



# Scotchcal Graphic Film Series 3690

## Description

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

### Key Features

- 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 multicolour graphics including labels, emblems, and striping

### Limitations of Use s

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.

## Product Line

3690A White  
3695A Black

## Compatible Products

- 3M™ Screen Printing Ink Series 1900 (line colour and four colour)
- 3M Screen print clears
- Selected 3M application tapes

## Characteristics

Characteristic	Description
Film	0.05mm, vinyl
Film colour	White: 3690A Black: 3695A
Film thickness (film and adhesive)	0.08 to 0.10 mm
Adhesive type	Pressure sensitive
Adhesive colour	Grey
Liner	120g/m <sup>2</sup> white kraft paper
Application surfaces	Flat or moderate compound curves, with and without rivets
Minimum application temperature *	4°C
Removal	Permanent

*\*For applications nearing the minimum temperature range, please contact your local technical service representative to confirm suitability of application*

## Chemical & Physical Properties

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)	24.5N/25mm @ 23°C
Applied shrinkage	1.2 mm
Service temperature range	-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	22N/25mm
Acrylic enamel	22N/25mm
Aluminum, anodized	26N/25mm
Aluminum, etched	22N/25mm
Chrome	22N/25mm
Fiberglass	22N/25mm
Powder coat paint	13-26N/25mm <i>can vary greatly; contact your 3M representative to arrange for 3M to test your substrate</i>

## 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

Colour	Ink Series	Protective Clears	Fleet			Exterior Sign 1st Surface			Interior		
			1	2	3	1	2	3	1	2	3
<b>Zones</b>			1	2	3	1	2	3	1	2	3
White/Black	Unprinted		5	4	3	5	4	3	5	5	5
White/Black	1900/ 9700 Line/Line	1920/9720/1955abc	5	4	3	5	4	3	5	5	5
White	1900/ 9700 Line/Halftone	1920/9720/1955abc	5	4	3	5	4	3	5	5	5

## 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.

## Fabrication

This bulletin does not contain detailed printing, processing or application procedures for the subject products. The appropriate Instruction Bulletin(s) may be obtained by contacting your 3M sales representative or 3M Technical Service.

## 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

## 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-19	SCPS-100
1920 1930	SCPS-100	SCPS-2
9720 UV 9730 UV 9700 UV (no screen print clear)	SCPM-44X	SCPS-44X

## 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 minimum application temperature is 4°C. Although there is no maximum application temperature, the adhesive becomes more aggressive as the surface temperature increases.

## 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).

## Removal

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

## Shelf Life

The shelf life of the film is 2 years and should be applied within 2 years of the receipt of film if unprocessed. Processed film should be applied within 1 year of processing and within 2 years of receipt of the film.

## 3M Related Literature

Listed below is related 3M technical literature that may be of interest.

Subject	Bulletin No.
3M™ Screen Printing Ink Series 1900	1900
3M™ Screen Printing Ink Series 9700UV	9700
<b>Instruction Bulletins</b>	
Design of Markings	2.1
Screen printing with ink series 1900 - line colour - 4-colour	3.11 3.12
Screen printing with ink 9700UV - line colour - 4-colour	3.4 3.13
Scoring and cutting	4.1
Using 3M application tapes; premasking and prespacing for films	4.3
Application, substrate selection, preparation and substrate-specific application techniques	5.1
Application, special applications and vehicles	5.4
Application, general procedures for interior and exterior dry applications	5.5
Storage, handling, maintenance, removal	6.5

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## Glossary of Terms

### Matched Component System™ or MCS™

The system pursuant to which Finished Graphics are produced by a Graphic Manufacturer using only 3M Products and components and manufactured in accordance with 3M's Product or Instruction Bulletins, 3M Specification Document and using 3M Approved Technologies.

## Health & Safety

Refer to the package label and the Material Safety Data Sheet for health, safety, and handling information on the products referenced in this bulletin. For 3M products, if necessary, you may contact our Toxicology/Product Responsibility Department on 01344 858000.

## Important Notice to Purchaser

The 3M products described in this publication are covered by a 3M warranty and limitation of liability.

3M's warranty provides that if 3M finds that goods are defective in material or workmanship they will be replaced or the price refunded at 3M's option but note that 3M does not accept liability for other direct losses (except for personal injury or death) or consequential losses relating to defective products or from information supplied by 3M.

Purchasers and users of 3M products, and not 3M supplying companies, are always solely responsible for deciding on the suitability of the 3M product for their required or intended use.

## Technical Assistance

For help on specific questions relating to 3M Commercial Graphics Division Products, contact your local Technical Service Representative.

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## Sales Assistance

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