



Scotchcal™

Translucent Graphic Film Series 3630

For Screen Printing, Electronic Cutting and Thermoforming

Description

3M™ Scotchcal™ Translucent Graphic Film Series 3630 is the ideal choice for internally-illuminated signs where crisp, clear colors (many with PANTONE® simulations) are required. This long-term, cast vinyl film has a clear, permanent, pressure-sensitive adhesive and a translucent synthetic liner that does not split if wet. The matte surface finish eliminates glare and provides a uniform color in both reflected and transmitted light. This film is thermoformable.

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.

- For indoor or outdoor use on:
 - The listed compatible substrates
 - Internally-illuminated sign faces
 - Internally-illuminated awnings protected by 3M™ Scotchcal™ Overlaminates 3640GPS and 3642GPS
- First surface application
- Thermoforming with rigid plastic surfaces under well-controlled conditions as described in Instruction Bulletin 5.16

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

- Graphics applied to competitive flexible substrates
- Graphics applied to substrates having coatings such as silicone.
- Graphics with more than two layers of film, except as described in **Three Film Layer Constructions**, page 4.
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684 for alternatives.

Compatible Products

Inks

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

Substrates

- 3M™ Panaflex™ Awning and Sign Facing 945GPS
- 3M™ Panagraphics™ II Intermediate Flexible Substrate
- Flat, rigid substrates such as flat acrylic, polycarbonate*, PETG sheet, glass

* Film series 3630 typically adheres to solar-grade polycarbonate substrate. However, some lots of this substrate may inhibit the adhesion of film series 3630. Contact 3M Commercial Graphics Technical Service (see page 6) if you are having difficulty with this combination. See Instruction Bulletin 5.7 for additional information.

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

Graphic Protection Options

- 3M™ Scotchcal™ High Gloss Overlamine 3640GPS
- 3M™ Scotchcal™ Matte Overlamine 3642GPS
- 3M™ Screen Print Gloss Clear 9800CL
- 3M™ Screen Print Gloss Clear 1920DR
- 3M™ Screen Print Gloss Clear 9720UV
- 3M™ Scotchcal™ Luster Overlamine 8519
- 3M™ Scotchcal™ Matte Overlamine 8520

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
Film	Cast vinyl
Film color	Translucent

Continued on the next page.

Characteristic	Description
Thickness	Without adhesive: 2 mils (0.05 mm) With adhesive: 3–4 mils (0.08–0.10 mm)
Adhesive type	Pressure sensitive
Adhesive color	Clear
Liner	Translucent, synthetic liner
Tensile strength	5 pounds/inch at 73°F (0.9 kg/cm at 23°)
Chemical resistance	Resists mild alkalis, mild acids, and salt Excellent resistance to water (<i>this does not include immersion</i>)

Application Characteristics

Characteristic	Description
Finished graphic application recommendation	Surface type: Flat without rivets Substrate type: Flexible sign facing Rigid substrates such as flat acrylic, PETG sheet, polycarbonate*, glass Application temperature: 60°F (16°C) <i>minimum</i> <i>air, film, substrates</i>
Adhesion	Acrylic and uncoated, clear polycarbonate: 4.0 pounds/inch (0.7 kg/cm)
Applied shrinkage	0.015 inch (0.4 mm)
Temperature range after application	-50° to +170°F (-45° to +77°C) Impact at low temperatures of film applied to flexible substrates may result in cracking of the film and/or substrate.
Removal	Permanent

Color Chart

Selected 3M product colors are a simulation of a PANTONE®-identified color standard. You can view these colors at www.scotchprint.com. Go to Product Information then 3M Color Selector. Consult the current PANTONE Color Publications for accurate color. PANTONE® is the property of Pantone, Inc. ©Pantone, Inc., 2000 Produced under License Agreement No. 813R between 3M and Pantone, Inc. Special colors are available by request. Pigment durability and manufacturing limitations do not permit exact color matching of all color shades.

Product No.	Color	PANTONE Color
3630-005	Ivory	n/a
3630-015	Yellow	PANTONE 109C
3630-20	White	n/a
3630-22	Black*	PANTONE Process Black C
3630-25	Sunflower	PANTONE 123 C
3630-26	Green	PANTONE 349 C
3630-33	Red	n/a
3630-36	Blue	PANTONE 281 C
3630-43	Lt. Tomato Red	n/a
3630-44	Orange	PANTONE 1655 C
3630-49	Burgundy	PANTONE 188 C
3630-51	Silver Gray	PANTONE 439 C
3630-53	Cardinal Red	n/a
3630-57	Olympic Blue	n/a
3630-59	Dark Brown	PANTONE 4625 C
3630-61	Slate Gray	n/a
3630-63	Rust Brown	PANTONE 483 C
3630-68	Rose Mauve	PANTONE 190 C
3630-69	Duranodic*	PANTONE Black C
3630-71	Shadow Gray	PANTONE 409 C
3630-73	Dark Red	n/a
3630-74	Kumquat Orange	PANTONE 1375 C
3630-75	Marigold	n/a
3630-76	Holly Green	n/a
3630-78	Vivid Rose	PANTONE 206 C
3630-83	Regal Red	PANTONE 187 C
3630-84	Tangerine	PANTONE 151 C
3630-87	Royal Blue	PANTONE 274 C
3630-97	Bristol Blue	PANTONE 294 C
3630-106	Brilliant Green	PANTONE 376 C
3630-108	Pink	PANTONE 224 C
3630-109	Light Rust Brown	PANTONE 181 C
3630-115	Lt. Lemon Yellow	PANTONE 3995 C
3630-116	Bright Jade Green	n/a
3630-118	Intense Magenta	PANTONE 241 C
3630-121	Silver	PANTONE 877 C
3630-125	Golden Yellow	PANTONE 1235 C
3630-126	Dark Emerald Green	PANTONE 3435 C
3630-127	Intense Blue	PANTONE 300 C
3630-128	Plum Purple	PANTONE 2622 C
3630-129	Bronze	PANTONE 471 C
3630-131	Gold Metallic	PANTONE 873 C
3630-133	Raspberry	PANTONE 220 C
3630-136	Lime Green	PANTONE 368 C
3630-137	European Blue	PANTONE 281 C
3630-141	Gold Nugget	n/a
3630-143	Poppy Red	n/a
3630-146	Light Kelly Green	PANTONE 347 C
3630-147	Light European Blue	n/a
3630-149	Light Beige	PANTONE 468 C
3630-156	Vivid Green	PANTONE 355 C
3630-157	Sultan Blue	PANTONE 288 C
3630-167	Bright Blue	PANTONE 2945 C
3630-236	Turquoise	PANTONE 3282 C
3630-246	Teal Green	PANTONE 322 C
3630-317	Evening Blue	n/a
3630-337	Process Blue	PANTONE 658 C

* Films 3630-22 and 3630-69 are effectively opaque for most sign uses.

Warranty Information

Graphic Performance Life

The actual performance depends on the:

- Use of correct combination of 3M compatible products
- Ink formulation (screen printing)
- Adequate ink drying or UV curing (screen printing)
- Selection and preparation of the substrate
- 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.

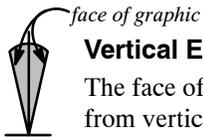
The warranties in this table are for graphics exposed in the U.S. in a vertical orientation. See **Warranty Notes** for how to determine other warranty combinations.

Warranted Durability				
Construction	Vertical Warranty		Horizontal Warranty	
	U.S. years	S.W. years	U.S. years	S.W. years
Unprinted film series 3630 applied to first surface				
First surface, Panaflex substrates	6	5	0	0
First surface overlaminated with 3640/3642-114GPS	9	6	6	4
First surface thermoformed	4	2	0	0
First surface thermoformed, overlaminated with 3640/3642-114GPS	6	5	0	0
Unprinted film series 3630 applied to second surface				
Second surface on acrylic and NON-solar grade polycarbonate	6	5	0	0
Second surface on solar grade polycarbonate	9	6	6	4
Second surface on acrylic and NON-solar grade polycarbonate, thermoformed	4	2	4	2
Second surface on solar grade polycarbonate, thermoformed	6	5	6	4
Film series 3630 applied to Panagraphics II substrate				
Unprinted, with no overlamine or 8519 or 8520	5	3	0	0
Printed with ink series 1900 and clear 1920DR	5	3	0	0
Printed with UV ink series 9800 and clear 9720UV or 9800CL	5	3	0	0
Printed film series 3630 applied to any compatible substrate				
With ink series 1900 and clear 1920DR	5	4	4	3
With UV ink series 9800 and clear 9720UV or 9800CL	5	4	4	3

See *Warranty Notes* on next page.

Warranty Notes

Graphic Exposure Definition



Vertical Exposure

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



Non-Vertical Exposure

The face of the graphic is greater than 10° from vertical.

Application Outside the U.S.

Contact the 3M organization for that country.

Desert Southwest Definition

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.

Graphic Protection

- **Screen print clears** must be applied by screen printing.
- **Overlaminates** must be cold roll applied using 3M authorized laminators and processes.

Graphics Made with Components Not Sold or Recommended by 3M

The user is solely responsible for the graphic appearance, performance and durability when this film is used with any other manufacturers' inks, graphic protection and/or application tapes.

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 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.

Screen Printing

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

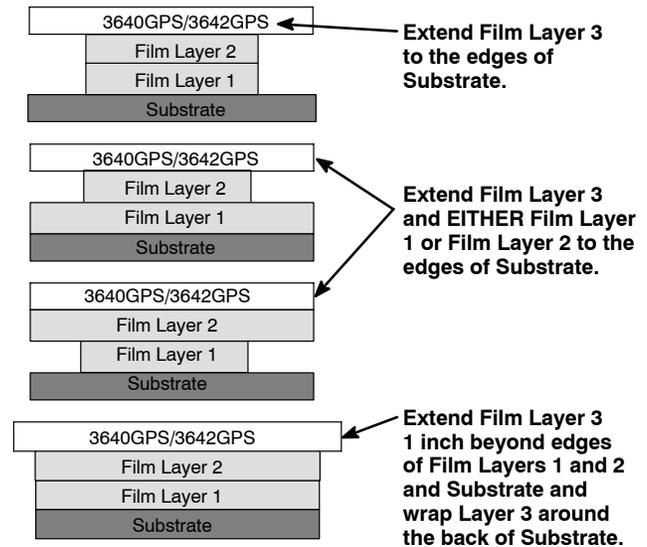
Fabrication

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

Three Film Layer Constructions

Important Note

A third layer of film on any one surface is warranted *only* if the top layer is 3M™ Scotchcal™ Overlaminates 3640GPS or 3642GPS and no more than two layers of any film are even with the edges of the substrate. Therefore:



The following example is a Color By Day / White By Night graphic, which is typical of a construction that requires three film layers. See Figure 1.



Figure 1. Example of Color By Day/White By Night

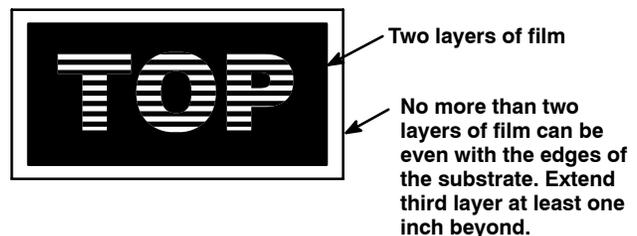


Figure 2. Extend Film 3640/3642GPS Beyond Edges of Other Film Layers

Thermoforming

Refer to Instruction Bulletin 5.16 for detailed information.



Caution

Film series 3630 emits vapors during the thermoforming process. Be sure to read and follow the information contained in the Material Safety Data Sheet (MSDS), the box label, and the Instruction Bulletin 5.16 before thermoforming.

Channel Letter Faces

When using film series 3630 on rigid plastic channel letter faces, avoid contact with the adhesive used to attach the trim cap edge. These adhesives attack film series 3630 and cause curling, lifting and premature failure of the film.

Spray Painting

Initial results indicate that film series 3630 can be spray painted with Grip-Flex™ or Lacryl™ paints with good performance. However, the performance or application of the paints is not warranted.

Cutting

For the inside corners of cut out letters and symbols, and the pointed end of stripes, cut the largest radius consistent with an acceptable appearance. This technique helps avoid stress cracking due to age, and lifting of pointed ends during maintenance.

For individual pieces, use one of these cutting methods.

- Hand cut
- Die cut
- Kiss cut
- Electronic cutter

For multiple pieces, use one of these cutting methods.

- Guillotine
- Die cut

Application Tapes

The type of 3M application tape to use for film series 3630 depends on the type of graphic produced and the ink or clear coat that was applied last.

- Use prespacing tape if very little of the liner is exposed.
- Use a premasking tape if the graphic has large amounts of exposed liner.

Ink	Premasking Tape	Prespacing Tape
Unprinted film	SCPM-3	SCPS-2
1900	SCPM-3	SCPS-2
9800	SCPM-44X	SCPS-53X

Application

For application by hand, the detergent and water application method is recommended. 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.

Shelf Life, Shipping, and Storage

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"> • 100°F (38°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; processed film may block if wound too tightly

See Instruction Bulletin 6.5 for details.

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 <http://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.

✓ Important Note

The user is responsible for determining and complying with all applicable building codes that affect the use of materials in indoor and outdoor awning, banner and sign face applications, including flammability standards. For information on flammability requirements, contact your local building code officials. For information on the results of flammability testing on 3M™ Panaflex™ Products from 3M Commercial Graphics Division, call 1-800-328-3908.

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

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.scotchprint.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™ Screen Printing Ink Series 1900	1900	2501
3M™ Screen Printing UV Ink Series 9800	9800	2513
3M™ Screen Printing Ink Series 9700UV	9700	2507
3M™ Panaflex™ Awning and Sign Facing 945GPS	945	4006
3M™ Panagraphics™ II Intermediate Flexible Substrate	Pana-graphics	4010
3M™ Light Control Film Series 3635	3635	3010
3M™ Scotchcal™ Overlaminates 3640GPS and 3642GPS	3640/ 3642	3011
Instruction Bulletins		
Design of graphics	2.1	5501
Screen printing with ink series 1900 - line color - 4-color	3.11 3.12	6011 6012
Screen printing with ink series 9700 UV	3.4	6004
Screen printing with UV ink series 9800 - line color - 4-color	3.20 3.21	6020 6021
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, wet method for translucent screen printed, thermal mass transfer and cut graphics	5.7	7007
Application and attachment of graphics	5.21	7021
Thermoforming	5.16	7016
Storage, handling, maintenance, removal	6.5	8505
Warranties		
3M Graphics Market Center Warranty Brochure		9503

*Grip-Flex is a trademark of AKZO Wyandotte.
Lacryl is a trademark of Spraylat Corporation.*

Bulletin Change Summary

Correction to the product number for 3M™ Scotchcal™ Matte Overlaminates 8520 on page 1.



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