



Scotchcal™ Graphic Film Series 225

Description

3M™ Scotchcal™ Graphic Film Series 225 has been specially formulated by 3M for Gerber Scientific Products, Inc. and is available exclusively from an authorized Gerber distributor. To find a Gerber distributor near you, contact Gerber at 1-800-222-7446 or visit their website at www.gspinc.com.

Advantages

- Designed for electronic cutting
- Optimized for printing on the GERBER EDGE®, EDGE 2 and GERBER MAXX™ 2 thermal printing systems
- Durable, dimensionally-stable, cast vinyl film
- Withstands severe weather and handling conditions
- Wide range of glossy colors
- Film 225-114 (clear) is enamel paint receptive
- Matte finish available in white and black
- Transparent synthetic liner
 - prevents moisture absorption
 - lays flat for easier assembly of multicolor graphics
 - resists static buildup
- Clear, pressure sensitive adhesive--film is the same color on both sides

Note: Films with clear adhesive have less hiding power, which should be considered when selecting and preparing a substrate.

Applications and End Uses

Film series 225 is a custom-formulated, cast vinyl film. It is available exclusively through Gerber Scientific Products and its network of distributors worldwide. This film is intended for making permanent, durable graphics when used with the listed Compatible Products in the following applications. These applications are warranted by the 3M™ MCS™ Warranty

- Prespaced, electronically-cut graphics
- Commercial and industrial applications, including emblems, vehicle graphics, labels, striping, general signage, two-way window graphics
- Graphics applied to flat surfaces with and without rivets, or simple curved surfaces

Limitations of End Uses

We do not normally warrant other applications, but please contact GSP to discuss your needs and other options.

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

- Application to corrugated surfaces or surfaces with compound curves
- Graphics subjected to gasoline vapors or spills
- Thermoforming
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684, Ext. 444, for alternatives

Compatible Products

- 3M™ Panaflex™ Awning and Sign Facing 945GPS
- 3M™ Panaflex™ Enhanced Image Sign Facing 645EI
- 3M™ Prespacing Tape SCPS-2
- 3M™ Premasking Tape SCPM-3

Characteristics

This information is subject to change. Be sure this is the most current Product Bulletin. See 3M Related Literature at the end of this bulletin.

Characteristic	Description
Film	2 mil cast vinyl
Colors	See page 2
Thickness (film and adhesive)	2.5 to 3.5 mil (0.063 to 0.09 mm)
Adhesive	Clear, pressure sensitive
Liner	Transparent synthetic
Application temperature	40°F (4°C) (minimum)
Application surfaces	For flat surfaces with and without rivets, or simple curved surfaces
Application substrates	Flexible signage, glass, metal, acrylic, polycarbonate, fiberglass, painted surfaces
Removability	Permanent

Note: For the full product names of the 3M products listed on this page, please see page 1.

Color Chart

Solid Colors		225-49	Beige
225-10	White	225-53	Cardinal Red
225-12	Black	225-56	Dark Green
225-13	Tomato Red	225-57	Olympic Blue
225-15	Bright Yellow	225-58	Burgundy
225-17	Vivid Blue	225-63	Geranium
225-19	Deep Mahogany Brown	225-66	Forest Green
225-20	Matte White	225-186	Bright Green
225-22	Matte Black	225-197	Light Navy
225-25	Sunflower	Transparent	
225-31	Medium Grey	225-114	Clear Enamel
225-37	Sapphire Blue	Receptive	
225-38	Royal Purple	225-120	Silver
225-47	Intense Blue	225-131	Gold

Effective Performance Life

The effective performance life for film series 225 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 charts below. The actual performance depends on the following conditions.

- Selection and preparation of the substrate
- Application methods
- Exposure conditions
- Cleaning methods

Warranted Durability

Vertical Exposure				
	Vertical Exposure face of graphic is $\pm 10^\circ$ from vertical			
Scotchcal Film Series 225				
Signs Only				
Solid colors, except 225-120, -131, 225-114				
Unprinted, applied to first surface	7	5		
Unprinted, applied to second surface	7	5		
Vehicles Only				
Solid colors, except 225-120, -131, 225-114				
Unprinted, applied to first surface	8	5		
Unprinted, applied to second surface	8	5		

Vertical Exposure (continued)

	Vertical Exposure face of graphic is $\pm 10^\circ$ from vertical	
	Scotchcal Film Series 225	U.S. 1, 4 years S.W. 2, 4 years
Signs and Vehicles		
Metallic colors 225-120, -131 Clear 225-114		
Unprinted, applied to first surface	5	3
Unprinted, applied to second surface	5	3

Non-Vertical Exposure

	Non-Vertical Exposure ³ face of graphic is vertical great than 10°	
	Scotchcal Film Series 225	Non-Vertical Exposure³ face of graphic is vertical great than 10°
Solid colors 225-10, -12, -20, -22 and -13, -15, -53	U.S. 1, 4 years	S.W. 2, 4 years
Unprinted, applied to first surface	5	0

- 1 For the warranty periods outside the United States, contact Gerber Scientific Products.
- 2 The United States Desert Southwest area includes Arizona, New Mexico, and the desert areas of California, Nevada, Utah, and Texas. A detailed map is available by request.
- 3 Non-vertical applications can be used to identify commercial vehicles from the air. Non-vertical applications expose the film to the maximum effect from sunlight and the environment. There are ink and film restrictions for horizontal applications. The film may change color, lose gloss, and chalk. The following performance statements assume that only legibility is required.
- 4 Unprinted film 225-20 may chalk with age. This is considered normal and acceptable wear.

Note: For the full product names of the 3M products listed on this page, please see page 1.

Fabrication

This Bulletin does not contain detailed processing or application procedures. Refer to the 3M Related Literature section for further information.

Caution

When using any equipment, always follow the manufacturers' instructions for safe operation.

Minimum Cutting Heights

Based on cutting and weeding evaluations that used Helvetica medium upper case, the recommended minimum cutting height for text is 0.250 inch (0.63 cm). Because of the differences in electronically-controlled cutting equipment and font characteristics, users should determine their own cutting and weeding capability.

These factors can affect cutting quality and ability:

- **Sharpness of the knife blade.** Dull blades create a serrated look to the cut edge of the film.
- **Weight on the 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. It also causes the blade to drag, accelerating wear and eventually creating a serrated cut edge on the film.
- Consider the stroke width of characters, style of serifs or extensions, and small details of scanned or digitized artwork.
- The minimum recommended stroke width is 0.040 inch (1.0 mm) when film is exposed to cleaning or other physical stress.

Printing with Gerber Digital Imaging Systems

Film series 225 is designed for use with the Gerber Digital Imaging systems and is compatible with GerberColor™: GCP (Process); GCS (Spot); GCT (Transparent); GCM (Medal); GCX (Special Effects); and GCF (Finishing) Series Foils.

Application Tapes

The application tape to use depends on the type of graphic produced. See Instruction Bulletin 4.3 for details.

- For graphics that have a large amount of exposed liner, and/or small letters and/or narrow stroke width, use 3M™ Prespacing Tape SCPS-2.
- For graphics that have very little exposed liner, and/or large letters, and/or wide stroke width, use 3M™ Premasking Tape SCPM-3.

Shelf Life, Storage, and Shipping

Follow these guidelines to store and ship 3M™ Scotchcal™ Film Series 225 and the processed graphics.

- Unprocessed film has a shelf life of 2 years after receipt from 3M. Processed film has a shelf life of 1 year. However, the total shelf life of a graphic before and after processing cannot exceed 2 years.
- Store the film in a clean, dry area, out of the direct sunlight, and at less than 100°F (38°C).
- Ship the finished graphic lying flat or in a roll. To roll the graphic, wrap it film-side out onto a core that is 5 inches (130 mm) or larger in diameter. These methods prevent the graphics from wrinkling or popping off the liner.

Product Data

Values given are typical for film series 225 and are not for use in specifications. The data given below are for film as purchased from 3M.

Physical Properties

Property	Value
Tensile strength (minimum)	5 pound/inch at 73°F (0.9 kg/cm at 23°C)
Applied shrinkage	0.008 inch (0.2 mm)
Service temperature range	-40° to +225°F (-40° to +107°C)
Reverse impact resistance	No cracking at 73°F or 40°F (23°C or 4°C)

Adhesion Characteristics

Final adhesion value is 24 hours after application.

Substrate	Adhesion Value
ABS	4 pounds/inch (0.7 kg/cm)
Acrylic	4 pounds/inch (0.7 kg/cm)
Acrylic enamel	4 pounds/inch (0.7 kg/cm)
Aluminum, alodine	8 pounds/inch (1.4 kg/cm)
Chrome	5 pounds/inch (0.9 kg/cm)
Polycarbonate	4 pounds/inch (0.7 kg/cm)
Urethane paints	4 pounds/inch (0.7 kg/cm)

Chemical Resistance Characteristics

- Resists mild acids, alkalis, and salts
- Excellent water resistance

Note: For the full product names of the 3M products listed on this page, please see page 1.

Flammability

Film 225-10 has been tested for flame spread per ASTM E84, "Surface Burning Characteristics of Building Materials," and meets the requirements of National Fire Protection Association Class A (1) (most fire-resistant class) as defined in NFPA 101, "Life Safety Code."

Health and Safety

Caution

When handling any chemical products, read the manufacturers' container labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information.

To obtain MSDS sheets for 3M products:

- By fax, call 1-800-364-0768 in the US and Canada or 1-650-556-8417 for all other locations.
- Electronically, visit us at <http://www.3M.com/MSDS>.
- By mail, or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501.

When using any equipment, always follow the manufacturers' instructions for safe operation.

3M Related Literature

Listed below is related 3M technical literature that may be of interest. You may view and print these Bulletins from our Web site at www.scotchprint.com, or order them via our Fax-on-Demand (FOD) system. Call one of these phone numbers to order the desired bulletins, and specify the FOD document number provided in the chart.

United States or Canada: 1-800-364-0768

International: 1-651-732-6506

Subject	Bulletin No.	FOD No.
Product Bulletins		
3M™ Panaflex™ Enhanced Image Sign Facing 645EI	645	4001
3M™ Panaflex™ Awning and Sign Facing 945 GPS	945	4006
Instruction Bulletins		
Design of graphics	2.1	5501
Using 3M application tapes; premasking and prespacing for films	4.3	6503
Application, substrate selection, preparation and substrate-specific application techniques	5.1	7001
Application, special applications and vehicles	5.4	7004
Application, general procedures for interior and exterior dry applications	5.5	7005
Application and attachment of graphics for Panaflex awning and sign facing 645EI	5.21	7021
Cleaning and repairing decorated awnings and sign facings	6.1	8501
Storage, handling, maintenance, removal	6.5	8505

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MAXX and GerberColor are trademarks of Gerber Scientific Products, Inc.

Bulletin Change Summary

Specified recommended Gerber systems; updated adhesion characteristics.



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Fax-on-Demand document: 3024
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