



3M™ Scotchlite™ Reflective Graphic Film

Series 580E

Product Bulletin

Product Description These flexible, enclosed-lens and retroreflective films are designed for commercial vehicle and railroad graphics according to ECE104.

Scotchlite™ Reflective Graphic Film Series 580E show good visibility at day and night-time, and also offer excellent retroreflective angularity performance. Series 580E retains most of its retroreflectivity when totally wet.

The film resists fuel vapors or occasional spills.

Product Line Electrocut and screen printing 580E-X X = color code, retro-reflective, glossy, permanent adhesive (clear).

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	
	Thickness (film)	180 µm (0.180 mm)	
	Adhesive type	pressure-sensitive	
	Adhesive appearance	clear	
	Liner	double-sided Polyethylene coated paper	
	Adhesion	approx. 19 N/25 mm	FTM 1: 180° peel, substrate: glass; cond: 24 h 23°C/50%RH
	Application method	dry only!	
	Applied shrinkage	0.4 mm	FTM 14
	Application temperature minimum (air and substrate)	+15°C	for flat surfaces
		+15°C	for curved surfaces with and without rivets
	Service temperature	-34°C to +93°C	
	Surface type	flat to curved, incl. rivets	
	Substrate type	aluminum, paint	

Graphic removal Hard to remove from supported substrates.

No liability is given for ease or speed of removal of any graphic. Pay attention to adequate air and substrate temperature.

Storage Shelf life Use within two years from the date of manufacture on the sealed original box. Use within one year after opening the box.

Storage conditions +4°C to +40°C, out of sunlight, original container in clean and dry area.

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™ Warranty

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 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.

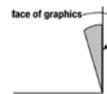
Zone 1 Northern Europe, Italy (north of Rome), Russia

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.

Interior

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

Vertical outdoor exposure

Zone 1

Zone 2

Zone 3

white/black

8 years

7 years

5 years

colors

8 years

7 years

5 years

Interior application

Zone 1

Zone 2

Zone 3

interior

8 years

8 years

8 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. 3M™ Panagraphics™ III Wide Width Flexible Substrate.
- 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.
- substrates other than recommended.
- surfaces that are not clean and smooth.
- surfaces with poor paint to substrate adhesion.

Graphic removal from

- signs or existing graphics that must remain intact.

Important Notice

- 3M Commercial Solutions products are not tested against automotive manufacturer specifications!
- Wet application method is not recommended for this film.
- Graphics with more than two layers of film except as described in this bulletin are not recommended.
- To avoid color variations all pieces of applied film of one colored area should be processed out of one lot of material.
- Be aware that outgassing causes this sheeting to bubble.

Special Information

The typical value of retroreflection is dependent on the film color. It is measured at a 5° entrance angle and a 0.33° observation angle and expressed in candelas per lux per square meter [cd/(lx·m²)].

Typical retroreflection The entrance angle is formed by a light beam striking the surface at a point and at a line that is perpendicular to the surface at the same point. Unprinted film 580E has the following typical value of retroreflection.

film number	color name	typical value	ECE104 class
580E			
-10	White	40	without
-10	White	40	E
-14	Orange	15	E
-64	Gold	40	E
-71	Yellow	35	E
-81	Lemon Yellow	35	D/E (marked D)
-72	Red	15	E
-75	Blue	7	E
-76	Light Blue	6	E
-77	Green	15	E
-82	Ruby Red	15	E
-85	Black	25	E

According to ECE104 film series 580E is approved Class E. 580-81E Lemon Yellow is approved Class D/E, but material is marked D.

Graphics Manufacturing

Graphic protection can improve the appearance, performance and durability of printed graphics. Any printed graphic exposed to abrasive conditions (including vehicles), harsh cleaners or chemicals must include graphic protection in order to be warranted.

When to use an overprint clear or overlaminate See instruction bulletin GPO 'graphic protection options' for further information about selection and use of protective overlaminates and printable clears.

[> Product Bulletin Graphic Protection Options <](#)

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.

Matching Whenever two or more pieces of the same reflective graphic film are seamed together as a continuous band of graphic film, they should be matched to assure uniform daytime and night appearance.

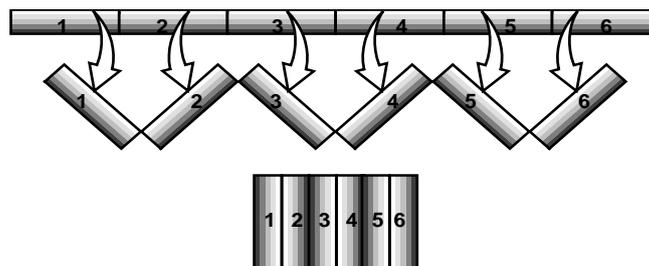
Material from a single roll or lot must be used on a single graphic or sign for identical matching.

In general, reflective graphic film from a roll must be matched as shown in FIGURE 1. The dark line represents one edge of the film.

The matching edges are always swung to meet each other. Panels 1 and 2 are a matched set. Pieces 1, 2 and 3 are matched, etc. By following this method you can match as many sheets from a roll as are required for any size sign.

Exact match between different run numbers should not be assumed.

FIGURE 1
Matching



Converting Information

Electronic Cutting

	Based upon cutting evaluations the minimum height for text is 25 mm using upper and lowercase Helvetica Medium. The stroke width should not be lower than 10 mm.
	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' <

Converting Information

Screen Printing

	Formulations and processing conditions can affect ink durability. Refer to the 3M Product and Instruction Bulletins for your ink for limitations and proper usage. Graphic protection can improve the appearance, performance and durability of your graphic.
	A clear coat also prevents chalking on unprinted films. Use equipment designed to handle high viscosity materials and make sure the coating is evenly applied to the specifications given in the clear's Instruction Bulletin.
Abrasion and Loss of Gloss	Abrasion damage and loss of gloss are not covered by any 3M warranty. This is considered normal wear and tear.

Application

See product bulletin ATR 'application tape recommendations' for information about selection and use of suitable application tapes for this product, please.

> [Product Bulletin Application Tape Recommendations](#) <

If two graphic panels meet side by side, carefully trim the film that the panels meet and form a butt seam. Do not overlap the panels!

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 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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