

# 3M™ Scotchcal™ ElectroCut™ Graphic Film Series 100

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## Product Description

Scotchcal™ ElectroCut™ Film Series 100 are durable, dimensionally stable, vinyl films which were specifically developed to be knife cut on electronic systems.

### Key Features

- Easy cutting of small letters or complex graphics
- Easy weed stripping
- Suitable for multi-colour graphics
- Resistance to humidity and water
- Good lay-flat performance on flat bed plotters
- Special adhesive enables the end user to apply graphics at +4°C
- Highly flexible films that may be applied on flat or corrugated surfaces with or without rivets and compound curved surface
- Film and adhesive can be easily removed even after several years, with the use of heat and/or 3M Graphic Remover System
- Transparent adhesive making these films suitable for use on windows or other transparent substrates by presenting the same appearance from both sides.
- Up to 10 years warranty
- Meets Building Regulation Class 0

## Applications and Uses

For the production of attractive emblems, labels, markings and striping for commercial and industrial applications Scotchcal™ Films Series 100 may also be screen printed, die cut or cold/hot kiss cut.

## 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.

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

- Graphics regularly subjected to petroleum vapours or spills
- Compound contours. For these surfaces please use 3M™ Scotchcal™ Contour Graphic Film 1100, specially developed for highly irregular surfaces
- Graphics made for automotive Original Equipment Manufacturers (OEM). Please contact 3M Automotive Division

## Compatible Products

- 3M™ Screen Printing Ink Series 1900 (line colour)
- 3M™ Screen Printing Ink Series 9700UV(line colour)
- 3M™ Screen Print Clear Coats
- Selected 3M application tapes

## Product Line

Custom colour matching is available on this product; contact the 3M Sales Office for stock availability and lead times for both standard and colour matched material.

### Product Numbers & Colours

Product Number	Colour Code
<b>Blacks/Whites/Transparents</b>	
White	100-10
Transparent	100-114
Black	100-12
Matt White	100-20
Matt Black	100-22
<b>Blues</b>	
Traffic Blue	100-002
Blue	100-003
Light Blue	100-123
Vivid Blue	100-17
Insignia Blue	100-27
Sapphire Blue	100-37
Sky Blue	100-415
Soft Blue	100-453
Intense Blue	100-47
Olympic Blue	100-57
Robin Egg Blue	100-600
Peacock Blue	100-602
Teal	100-603
Aqua	100-716
Dark Aqua	100-718
Light Navy	100-724
Shadow Blue	100-725
Wedgewood Blue	100-726
<b>Greens</b>	
Dark Green	100-008
Emerald Green	100-027
Light Green	100-047
Green	100-122
Lime Green	100-449
Conifer Green	100-450
Kelly Green	100-46
Dark Green	100-56
Apple Green	100-719
Bright Green	100-722
Forest Green	100-727

<b>Browns</b>	
Dark Brown	100-107
Beige	100-119
Sahara	100-186
Deep Mahogany	100-19
Russett Brown	100-29
Ivory	100-383
Tan	100-39
Light Brown	100-451
Esso Beige	100-467
Harvest Gold	100-604
Sandstone	100-728
Putty	100-729
Saddle Brown	100-730
Fawn	100-731
Mahogany Brown	100-060
Hazelnut Brown	100-596
<b>Greys</b>	
Nimbus Grey	100-012
Traffic Grey	100-038
Stone Grey	100-079
Pearl Grey	100-11
Light Grey	100-384
Medium Grey	100-605
Dark Grey	100-706
<b>Metallics</b>	
Anthracite	100-144
Gold	100-54
Aluminium	100-58
<b>Oranges</b>	
Orange	100-091
Bright Orange	100-14
Red Orange	100-266
Yellow/Orange	100-381
Apricot	100-598
Light Orange	100-717

<b>Pinks and Purples</b>	
Violet	100-265
Pink	100-454
Royal Purple	100-595
Purple	100-597
Magenta	100-599
Lilac	100-601
Salmon Pink	100-714
Mauve	100-715
Dark Violet	100-721
<b>Reds</b>	
Tomato Red	100-13
Geranium	100-176
Deep Red	100-23
Light Red	100-368
Dark Burgundy	100-386
Esso Red	100-466
Ruby Red	100-53
Cardinal Red	100-720
Burgundy	100-723
<b>Yellows</b>	
Bright Yellow	100-15
Sunflower	100-25
Yellow	100-385

## Main Characteristics

Property	Description
Film Type	0.05 mm opaque vinyl
Adhesive type	Permanent, pressure sensitive acrylic
Adhesive color	Transparent
Thickness (film plus adhesive)	0.07 mm - 0.10 mm
Liner	White kraft
Suitable application surface	Flat and corrugated surfaces with and without rivets, simple curves, moderate compound curves
Suitable application substrates	ABS resins, aluminum, chrome, glass fiberglass-reinforced plastic, paint (check adhesion to powder or water-base paints)
Minimum application temperature	4°C Note: For applications nearing the minimum temperature range, please contact your local technical service representative to confirm suitability of application

## Chemical and Physical Properties

Values given are typical and are not for use in specifications. If a custom specification is desired, a request should be submitted through your sales representative. The data given below is for unprinted film

### Chemical Resistance

The film was applied to an aluminium substrate at 23°C 24 hours before testing. The samples were immersed in the noted chemical agent at 23°C and after exposure were wiped clean. The table below indicates the exposure time which will not lead to any significant visible change in appearance.

Chemical Agent	Exposure Time	Results
Water	24 hours	No effect
100% rel. Humidity (38°C)	24 hours	No effect
50/50 Ethylene Glycol/Water	24 hours	No effect
SAE 20 Motor Oil	24 hours	No effect
VM&P Naphtha	10 mins	No effect
10% Hydrochloric Acid	10 mins	No effect
10% Ammonium Hydroxide	10 mins	No effect
Mineral Spirits	10 mins	No effect
Reference Fuel (85% Mineral Spirits/15% Xylol)	10 mins	No effect

Methyl Alcohol	10 mins	No effect
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These films are not intended for use nor warranted where they are subject to spillage of petroleum products.

### Physical Properties

Property	Metric Units
Thickness (ISO 4593)	0.07mm - 0.10mm
Elongation (ISO 1184-1983)	> 50%
Dimensional Stability (FTM 14)	> 0.4mm
Temperature Range	-40°C to +95°C
Reverse impact Resistance at 23°C	No effect
at 4°C	No effect

### Adhesion (FTM1)

Substrate	Metric Units (N/25mm)
Etched Aluminium	>25
Anodised Aluminium	>25
Stainless Steel	>25
Chrome Plating	>25
ABS	20-25
Acrylic Enamel	20-25
Urethane Paints	17-20
Glass	>25

These adhesion values are 24 hours after application.

**Note:** ISO refers to standards of the International Standards Organisation. FTM (Fimat Test Methods) refers to test methods listed by Fimat, the Association of European Tape Manufacturers.

### Flammability

3M™ Scotchcal™ ElectroCut™ Film Series 100 achieves the following flammability ratings:

Test	Result
BS476 Part 6: Method of Test for Fire Propagation For Products	$I_{max} = 0.20$ $i_1 = 0.00$
BS476 Part 7: Surface Spread of Flame Test for Materials	Class 1
BS6853: Appendix D Clause 8.4 Methods of measuring Smoke Density	$A_0$ (on) = 2.34 $A_0$ (off) = 2.96
NFX70-100: Analysis of Pyrolysis and Combustion Gases	R = 0.10

Film Series 100 achieves a Class 0 rating, as defined in The Building Regulations 1985, B2/3/4 Fire Spread.

## Warranty

Only a Scotchprint® Graphics Authorised Manufacturer or 3M™ MCS™ Qualified Manufacturer can produce 3M™ MCS™ Warranted Graphics. The warranty period is based on field experience and exposure tests. When the graphics are processed and used according to the 3M recommendations, they should have the performance life shown in the table below. The actual performance depends on the:

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

## Warranted Durability

**Unprinted** (Orientation of the applied film V / <10°\*)

Colour	Fleet			Exterior Sign 1st Surface			Exterior Sign 2nd Surface			Interior		
	1	2	3	1	2	3	1	2	3	1	2	3
White/Black	10	8	6	10	8	6	10	8	9	10	10	10
Colours/Special Colours	8	6	4	8	6	4	8	6	4	8	8	8
Metallics/Transparent	6	4	2	6	4	2	6	4	2	6	6	6

**Printed** (Orientation of the applied film V / <10°\*)

Colour	Ink Series	Protective Clears	Fleet			Exterior Sign 1st Surface			Exterior Sign 2nd Surface			Interior		
			1	2	3	1	2	3	1	2	3	1	2	3
White/Black/Colours	1900/9700 Line	1920/9720	8	6	4	8	6	4	-	-	-	8	8	8
Transparent	1900/9700 Line	1920/9720	6	4	2	6	4	2	6	4	2	6	4	2

Zone 1 = Northern & Central Europe

Zone 2 = Mediterranean Europe

Zone 3 = Middle East and Northern Africa

Horizontal applications of markings and stripping can be used on the rooftops of commercially owned vehicles where identification from the air is desired.

Horizontal applications are subjected to maximum sunlight and environmental effects. Therefore, colour change, loss of gloss and chalking may occur. The following performance statements are based on the premise that legibility is all that is required.

\*Only the following films are recommended for horizontal application:

- 100-13 tomato red
- 100-15 bright yellow
- 100-12 black
- 100-10 white

Expected durability: 5 years

## 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

### Cutting with Electronic Systems

The minimum height for text is 10mm. This is based upon cutting and weeding evaluations using uppercase Helvetica Medium copy. The stroke width should not be lower than 1mm. Users are encouraged to do their own evaluation for specific heights required for a particular job. The variable characteristics of electronically controlled cutting equipment requires users to verify their specific requirements.

### Weeding

It is recommended that Series 100 Film have the excess film weeded (removed) as soon after cutting is practical. This is to minimise the effect of possible adhesive flow 24 or more hours after cutting.

## Premasking/Prespacing

### Premasking

SCPS-100 is recommended for premasking large graphics of areas 0.5m<sup>2</sup> and over.

### Prespacing

SCPS-2 is recommended for prespacing small and medium size graphics up to 0.5m<sup>2</sup>.

## Application

Refer to the Instruction Bulletin 5.4 and 5.5 for application details.

## 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).

## 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.

## Related 3M Literature

Listed below is related 3M Technical Literature which may be of interest:

Subject	Instruction Bulletin
Design of Markings	2.1
Premasking and Prespacing	4.3
Surface Preparation	5.1
Application	5.4 5.5
Storage, Maintenance and Removal	6.5
Warranty of Products	-

## 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.

### 3M™ Comply™ Performance

With its remarkable 'bubble and wrinkle free' application feature, 3M™ Comply™ Performance is the next step in speeding and easing graphic application. The adhesive layer has been developed to contain uniquely-configured channels which allow air to escape during application.

## 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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[www.3m.com/uk/graphicsolutions](http://www.3m.com/uk/graphicsolutions)  
[www.scotchprint.com/uk](http://www.scotchprint.com/uk)

## Sales Assistance

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