



# Scotchcal™ Opaque Graphic Film

## Series 100

### Product Bulletin

#### Product Description

These high performance premium cast films are a range of colored films that have been specially developed to be knife cut on electronic systems. The film range is available in 170 colors including 50 metallic tones.

Series 100 films have very good conformability for application on flat or moderate curved surfaces, with or without rivets.

They are outstanding for easy cutting of small letters or complex graphics. The colorless adhesive suits this material for use on windows or other transparent substrates.

<b>Product Line</b>	Electrocut	SC100-X	X = color code, opaque, glossy (and few matte), permanent adhesive. Wide selection out of large color range. Special colors available on request.
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**Notice!** Some colors have a lower opacity. It needs to be checked before use if it fits to the requirements of the application.

#### Product Characteristics

These are typical values for unprocessed products.  
Contact your 3M representative for a custom specification.

#### Physical & Application

Material	cast vinyl
Surface finish	glossy and matte (see product line)
Thickness (film)	50 µm (0.05 mm)

Adhesive type	solvent acrylic; pressure-sensitive
Adhesive appearance	clear

Liner	Kraft paper
Notice!	weight of Kraft paper is 120 g/m <sup>2</sup> .

Adhesion	25 N/25 mm	FTM 1: 180° peel, substrate: glass; cond: 24 h 23°C/50%RH
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Application method	wet or dry
Applied shrinkage	< 0.15 mm FTM 14
Application temperature	+4°C minimum (air and substrate)

Service temperature	-40°C to +110°C
Surface type	flat to curved, incl. rivets
Substrate type	aluminum, glass, PMMA, PC*, ABS, paint PC*: Polycarbonates might require drying with heat before use

Graphic removal	Good to remove without or little heat. No liability is given for ease or speed of removal of any graphic. Pay attention to adequate air and substrate temperature.
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<b>Storage</b> Shelf life	2 years from the date on the original box Up to 2 years unprocessed, or processed within 1 year and apply within 1 year of processing
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Storage conditions!	+4°C to +40°C, out of sunlight, original container in clean and dry area.
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**Flammability** Flammability standards are different from country to country. Ask your local 3M contact for details, please.

## Durability

Unprocessed film The following durability data are given for unprocessed film only!

3M Performance Guarantee and MCS™ In addition, 3M provides a guarantee/warranty on a finished applied graphic within the framework of 3M Performance Guarantee and/or 3M MCS™ warranty programs.  
Visit [www.3mgraphics.com](http://www.3mgraphics.com) for getting more details about 3M's comprehensive graphic solutions.

Climatic zones Graphic durability is largely determined by the climate and the angle of exposure. Find below a table showing the durability of a product according to the angle of exposure and the geographical location of the application.

- Zone 1 Northern Europe, Italy (north of Rome), Russia  
 Zone 2 Mediterranean area without North Africa, South Africa  
 Zone 3 Gulf area, Africa

Exposure types

Vertical:



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

Horizontal:



The face of the graphic is  $\pm 5^\circ$  from horizontal.

Interior: Interior means an application inside a building without direct exposure to elements.

Vertical outdoor exposure	Zone 1	Zone 2	Zone 3
white/black	12 years	10 years	8 years
colors	10 years	8 years	6 years
transparent	10 years	8 years	6 years
metallics	4 years	3 years	3 years
Horizontal outdoor exposure	Zone 1	Zone 2	Zone 3
white/black	5 years	4 years	3 years
colors	5 years	4 years	3 years
The following films are suitable for horizontal applications:	white -10, black -12, tomato red -13		
Interior application	Zone 1	Zone 2	Zone 3
interior	12 years	12 years	12 years

## Limitations of End Uses

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs to recommend other products.

- Graphics applied to
- flexible substrates incl. Panaflex™ and Panagraphics™.
  - low surface energy substrates or substrates with low surface energy coating.
  - other than flat or moderate curved/corrugated surfaces.
  - painted or unpainted wallboards, gypsum boards and wallpapers.
  - stainless steel.
  - surfaces not clean and more than moderate textured.
  - surfaces with poor paint to substrate adhesion.

- Graphic removal from
- signs or existing graphics that must remain intact.

- Graphics subjected to
- gasoline vapors or spills.

- Important Notice
- 3M Commercial Graphics Division products are not tested against automotive manufacturer specifications!
  - Non vertical applications will have a significant decrease in durability!
  - Thermoforming of applied film is not recommended!
  - 3M accepts no liability for glass breakage when using this film for window graphics.
  - To avoid color variations all pieces of applied film of one colored area should be processed out of one lot of material.
  - The color appearance of metallic film is dependent on the viewing angle to the product! Therefore the job design should be done that all parts of metallic film are applied the same orientation.

## Graphics

### Manufacturing

Shipping finished graphics Flat, or rolled film side out on 130 mm (5 inch) or larger core. These methods help to prevent the liner from wrinkling or application tape, if used, from popping off.

### Converting Information

Based upon cutting evaluations the minimum height for text is 10 mm using upper and lowercase Helvetica Medium. The stroke width should not be lower than 1 mm.

### Electronic Cutting

The variable characteristics of electronically controlled cutting equipment require users to verify their specific requirements.

Sharpness of knife blade Dull blades impart a serrated look to the edge of the cut film.

Weight of knife blade The ideal weight slightly scores the liner. Too little weight does not cut completely through the film and the adhesive. Excessive weight cuts the liner and causes the blade to drag, accelerating wear and creating a serrated cut edge on the film.

Weeding The excess film should be weed (removed) as soon after cutting as practical. This is to minimize the effect of possible adhesive flow.

Temperature and relative humidity Temperature and relative humidity are minor considerations, but avoid extreme or rapid fluctuating conditions.

Roll storage Store the film in the same environment as the cutting equipment.

Further information For more details refer to our instruction bulletin 4.1 'Sheeting, Scoring, Film Cutting', please  
>[Instruction Bulletin 4.1 'Sheeting, Scoring, Film cutting'](#)<

### Application

The use of an application tape is neither recommended nor needed.

Refer to Instruction Bulletin 5.1 'select and prepare substrates for graphic application', for general application information.

>[Instruction Bulletin 5.1 'select and prepare substrates for graphic application'](#)<

### 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 'storage, handling, maintenance and removal of films and sheetings', for general maintenance and cleaning information.

>[Instruction Bulletin 6.5 'Storage, Handling, Maintenance and Removal of Films and Sheetings'](#)<

### Remarks

This bulletin provides technical information only.

Important notice All questions of warranty and liability relating to this product are governed by the terms and conditions of the sale, subject, where applicable, to the prevailing law.

Before using, the user must determine the suitability of the product for its required or intended use, and the user assumes all risk and liability whatsoever in connection therewith.

Additional Information Visit the web site of your local subsidiary at [www.3mgraphics.com](http://www.3mgraphics.com) for getting more:

- details about 3M™ MCS™ Warranty and 3M™ Performance Guarantee
- additional instruction bulletins
- a complete product overview about materials 3M is offering

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