



# Scotchcal Graphic Film Series 3690

## Description

3M™ Scotchcal™ Graphic Film Series 3690 is a premium 2-mil, screen printable, long term film with an aggressive, permanent adhesive that has good adhesion to sand cast, moderately-rough surfaces and some low surface energy materials.

### Advantages

- Withstands severe weather and handling conditions encountered by commercial and industrial graphics
- Extremely aggressive, pressure-sensitive adhesive
- Good adhesion to sand cast, moderately-rough surfaces, and some low surface energy materials
- Warranted durability of up to 7 years
- Gray adhesive for good hiding power

### Applications and Uses

Film 3690 is intended for making durable, permanent graphics when used with the listed Compatible Products in the following applications. These types of applications are warranted by the 3M™ MCS™ Warranty.

- Use for multicolor graphics including labels, emblems, and striping
- Use for original equipment manufacturer's decorative and identification graphics, cautionary, safety and vandal-resistant labeling

### Limitations of Uses

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

Specifically, we do not warrant this film for the following:

- Applications to corrugated or riveted surfaces
- Graphics regularly subjected to gasoline vapors or spills
- Graphics for automotive Original Equipment Manufacturers (OEM); 3M Commercial Graphics Division products are not tested against automotive manufacturing specifications.

## Compatible Products

- 3M™ Screen Printing Ink Series 1900 (line color and four color)
- 3M™ Screen Printing Ink Series 9700UV (line color and four color)
- Sericol™ Duracal™ UV Screen Print Inks and Sericol™ Duracal™ Overprint Clear \*  
*(warranted for OEM applications only)*
- 3M™ Premasking Tape SCPM-3, SCPM-44X
- 3M™ Prespacing Tape SCPS-2, SPCS-53X

\*See page 5 for how to obtain Duracal inks.

## Characteristics

Characteristic	Description
Film	2 mil, vinyl
Film color	White: 3690-10, 3690LF-10 Black: 3690-10, 3690LF-12
Film thickness (film and adhesive)	3 to 4 mil (0.08 to 0.10 mm)
Adhesive type	Pressure sensitive
Adhesive color	Gray
Liner	3690-10, 3690-12: white kraft paper  3690LF-10, 3690LF-12: polyethylene-coated layflat paper
Application surfaces	Flat or moderate compound curves, with and without rivets
Minimum application temperature	40° F (4°C) <i>air and substrate</i>
Removal	Permanent



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

## Effective Performance Life

The effective performance life is based on field experience and exposure tests conducted throughout the United States. When the graphics are processed and used according to 3M recommendations, they should have the performance life shown in the chart below. The actual performance depends on the:

- Correct combination of film, ink, and screen print clear
- Ink formulation
- Drying methods
- Selection and preparation of the substrate
- Application methods
- Exposure conditions
- Cleaning methods

## Warranted Durability

Film 3690 and ink series:	Screen Print Clear	 <b>Vertical Exposure</b> <i>face of graphic is ± 10° from vertical</i>		 <b>Non-Vertical Exposure</b> <i>face of graphic is 10°–45° from vertical</i>	
		U.S. <sup>1</sup> years	Southwest <sup>2</sup> years	U.S. <sup>1</sup> years	Southwest <sup>2</sup> years
<b>Unprinted</b>					
None	None	7	4	4	2
<b>Ink Series 1900</b>					
line color	1920DR 1930	5 2, may haze	3 1	3 1	2 0
line color or 4-color	9720UV 9730UV	5 3	3 2	3 2	2 1
<b>Ink Series 9700UV</b>					
line color	None 9720UV 9730UV	2 5 3	1 3 2	1 3 2	0 2 1
4-color	9720UV	5	3	3	2
<b>Duracal Ink<sup>3</sup></b>					
line color	Duracal clear	5	3	3	2

<sup>1</sup> For warranty periods outside the United States, contact the 3M sales organization for that country.

<sup>2</sup> The Desert Southwest area includes Arizona, New Mexico, and the desert areas of California, Nevada, Utah, and Texas. A detailed map is available by request.

<sup>3</sup> Sericol Duracal UV Inks are warranted for Original Equipment Manufacturer (OEM) applications only.

## Warranty Exceptions

- Unprinted film 3690-10 has a tendency to chalk in exterior applications. Film that cannot be cleaned must be printed with screen print clear 1920DR or 9720UV or 9730UV. The warranty is the same as in the table above for printed graphics.

## Printing

To get the durability given in the Effective Performance Life section, use the correct combination of ink and screen print clear. Carefully follow the processing directions. Check the appropriate Product Bulletins and Instruction Bulletins for the limitations of each particular ink.

## Cutting

These are the common cutting methods for film series 3690.

- Band sawing
- Hand cut
- Guillotine
- Cold and hot steel-rule die cutting
- Hot kiss cutting
- Flat-bed electronic cutting
- Drum-type electronic cutting

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

## Application Tape

The type of application tape used depends on the type of graphic produced and the ink or screen print clear that was applied last.

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

Screen Print Clear	Premasking	Prespacing
Unprinted film	SCPM-3	SCPS-2
1920 1930	SCPM-3	SCPS-2
9720 UV 9730 UV 9700 UV (no screen print clear)	SCPM-44X	SCPS-53X

## Application

Refer to the Instruction Bulletins listed in the 3M Related Literature section, located at the end of this Bulletin, for more complete information.

### Temperature

The application temperature is 40° to 90°F (4° to 38°C). Although there is no maximum application temperature, the adhesive becomes more aggressive as the surface temperature increases.

## Removal

Film series 3690 is not a removable product. A solvent-based remover system may be needed.

## Shelf Life, Storage, and Shipping

Follow these guidelines to store and ship film series 3690 and the processed graphics.

- Unprocessed film has a shelf life of two years after receipt from 3M. Processed film has a shelf life of one year. However, the total shelf life of a graphic before and after processing cannot exceed two years.
- Store the film in a clean, dry area in the original container.
- Store the film out of direct sunlight and at less than 80°F (27°C).
- Ship the finished graphic lying flat or roll the graphic. For rolling, roll film side out onto a core that is 5 inches (13 cm) in diameter or larger. These methods help 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 <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.

## Product Data

The values given are typical for film series 3690. For a custom specification submit a request to your 3M sales representative.

### Physical Characteristics

These properties are for film with a screen print clear.

Property	Value
Tensile strength (minimum)	5 pound/inch at 73°F (0.9 kg/cm at 23°C)
Applied shrinkage	0.047 inch (1.2 mm)
Service temperature range	-65° to +225°F (-54° to +107°C)

### Chemical Characteristics

- Resists mild acids, alkalis, and salts
- Excellent water resistance

### Adhesion

Adhesion value is for 24 hours after application.

Substrate	Value
ABS	5 pounds/inch (0.9 kg/cm)
Acrylic enamel	5 pounds/inch (0.9 kg/cm)
Aluminum, anodized	6 pounds/inch (1.1 kg/cm)
Aluminum, etched	5 pounds/inch (0.9 kg/cm)
Chrome	5 pounds/inch (0.9 kg/cm)
Fiberglass	5 pounds/inch (0.9 kg/cm)
Powder coat paint	3-6 pounds/inch (0.5-1.1 kg/cm) <i>can vary greatly; contact your 3M representative to arrange for 3M to test your substrate</i>

## 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: Film series 3690 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. 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.**

### Attention:

#### Scotchprint® Graphics Authorized Manufacturers

There's a whole other world behind the Scotchprint® Graphics Internet site ([www.scotchprint.com](http://www.scotchprint.com)) and you can travel there with the Scotchprint® Graphics Network. This password-protected Web site opens the door to exclusive Scotchprint® Graphics product information, services and product promotions for 3M's Scotchprint® Graphics Authorized Manufacturers.

There's no charge and you can sign up today. Just ask your Commercial Graphics Division sales representative, or contact Lisa Burns ([ljburns3@mmm.com](mailto:ljburns3@mmm.com)).

## How to Order Sericol Inks

Sericol's Duracal inks can be obtained through their distributor network. Please refer to this web site for details: <http://www.sericol.com/Distributors/distribFR.htm>. You can also contact Sericol at: Sericol Inc. Corporate Office 1101 W. Cambridge Drive, Kansas City, KS 66103 Tel: 913-342-4060, Fax: 913-342-4752

## 3M Related Literature

Listed below is related 3M technical literature that may be of interest. You may view and print these Bulletins from our Web site at [www.scotchprint.com](http://www.scotchprint.com), or order them via our Fax-on-Demand (FOD) system. Call one of these phone numbers to order the desired bulletins, and specify the FOD document number provided in the chart.

United States or Canada: 1-800-364-0768  
International: 1-651-732-6506

Subject	Bulletin No.	FOD No.
3M™ Screen Printing Ink Series 1900	1900	2501
3M™ Screen Printing Ink Series 9700UV	9700	2507
3M™ Controltac™ Plus Graphic Film with Comply™ Performance 3690C	3690C	1012
<b>Instruction Bulletins</b>		
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 9700UV - line color - 4-color	3.4 3.13	6004 6013
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, special applications and vehicles	5.4	7004
Application, general procedures for interior and exterior dry applications	5.5	7005
Storage, handling, maintenance, removal	6.5	8505
<b>Warranties</b>		
Worldwide 3M™ MCS™ Warranty Packet (includes all Commercial Graphics MCS Warranties)		9503
Worldwide 3M™ MCS™ Warranty Overview-Folder		9504
3M™ MCS™ Graphics Warranty for Fleet Vehicle Applications (includes overview)		9506

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### Bulletin Change Summary

Sericol Duracal inks were added as an approved ink system for OEM applications.



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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: 1512  
[www.scotchprint.com](http://www.scotchprint.com)

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