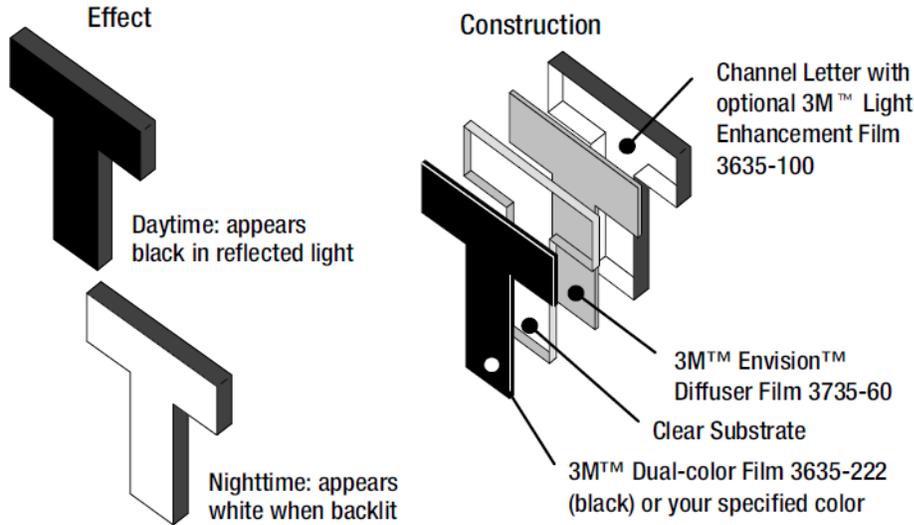

Figure 3. Construction Option 4:

Dual-Color Film on Flexible Substrate Black Dual-Color with No Color

This option uses 3M™ Panagraphics™ III Wide Width Flexible Substrate or 3M™ Envision™ Flexible Substrate FS-1. Film can be applied only to the first surface of this substrate.

ⓘ **IMPORTANT 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 or 3730.
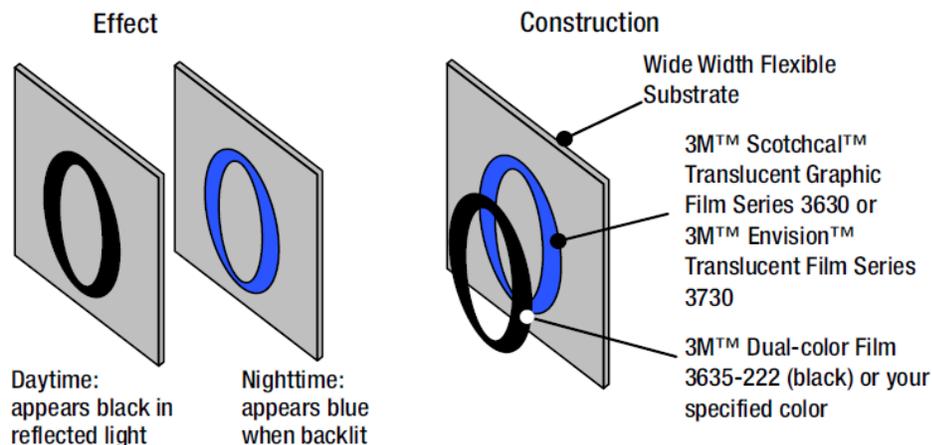

Figure 4. Dual-Color Film on Flexible Substrate

See 3M Instruction Bulletin 4.26 for detailed information.

Maximum Three Layers of Film

> ⓘ **IMPORTANT NOTE**
>
> A third layer of film on any one surface is warranted only if the top layer is an approved overlaminate and no more than two layers of any film are even with the edges of the substrate.
>
> NEVER place an overlap over an existing overlap, which creates four layers.

Graphic Protection

Graphic protection may improve the appearance, performance and durability of the graphic. Click on the graphic protection options listed in Product Bulletin or see the 3M Graphics Market Product Catalog, for more information.

> ⓘ **IMPORTANT NOTE**
>
> During installation, scratches may occur on films without graphic protection.

Application Tapes

There are two types of application tapes. See 3M Instruction Bulletin AT-1 to determine what application tape is recommended for your film or finished graphic.

Premasking Tape

Increases stiffness during application while preventing stretching and damage. Use when little or no liner is exposed. See 3M Instruction Bulletin 4.3 for complete details.

Prespacing Tape

Holds cut and weeded letters or graphics in place during application and after removing the film liner, while preventing stretching and damage. Use when large amounts of liner are exposed. See 3M Instruction Bulletin 4.3 for complete details.

Application and Installation

In addition to other 3M Bulletins specified in this document, the following Bulletins provide details that you may need to successfully apply a graphic.

- 3M Instruction Bulletin 2.1 Design of Graphics
- 3M Instruction Bulletin 2.4 Design of Cabinets for Light Boxes and Channel Letters
- 3M Instruction Bulletin 5.5 Application, General Procedures for Interior and Exterior Dry Application
  - For roll application, the dry method is acceptable.
- 3M Instruction Bulletin 6.5 Storage, Handling, Maintenance, and Removal of Films and Sheetings

Maintenance and Cleaning

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline). See 3M Instruction Bulletin 6.1 for details.

Removal

This film uses a permanent adhesive. This film is not easily or cleanly removable. See 3M Instruction Bulletin 6.5 for details.

Shelf Life, Storage and Shipping

Shelf Life

The shelf life is never more than 3 years from the date of manufacture on the original box.
If you process the film, the shelf life is changed to 1 year from the processing date, but not later than the 3 year maximum from the manufacturing date.

Storage Conditions

- 40° to 100 °F (4° to 38 °C)
- Out of sunlight
- Clean, dry area
- Original container
- Bring the film to room temperature before use

Shipping Finished Graphics

Flat, or rolled printed side out on 6 inch (15 cm) or larger core. This helps prevent the application tape, if used, from popping off.

Health and Safety

⚠ CAUTION

When handling any chemical products, read the manufacturer's container labels and the Safety Data Sheets (SDS) for important health, safety and environmental information. To obtain SDS sheets for 3M products go to 3M.com/SDS, or 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 manufacturer's instructions for safe operation.

Bulletin Change Summary

For the most current 3M Technical Information available to successfully use this product, please view this Bulletin electronically and click on the blue underlined links to view the relevant documents. Please read the entire Bulletin thoroughly.

Release I MAR-2017:

- Created Film Color table, See "Film Color" on page 3.
- Updated "Warranty Period Matrices - Screen Printing - Vertical Exposure" on page 4.
- Updated "Reduced Warranty Period for Other Graphic Exposures" on page 5.

Release H DEC-2016:

- Added Construction Options. See "For best results use a clear substrate and a diffuser with Dual Color film. If the Dual color film is applied first surface apply the diffuser film second surface. Application of Dual Color film directly to a white substrate may tend to wash out the face color of the Dual Color film." on page 6.

Release G MAY-2016:

- Updated Product Bulletin to new format. Please read the entire Bulletin thoroughly.

3M Commercial Solutions
3M Center
Building 220-12E-04
St. Paul, MN 55144-1000
Phone 1-800-328-3908
Web 3M.com/Graphics