



Blockout Films 3635-20b, 3635-22b Day/Night Films 3635-91, 3635-0171

For product information on 3M™ Diffuser Films 3635-30 and 3635-70, refer to Product Bulletin Diffuser

1. Product Description

A. Product Features

This bulletin covers two distinct categories of light management films: blockout and day/night films.

- Control light transmission or achieve special effects for backlit signs
- 2 and 4-mil vinyl film
- Pressure-sensitive adhesive
- Adheres to rigid or flexible substrates

Also see these other 3M light management films: 3M™ Envision™ Diffuser Films 3735-50 and 3735-70, 3M™ Diffuser Films 3635-30 and 3635-70, 3M™ Light Enhancement Film 3635-100 and 3M™ Dual-Color Film 3635-200.

B. Recommended Types of Graphics and End Uses

Always refer to the base film or flexible substrate's [Product Bulletin and Instruction Bulletin 4.26](#) for additional construction or product usage details. In general, the warranty for a first surface application on flexible substrates is the same as the translucent film.

Product	Recommended Uses	Limitations of End Uses
Blockout Film 3635-20b and 3635-22b	<ul style="list-style-type: none"> • Internally-illuminated signs • Blocks out light • First and second surface applications • May be printed with 3M™ Screen Printing Ink Series 1900 	<ul style="list-style-type: none"> • Second surface applications with 3M™ Panaflex™ Awning and Sign Facing 945GPS
Day/Night Film 3635-91 and 3635-0171	<ul style="list-style-type: none"> • Internally-illuminated signs • Produce the appearance of dark graphics during the day • Produce the appearance of white or colored graphics at night • First and second surface applications 	<ul style="list-style-type: none"> • Cannot be printed

C. Performance Overview

3M tests the performance of both individual products and finished graphic constructions. This table shows the best performance expected from this product without a Warranty Period and with a Warranty Period.

For detailed graphic construction and application options along with specific Warranty Periods, please see the Warranty Information, Section 5.

Expected Performance Life. This is the estimated period of time the product should perform satisfactorily.	
Unprinted film with no graphic protection, applied to a flat vertical outdoor surface.	7 years Unwarranted Period
3M™ MCS™ Warranty. This is the maximum period of time 3M will warrant the finished graphic performance.	
Printed film with the best 3M ink and graphic protection option, applied to a flat, vertical outdoor surface.	9 years Warranty Period

2. Compatible Products for Blockout Film 3635-20b and 3635-22b ONLY

Note: Only films 3635-20b and 3635-22b can be printed or have an overlamine applied directly to them.

- 3M™ Screen Printing Ink Series 1900 (opaque inks only)
- 3M™ Scotchcal™ Gloss Overlamine 3640GPS
- 3M™ Scotchcal™ Matte Overlamine 3642GPS

3. Physical and Application Characteristics

These are typical values for unprocessed product; processing may change the values. Contact your 3M representative for a custom specification.

A. Physical Characteristics

Characteristic	Value	
	Blockout Film 3635-20b and 3635-22b	Day/Night Film 3635-91 and 3635-0171
Film description	3635-20b: Uniformly white on face side with a matte surface 3635-22b: Uniformly black on face side with a matte surface	3635-91: Greenish gray color 3635-0171: Charcoal gray color
Light transmission	Less than 1%, typical	3635-91: 47%, typical 3635-0171: 8.3%, typical
Thickness	Without adhesive: 4 mil (0.10 mm) With adhesive: 5 mil (0.13 mm)	Without adhesive: 2 mil (0.05mm) With adhesive: 3-4 mil (0.08 - 0.10 mm)
Adhesive type	Pressure sensitive	
Adhesive color	Clear	
Liner	White kraft paper	
Tensile strength	5 pounds/inch at 73°F (0.9 kg/cm at 23°C)	
Chemical resistance	Resists mild alkalis, mild acids, and salt; excellent resistance to water (<i>but not immersion</i>)	

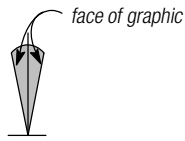
B. Application Characteristics

Characteristic	Value
Finished graphic application recommendation	Surface type: Flat Substrate type: 3M™ Panaflex™ Awning and Sign Facing 945GPS, 3M™ Panagraphics™ III Flexible Substrate, acrylic, polycarbonate, PETG (glycol-modified polyethylene terephthalate) Application method: Wet or dry Application temperature (air and substrate): 60°F (16°C) <i>minimum</i>
Adhesion	Acrylic panels; first surface of sign facing 945GPS or Panagraphics substrate: 3 pounds/inch (0.5 kg/cm)
Temperature range after application	-20° to +175°F (-29° to +80°C)
Applied shrinkage	0.015 inch (0.4 mm)
Graphic removal	Permanent

4. Definitions

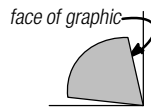
A. Exposure

U.S. Vertical Exposure



The face of the graphic is +/- 10° from vertical.

U.S. Non-vertical Exposure



The face of the graphic is greater than 10° from vertical and greater than 5° from horizontal. This includes non-vertical surfaces of vehicle wraps or fleet graphics.

U.S. Desert Southwest Exposure

Any outdoor graphic exposed to solar energy more than half of the daylight hours in Arizona, New Mexico and the desert areas of California, Nevada, Utah and Texas is subject to reduced warranties. [Click here](#) for a detailed map.

B. Graphic Construction

The products used to make a graphic, which may include film and/or flexible substrate, graphic protection, ink, printer and application tape.

C. Graphic Protection

Overlaminates films or clear coats used to protect the graphic and/or change gloss.

D. Graphic Types

Indoor Signs

Stationary graphics applied indoors and *not* exposed to the elements.

Outdoor Signs

Stationary graphics applied outdoors and exposed to the elements.

First Surface

Film applied to a substrate so the viewer sees the film before the substrate.

Second Surface

Film applied to a substrate so the viewer sees through the substrate to the film.

5. Warranty Information

A. Warranty Coverage Overview

The warranty coverage for each graphic is based on the user(s) both reading and following all applicable and current 3M Product and Instruction Bulletins. 3M will honor the Warranty Period stated in the base film's Product Bulletin that is current when the film was purchased. The Warranty Period may be reduced and stipulations may apply for certain constructions and applications, as covered in this Bulletin.

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.

B. 3M Basic Product Warranty

This product is 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 and as further set forth in the [3M Commercial Graphics Warranty Brochure](#).

C. Limited Remedy

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.

D. Limitation of Liability

Except where prohibited by law, 3M SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO PURCHASER OR USER FOR ANY DIRECT (EXCEPT FOR THE LIMITED REMEDY PROVIDED ABOVE), 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 SELLER'S 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 including breach of contract, breach of warranty, negligence, strict liability, or any other legal or equitable theory.

E. Additional Limitations

See the [3M Commercial Graphics Warranty Brochure](#) at 3Mgraphics.com, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

F. 3M™ MCS™ Warranty

Subject to Stipulations set forth in Section G., below

Finished graphics constructed with the materials specified and the exposure specified in the Warranty Period tables, Section F.(1), is eligible for the 3M™ MCS™ Warranty. For warranties for other exposures, see Section G.(1).

(1) Warranty Period Tables
for Finished Graphics
in Standard U.S. Exposure

				Warranty Period in Years			
Application	Film	Ink	Graphic Protection	U.S. Vertical Sign	U.S. Non-Vertical Sign		
First surface application on: 3M flexible substrates* or rigid substrates (acrylic, polycarbonate, PETG)	3635-20b	None	None	5	0		
			3640GPS 3642GPS	9	6		
		Ink series 1900	1920DR	4	0		
			3640GPS 3642GPS	5	4		
			3635-22b	None	None	5	0
					3640GPS 3642GPS	9	6
	Ink series 1900	1920DR	3	0			
		3640GPS 3642GPS	9	6			
	3635-91 3635-0171	None	None	4	0		
			3640GPS 3642GPS	7	4		

* The warranty for a first surface application on a 3M flexible substrate is the same as the translucent film.

G. General Warranty Stipulations for 3M™ MCS™ Warranty

These stipulations apply to graphics covered by the 3M™ MCS™ Warranty. Specific provisions of these stipulations are found in the [3M Commercial Graphics Warranty Brochure](#) at 3Mgraphics.com.

(1) Reduced Warranty Period for Other Graphic Exposures

For graphics oriented in other graphic exposures, multiply the Warranty Period (in years) for your graphic construction as shown in the applicable Warranty Period table, Section F.(1), by the percentage shown for the intended graphic exposure.

If the Graphic Exposure is:	Use this Percentage of U.S. Vertical Exposure Warranty Period	Calculation Examples
U.S. Non-vertical	50% (0.5)	0.5 x 5 years = 2.5 years 0.5 x 9 years = 4.5 years
Desert Southwest Vertical	70% (0.7)	0.7 x 5 years = 3.5 years 0.7 x 9 years = 6.3 years
Desert Southwest Non-vertical	35% (0.35)	0.35 x 5 years = 1.65 years 0.35 x 9 years = 3.15 years
U.S. Horizontal	0%	0

(2) Abrasion and Loss of Gloss

Abrasion damage and loss of gloss are not covered by any 3M warranty. This is considered normal wear and tear. However, to help maintain the appearance of your graphic, use the recommended graphic protection whenever:

- it is required for the construction and end use as shown in the Warranty Period table.

(3) Application to Glass

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

(4) Application Outside the U.S.

Contact the 3M organization for that country.

(5) Graphics Made with Components Not Sold or Recommended by 3M

The 3M™ MCS™ Warranty does not, under any circumstances, cover graphics made with inks, film, graphic protection and/or application tapes that are not sold or recommended by 3M.

The user is solely responsible for the graphic appearance, performance and durability of graphic constructions that include any non recommended or qualified products.

6. Factors that Affect Graphic Performance Life

The actual performance life of a graphic is affected by all of the following.

- Combination of inks, printers and drying or curing, as appropriate
- Selection and preparation of the substrate
- Method of decoration
- Application methods
- Exposure conditions
- Cleaning methods

7. Graphics Manufacturing

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

A. Application Tapes

See [Instruction Bulletin 4.3](#) for complete details on how to use application tapes.

(1) When to Use Premasking Tape

- Use as an application aid to increase stiffness, and prevent stretching and damage during application.
- Use when little or no liner is exposed.
- Use SCPS-2 for the constructions shown in the Warranty Period table of this Bulletin.

(2) When to Use Prespacing Tape

- Hold cut and weeded letters or graphics in registration after removing the film liner.
- Protect cut graphic parts from scratching or damage during application.
- Use when large amounts of liner are exposed.
- Use SCPM-3 for the constructions shown in the Warranty Period table of this Bulletin.

8. Application and Installation

- For application by hand, the detergent and water application method is recommended for this pressure-sensitive film. Refer to [Instruction Bulletin 5.7](#) for more information. Dry application by hand may leave some dark streaks or bubbles that could be visible in transmitted light.
- For roll application, the dry method is acceptable.

Refer to the 3M Related Literature section, located at the end of this bulletin, for a list of the Instruction Bulletins that may be needed to install this film.

9. 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.)

Refer to [Instruction Bulletin 6.5](#) for general maintenance and cleaning information.

10. Shelf Life, Storage and Shipping

A. Shelf Life

Total shelf life: 3 years from the date of manufacture on the original box. If you do process the film, do so within 2 years and apply within 1 year. If you do not process the film, apply it within 3 years.

B. Storage Conditions

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

C. Shipping Finished Graphics

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

11. 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](#) are available at [3Mgraphics.com](#). The following applicable Bulletins provide information and processes you need to properly make the graphics described in this Bulletin. Additional Bulletins may be needed as indicated in the 3M Related Literature section of other 3M components you use.

Bulletin types: PB = Product Bulletin; PB-IB = Product & Instruction Bulletin; IB = Instruction Bulletin

Subject	Type	Bulletin No.
3M™ Panaflex™ Awning and Sign Facing 945GPS	PB	945
3M™ Panagraphics™ III Wide Width Flexible Substrate	PB	P3
3M™ Diffuser Films 3635-30 and 3635-70 3M™ Envision™ Diffuser Films 3735-50 and 3735-60	PB	Diffuser
3M Graphic Protection Products <i>overview of all graphic protection products and specific information on most overlaminates</i> -Cold roll lamination	PB IB	GP-1 4.22
3M™ Screen Printing Ink Series 1900 and Overprint Clear VI0402 - Screen printing with ink series 1900 - line color - Screen printing with ink series 1900 - 4-color	PB IB IB	1900 3.12 3.11
Design of graphics	IB	2.1
Design of cabinets for light boxes and channel letters	IB	2.4
Using 3M application tapes; premasking and prespacing for films	IB	4.3
Scoring and cutting	IB	4.1
Making backlit signs with 3M digitally imaged graphics	IB	4.26
Application, substrate selection, preparation and substrate-specific application techniques	IB	5.1
Application, general procedures for indoor and outdoor dry applications	IB	5.5
Application, wet method for translucent screen printed, thermal mass transfer and cut graphics	IB	5.7
Thermoforming	IB	5.16
Storage, handling, maintenance, removal	IB	6.5
3M Commercial Graphics Warranty Brochure	Go to 3Mgraphics.com/warranties	

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12. Bulletin Change Summary

Product information about 3M diffuser films 3635-30 and 3635-70 can be found in Product Bulletin Diffuser. Reformatted the Product Description section, which now includes a product performance overview, and the Warranty Information section. Added more information about recommended application methods and cleaning. Removed second surface application using day/night films with 3M™ Panaflex™ Awning and Sign Facing 945GPS. Warranted Durability is now known as Warranty Period.



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