



# 3M™ Scotchcal™ Opaque Graphic Film Series 80

## Product Description

Scotchcal Opaque Graphic Film Series 80 is a cast PVC film in a range of colours that have been specially developed to be knife cut on electronic systems. The film range consists of 84 colours including matt white, matt black and 8 metallic tones. Series 80 films have good conformability making them suitable for applications on flat or moderate curved surfaces with or without rivets. The film construction and lay flat liner makes the film suitable for the easy cutting and weeding of small letters and complex graphics. The clear permanent pressure sensitive adhesive enables accurate graphic positioning while making the film suitable for use on windows and other glass surfaces.

## Product Line

Description	Finish	Pantone Ref.	Description	Finish	Pantone Ref.
80-003 Dark Blue	Gloss	2757 C	80-2549 Goldrod	Gloss	-
80-008 Fir Tree Green	Gloss	3308 C	80-2550 Golden Yellow	Gloss	-
80-012 Grey	Gloss	425 C	80-2551 Signal Red	Gloss	-
80-038 Traffic Grey	Gloss	-	80-2552 Sanguine (Red)	Gloss	-
80-10 White	Gloss	-	80-2553 Fire Brick	Gloss	-
80-1024 Bluert	Gloss	-	80-2554 Deep Red	Gloss	-
80-114 Transparent	Transparent	-	80-2555 Curacao	Gloss	-
80-12 Black	Gloss	-	80-2556 Gentian	Gloss	-
80-123 Light Blue	Gloss	-	80-2557 Night Blue	Gloss	-
80-13 Tomato Red	Gloss	1797 C	80-2558 Cool Grey	Gloss	-
80-14 Bright Orange	Gloss	165 C	80-2559 Golden Mica Metallic	Metallic	-
80-144 Anthracite Metallic	Metallic	-	80-2560 Black Metallic	Metallic	-
80-15 Cadmium Yellow	Gloss	-	80-2561 Navy Blue Metallic	Metallic	-
80-1583 Clear Green	Gloss	-	80-2562 Buttercup	Gloss	-
80-1645 Intense Green	Gloss	341 C	80-2563 Canary Yellow	Gloss	-
80-17 Vivid Blue	Gloss	2945 C	80-2564 Wheat	Gloss	-
80-176 Geranium Red	Gloss	-	80-2565 Highway Blue	Gloss	-
80-1789 Fjord Blue	Gloss	301 C	80-266 Red Orange	Gloss	485 C
80-1794 Deep Blue	Gloss	274 C	80-368 Light Red	Gloss	1795 C
80-1833 Fossil Grey	Gloss	-	80-37 Sapphire Blue	Gloss	280 C
80-19 Deep Mahogany Brown	Gloss	476 C	80-384 Light Grey	Gloss	428 C
80-1916 Intense Pink	Gloss	-	80-410 Mandarin	Gloss	-
80-20 White Matte	Matte	-	80-449 Lime Green	Gloss	-
80-2065 Venus Gold Metallic	Metallic	-	80-453 Soft Blue	Gloss	2915 C
80-22 Black Matte	Matte	-	80-47 Intense Blue	Gloss	300 C
80-23 Ruby Red	Gloss	-	80-53 Cardinal Red	Gloss	187 C
80-2400 Intense Red	Gloss	-	80-54 Gold Metallic	Metallic	-
80-2407 Red Brown	Gloss	-	80-56 Dark Green	Gloss	3425 C
80-2409 Aubergine	Gloss	255 C	80-57 Olympic Blue	Gloss	-
80-2410 Fuchsia	Gloss	-	80-58 Aluminium Metallic	Metallic	-
80-2411 Intense Violet	Gloss	267 C	80-595 Royal Purple	Gloss	-
80-2412 Lavender	Gloss	2665 C	80-597 Purple	Gloss	525 C
80-2413 Lilac	Gloss	-	80-600 Robin Egg Blue	Gloss	318 C
80-2415 Light Pink	Gloss	-	80-603 Teal	Gloss	321 C
80-2416 Basalt Blue	Gloss	2766 C	80-605 Medium Grey	Gloss	422 C
80-2428 Crystal Grey	Gloss	-	80-706 Dark Grey	Gloss	-
80-2429 Nevada Beige	Gloss	-	80-716 Aqua	Gloss	-
80-2430 Sand	Gloss	-	80-717 Light Orange	Gloss	151 C
80-2431 Almond	Gloss	7506 C	80-719 Apple Green	Gloss	369 C
80-2434 Signal Orange	Gloss	1505 C	80-721 Bright Violet	Gloss	-
80-2476 Granite Metallic	Metallic	-	80-724 Light Navy	Gloss	648 C
80-25 Yellow	Gloss	1235 C	80-822 Mid Grey	Gloss	423 C

## Product Characteristics

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

### Physical & Application

<b>Material</b>	Cast vinyl
<b>Surface Finish</b>	Gloss & Matte (see product line)
<b>Film Thickness</b>	0.05mm (50u)
<b>Adhesive type</b>	Permanent, transparent pressure sensitive acrylic
<b>Liner</b>	Lay flat, kraft paper
<b>Adhesion</b>	20 (N/25mm). FTM1: 180° peel, substrate; glass; cond: 24h 23°C/50% RH
<b>Application method</b>	Wet [water & detergent] or Dry
<b>Applied shrinkage</b>	<0.2 mm FTM 14
<b>Application temperature</b>	+8°C minimum (air and substrate)
<b>Service temperature</b>	-40°C to +95°C
<b>Surface Type</b>	Flat and moderate curved surfaces, with or without rivets
<b>Substrate type:</b>	Aluminium, Glass, PMMA, ABS, Paints Polycarbonates (polycarbonates may require drying with heat before graphic application)
<b>Graphic Removal</b>	Removable with heat or chemicals from noted substrates. No guarantee is given for ease or speed of removal of any graphic, which will be dependent upon air and substrate temperatures.

### Durability

Orientation of the applied film Vertical: +/- 10°*	
White/Black	10 years
Colours	8 years
Transparent/Metallics	5 years

### Shelf Life

Providing the recommended storage conditions are followed:  
Unprocessed film, 2 years from date on the original packaging  
Processed film, apply within 1 year of processing

### Storage conditions

- Between 4° and 40°C
- Out of direct sunlight
- In clean dry area
- In original container

### Flammability

Flammability standards are different from country to country. Please ask your local 3M contact for details.

## 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, including 3M Panaflex™ and 3M 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 or more than moderate textured
  - Surfaces with poor paint to substrate adhesion
  - Substrates having regular exposure to petroleum vapour or spills

- Graphic removal from
- Signs, surfaces or existing graphics that may be damaged by removal

### 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

## Graphic Manufacturing

<b>Shipping Finished graphics</b>	Flat, or rolled film side out on 130mm (5inch) or larger core. These methods help to prevent the liner from wrinkling or application tape, if used, from popping off.
<b>Colour appearance of metallic films</b>	Due to the metallic effect, the colour appearance of the film is dependent on the viewing angle to the product! All metallic film of one colour should be processed out of one lot of material and the job layout should be done so that all parts are applied with the same orientation.
<b>Converting Information</b>	Based upon cutting evaluations the minimum height for text is 10mm using upper and lowercase Helvetica Medium. The stroke width should not be less than 1mm.
<b>Electronic Cutting</b>	The variable characteristics of electronically controlled cutting equipment require users to verify their specific requirements.
<b>Sharpness of knife blade</b>	Blades should be kept sharp, dull blades impart a serrated look to the edge of the cut film
<b>Weight of knife blade</b>	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.
<b>Weeding</b>	The excess film should be weeded (removed) as soon after cutting as practical. This is to minimise the effect of possible adhesive flow.
<b>Temperature and relative humidity</b>	Temperature and relative humidity are minor considerations, but avoid extreme or rapidly fluctuating conditions.
<b>Roll storage</b>	Store the film in the same environment as the cutting equipment.
<b>Further information</b>	For more details please refer to our instruction bulletin 4.1 'Sheeting, Scoring, Film Cutting'
<b>Maintenance and Cleaning</b>	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 Sheeting's', for general maintenance and cleaning information.
<b>Important Notes</b>	The above data represents our current empirical values. It is the customer's responsibility to verify, before using the product, whether it is suitable for the intended use while also taking account of possible application-related influences. All issues regarding warranty and liability are determined by the regulations of the respective purchase contract, unless specified otherwise by statutory provisions. In the event of improper use and/or processing not in compliance with our precise instructions, all liability of 3M will be excluded.

## 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.

## 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.

## Related Bulletins

Subject	Bulletin #
Pre-masking and pre-spacing	4.3
Substrate Selection, Preparation and Substrate Specific Application Techniques	5.1
Application	5.4 & 5.5
Storage, Handling, Maintenance and Removal of Films and Sheetings	6.5

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