3M

Scotchcal™ ElectroCut™ Graphic Film
Series 7125

For Electronic Cutting, Thermal Transfer Printing and Screen Printing

1. Product Description

Film series 7125 are 2-mil, pressure-sensitive films designed for permanent graphics that may be prespaced and electronically cut, screen printed, or used in narrow width thermal transfer printing systems. This film, which is the same color on both sides, has a paper liner. The liner is blue on white films -10 and -20, for ease in weeding, and white for all others. This film is available in 62 colors.

2. Recommended Types of Graphics and End Uses

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty. Please read the entire Bulletin for details.

- Prespaced and electronically-cut graphics in the applications described in Product Description.
- Commercial and industrial graphic applications, including emblems, vehicle graphics, labels, striping, general signage, two-way window markings
- Thermal transfer printed graphics

A. Limitations of End Uses

(1) Do not use the film for these end uses

3M does not normally warrant other uses or applications, but please contact us to discuss your needs or let us suggest other 3M products.

- Application to corrugated surfaces or surfaces with compound curves
- Thermoforming
- Application to stainless steel for fleet applications
- Backlit signage (Use 3M™ Scotchcal™ Translucent Graphic Film Series instead)
- Use in Summa's SummaChrome™ or DuraChrome® printers or similar printers

3. Compatible Products

This Bulletin provides details about the base film, **recommended construction options, warranted durability and warranty limitations for the constructions shown in the Warranted Durability Tables.** Additional specific information about compatible products can be found in the Product and Instruction Bulletins listed in **3M Related Literature** at the end of this bulletin.

A. Screen Printing Inks

- 3M™ Screen Printing Ink Series 1900 *line color only*
- 3M™ Screen Printing UV Ink Series 9800 *line color only*

B. Graphic Protection

- 3M™ Screen Printing Gloss Clear 1920DR
- 3M™ Screen Printing Matte Clear 1930
- 3M™ Screen Printing Gloss Clear 9720UV
- 3M™ Screen Printing Matte Clear 9730UV
- 3M™ Screen Printing Gloss Clear 9800CL
- 3M™ Screen Printing Gloss UV Clear 9720i

C. 3M Flexible Substrate

- 3M™ Panaflex™ Awning and Sign Facing Series 945GPS

D. Other Products

- 3M™ Prespacing Tape SCPS-2
- 3M™ Prespacing Tape SCPS-3 with HVA
- 3M™ Prespacing Tape SCPS-53X
- 3M™ Premasking Tape SCPM-3
- 3M™ Premasking Tape SCPM-44X

4. Characteristics

These are typical values for unprocessed product; processing may change the values. Contact your 3M representative for a custom specification.

A. Physical Characteristics

Characteristic	Description
Film	Cast vinyl
Thickness	**Without adhesive:** 2 mil (0.05 mm) **With adhesive:** 2.5 to 3.5 mils (0.063 to 0.09 mm)
Color	See Chart, below
Adhesive type	Pressure sensitive
Adhesive color	Clear
Liner	**Films 7125-10, 7125-20:** Blue kraft paper **All other others:** White kraft paper
Tensile strength *minimum*	5 pound/inch at 73°F (0.9 kg/cm at 23°C)
Adhesion *24 hours after application*	**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) **Fruehauf painted panels:** 4 pounds/inch (0.7 kg/cm) **Polycarbonate:** 4 pounds/inch (0.7 kg/cm) **Urethane paints:** 4 pounds/inch (0.7 kg/cm) **Aluminum, alodine:** 8 pounds/inch (1.4 kg/cm) **Chrome:** 5 pounds/inch (0.9 kg/cm) **Polypropylene:** 3 pounds/inch (0.5 kg/cm)
Chemical resistance	Resists mild alkalis, mild acids, and salt Excellent resistance to water *(this does not include immersion)*
Flammability	Film 7125-10 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." Contact 3M at 1-800-328-3908 for more information.

B. Color Chart

Number	Color	Number	Color	Number	Color
7125-10	White	7125-46	Kelly green	7125-99	Fawn
7125-11	Pearl grey	7125-47	Intense blue	7125-103	Magenta
7125-12	Black	7125-48	Purple	7125-105	Harvest gold
7125-13	Tomato red	7125-49	Beige	7125-120	Satin aluminum
7125-14	Bright orange	7125-53	Cardinal red	7125-130	Eggshell
7125-15	Bright yellow	7125-54	Light orange	7125-131	Satin gold
7125-17	Vivid blue	7125-56	Dark green	7125-139	Saddle brown
7125-19	Deep mahogany brown	7125-57	Olympic blue	7125-173	Salmon pink
		7125-58	Burgundy	7125-176	Aqua
7125-20	Matte white	7125-59	Putty	7125-177	Shadow blue
7125-22	Matte black	7125-63	Geranium	7125-186	Bright green
7125-23	Deep red	7125-64	Apricot	7125-187	Wedgewood blue
7125-24	Terra cotta	7125-66	Forest green	7125-193	Mauve
7125-25	Sunflower	7125-77	Peacock blue	7125-196	Apple green
7125-27	Indigo	7125-85	Vista yellow	7125-197	Light navy
7125-29	Russet brown	7125-86	Robin egg blue	7125-263	Perfect match red
7125-31	Medium grey	7125-88	Violet	7125-273	Process magenta
7125-37	Sapphire blue	7125-89	Sandstone	7125-276	Bottle green
7125-38	Royal purple	7125-90	Antique white	7125-307	Dark aqua
7125-39	Tan	7125-96	Teal	7125-357	Bermuda blue
7125-41	Dark grey	7125-98	Dark violet		

C. Application Characteristics

| Characteristic	Description
Finished graphic application recommendation	**Graphic orientation:** Vertical, non-vertical and horizontal
	Surface type: Flat with and without rivets; Simple curves
	Substrate type: Panaflex substrate 945GPS, metal, glass, acrylic, polycarbonate, fiberglass, painted surfaces
	Application temperature: 50° to 100°F (10° to 38°C) *air and substrate*
Applied film shrinkage	0.010 inch (0.3 mm) *maximum*
Finished graphic exposure temperature	-40° to +225°F (-40° to +107°C)
Graphic removal	None, permanent

5. Definitions
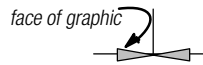
A. Exposure

U.S. Vertical Exposure
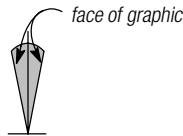
face of graphic

The face of the graphic is +/- 10° from vertical.

U.S. Non-vertical Exposure
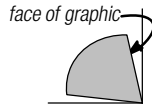
face of graphic

The face of the graphic is greater than 10° from vertical and greater than 5° from horizontal. This includes non-vertical surfaces of vehicle wraps or fleet graphics.

U.S. Horizontal Exposure

face of graphic

The face of the graphic is +/- 5° from horizontal.

U.S. Desert Southwest Exposure

Any outdoor graphic exposed to solar energy more than half of the daylight hours in Arizona, New Mexico and the desert areas of California, Nevada, Utah and Texas is subject to reduced warranties. A detailed map is available at 3Mgraphics.com under Warranties.

B. Graphic Types

Indoor Signs Stationary graphics applied indoors and *not* exposed to the elements.

Outdoor Signs Stationary graphics applied outdoors and exposed to the elements.

C. Graphic Construction

The products used to make a graphic, which may include film and/or flexible substrate, graphic protection, ink, printer and application tape.

D. Vehicle

Fleet Vehicle Straight trucks, semi-tractors and trailers used in commercial fleets. Excludes air shields.

Standard Vehicle Buses, vans, automobiles, recreational vehicles unless otherwise noted.

6. Warranty Information

A. Limitations and Disclaimers Applicable to All Warranties & Warranty Coverage Overview

Both the warranty coverage and the durability for each graphic is based on the user(s) reading and following all applicable and current 3M Product and Instruction Bulletins. 3M will honor the Warranted Durability stated in the base film or substrate Product Bulletin that is current when the film was purchased. Warranted durabilities may be reduced and stipulations may apply for certain constructions and applications, as covered in this Bulletin.

Continued on the next page.

The following is made in lieu of all other express or implied warranties, including any implied warranty of **merchantability** or fitness for a particular purpose or implied warranty arising out of a course of dealing, custom or usage of trade. 3M will replace or refund the price of any 3M materials that do not meet this warranty within the specified time periods. These remedies are exclusive. **In no case shall 3M be liable for any direct, indirect, or consequential damages, including any labor or non-3M materials charges.**

See the *3M Graphics Market Center Warranty Brochure* at 3Mgraphics.com, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

B. 3M Basic Product Warranty

All 3M products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this Product Bulletin and as further set forth in the 3M Graphics Market Center Warranty Brochure.

C. 3M™ MCS™ Warranty
Subject to Stipulations set forth in Section D., below

Finished graphics constructed with the materials specified and the exposure specified in the Warranted Durability Tables, Section C.(1), is eligible for the 3M™ MCS™ Warranty. For warranties for other exposures, see Section D.(1).

Veh = Fleet, Standard and Recreational Vehicle Graphics
Out = Outdoor Signs
In = Indoor Signs

Warranted Durability In Years

(1) Warranted Durability Table for Finished Graphics in a Standard U.S. Vertical Exposure

Graphic Protection	No Printing			Ink Series 1900			Ink Series 9800			Ink Series 9800 Metallic		
Graphic Protection	Veh	Out	In	Veh	Out	In	Veh	Out	In	Veh	Out	In
Film Colors: 7125-10, 12, 20, 22												
1920DR, air dry	—	—	—	5	5	5	—	—	—	—	—	—
1920DR, oven dry	—	—	—	6 ■	6 ■	6 ■	—	—	—	—	—	—
1930	—	—	—	2	2	2	—	—	—	—	—	—
9720i	—	—	—	6	6	6	6	6	6	5	5	5
9720UV	—	—	—	6	6	6	6	6	6	5	5	5
9730UV	—	—	—	3	3	3	3	3	3	—	—	—
9800CL	—	—	—	—	—	—	5	5	5	5	5	5
None	8	7	7	—	—	—	—	—	—	—	—	—
Film Colors: 7125-114, 120, 131												
1920DR, air dry	—	—	—	5	5	5	—	—	—	—	—	—
1920DR, oven dry	—	—	—	5 ■	5 ■	5 ■	—	—	—	—	—	—
1930	—	—	—	2	2	2	—	—	—	—	—	—
9720i	—	—	—	5	5	5	5	5	5	5	5	5
9720UV	—	—	—	5	5	5	5	5	5	5	5	5
9730UV	—	—	—	3	3	3	3	3	3	—	—	—
9800CL	—	—	—	—	—	—	5	5	5	5	5	5
None	5	5	5	—	—	—	—	—	—	—	—	—
Film Colors: All other colors of film series 7125												
1920DR, air dry	—	—	—	5	5	5	—	—	—	—	—	—
1920DR, oven dry	—	—	—	6 ■	6 ■	6 ■	—	—	—	—	—	—
1930	—	—	—	2	2	2	—	—	—	—	—	—
9720UV	—	—	—	6	6	6	6	6	6	5	5	5
9730UV	—	—	—	3	3	3	3	3	3	—	—	—
9800CL	—	—	—	—	—	—	5	5	5	5	5	5
None	6	6	6	—	—	—	—	—	—	—	—	—

■ Warranty requires oven drying the last color of ink series 1900 and screen print 1920DR for 2 hours at 150°F (65°C).

(2) Legibility Warranty

For Fleet Graphics ONLY for Horizontal Exposure and Selected Constructions

Applications subjected to maximum sunlight and environmental conditions used on rooftops of commercially-owned fleet vehicles where identification from the air is needed are warranted for <u>legibility only</u> for the following constructions. The graphic will change color, lose gloss and chalk, which is not covered by warranty.

Warranty in Years

Film Colors: 10, 11, 12, 13, 14, 15, 20, 22, 53		Horizontal Exposure	
Ink Series	Clear	U.S.	U.S. Desert Southwest
No printing	None	5	3

D. General Warranty Stipulations for 3M™ MCS™ Warranty

These stipulations apply to graphics covered by the 3M™ MCS™ Warranty. Specific provisions of these stipulations are found in the *3M Graphics Market Center Warranty Brochure* at 3Mgraphics.com.

(1) Reduced Warranted Durability for Non-vertical Graphics

For graphics oriented in a non-vertical, outdoor exposure, multiply the warranted durability years for your graphic construction as shown in the applicable Warranted Durability Tables, Section C.(1) or Section D(1), by the percentage shown for the intended graphic exposure.

If the Graphic Exposure is:	Use this Percentage of U.S. Vertical Exposure, Warranted Durability	Calculation Examples
U.S. Non-vertical	50% (0.5)	0.5 x 5 years = 2.5 years
Desert Southwest Vertical	70% (0.7)	0.7 x 5 years = 3.5 years
Desert Southwest Non-vertical	35% (0.35)	0.35 x 5 years = 1.75 years
Horizontal	0%	0

(1) Opacity

This film can be used on opaque surfaces but has less hiding power than a film with a colored adhesive. Consider this characteristic when selecting and preparing the substrate.

(2) 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.

(3) Application to Glass

3M accepts no liability for glass breakage when using this film for window graphics. See Instruction Bulletin 5.1 for details.

(4) Application Outside the U.S.

Contact the 3M organization for that country.

(5) Graphics Made with Components Not Sold or Recommended by 3M

The 3M™ MCS™ Warranty does not cover finished graphics made with inks, film, graphic protection and/or application tapes that are not sold or recommended by 3M. The user is solely responsible for the graphic appearance, performance and durability of graphic constructions that include any other products.

(6) Printed Vehicle Graphics

Screen printed vehicle graphics require a clear to be warranted

(7) Harsh Washing

Graphics exposed to abrasive washing conditions, harsh cleaners or chemicals are not warranted.

(8) Clears that Haze

Clears 1930 and 9730UV may haze, which is not covered by the warranty.

(9) Chalking

Chalking for unprinted film colors 20, 263, 273 and 286 as they age is considered normal and acceptable wear. Chalking can be removed by normal graphic cleaning methods.

7. Factors that Affect Graphic Performance Life

The actual performance life of a graphic is affected by all of the following.

- Correct combination of 3M-recommended graphics products
- Ink formulation (screen printing)
- Adequate ink drying and/or UV curing (screen printing)
- Selection and preparation of the substrate
- Surface texture
- Application methods
- Angle and direction of sun exposure
- Environmental conditions
- Cleaning or maintenance methods

8. Graphics Manufacturing

⚠ **CAUTION**

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

A. Thermal Transfer Printing

Formulations and processing conditions can affect ink durability. Refer to the Product and Instruction Bulletins for your ink for limitations and proper usage.

This film can be imaged with narrow width thermal transfer printing systems. Refer to the equipment manufacturer's literature for details.

B. Screen Printing

Refer to the ink's Product and Instruction Bulletins.

C. Cutting

Based on cutting and weeding evaluations that used Helvetica medium upper case, the recommended minimum cutting height for text is 0.375 inch (0.95 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.
- Temperature and relative humidity are minor considerations, but avoid extreme or rapidly fluctuating conditions.
- Store the film in the same environment as the cutting equipment.
- 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.

D. Weeding

The excess film should be weeded (removed) as soon after cutting as practical. This is to minimize the effect of possible adhesive flow 24 or more hours after cutting.

E. Application Tapes

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

(1) When to Use Premasking Tape

- As an application aid to increase stiffness, and prevent stretching and damage during application.
- When little or no liner is exposed.

(2) When to Use Prespacing Tape

- Hold cut and weeded letters or graphics in registration after removing the film liner.
- Protect cut graphic parts from scratching or damage during application.
- Use when large amounts of liner are exposed.

(3) How to Select a Tape

Determine whether you want to premask the graphic or prespace cut pieces of film such as letters. Then locate the graphic protection used on your graphic in the table below, and use the corresponding tape. See Instruction Bulletin 4.3 for complete details.

EXAMPLE: To premask a film that includes clear 1920DR, use premasking tape SCPM-3.

	Graphic Protection			
	Refer to the Warranty tables to determine whether the Graphic Protection option listed is approved for the ink series you are using with these films.			
	1920DR 1930	**9720UV 9730UV 9720i 9800CL**	**Ink 9800, no clear**	**Unprinted film**
Premasking SCPM-3 with HVA *use for prespacing*	■			■
Prespacing SCPS-2	■			■
Prespacing SCPS-53X		■	■	
Premasking SCPM-3	■			■
Premasking SCPM-44X		■	■	

9. Shelf Life, Storage and Shipping

A. Shelf Life

Total shelf life: 3 years from the date of manufacture on the original box. Up to 3 years unprocessed, *OR* process within 2 years *and* then apply within 1 year of processing.

B. Storage Conditions

- 40° to 100°F (4° to 38°C)
- Out of sunlight
- Clean dry area
- Original container
- Bring the film to print room temperature before using

C. Shipping Finished Graphics

Flat, or rolled printed side out on 5 inch (13 cm) or larger core. This helps prevent the liner and, if used, the application tape from popping off.

10. 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 go to 3M.com/MSDS, or 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.

11. 3M Related Literature

Before starting any job, be sure you have the most current Product and Instruction Bulletins.

The information in 3M Product and Instruction Bulletins is subject to change. Current Bulletins are available at 3Mgraphics.com. The following applicable Bulletins provide information and processes you need to properly make the graphics described in this Bulletin. Additional Bulletins may be needed as indicated in the 3M Related Literature section of other 3M components you use.

Bulletin types: PB = Product Bulletin; PB-IB = Product & Instruction Bulletin; IB = Instruction Bulletin

Subject	Type	Bulletin No.
3M™ Scotchcal™ Translucent Graphic Film Series 3630	PB	3630
3M™ Panaflex™ Awning and Sign Facing 945GPS	PB	945

3M™ Screen Printing Ink Series 1900 and Overprint Clear VI0402
   Screen printing with ink series 1900   - line color
   - 4-color
	PB
	I B
	I B
		1900
		3.12
		3.11

3M™ Screen Printing UV Ink Series 9800 • Screen printing with UV ink series 9800 - line color - 4-color	PB IB IB	9800 3.20 3.21
3M™ Screen Print UV Gloss Clears 9720i, 9720UV, 9730UV	PB-IB	Clears 9720
Design of graphics	IB	2.1
Using 3M application tapes; premasking and prespacing for films	IB	4.3
Application, substrate selection, preparation and substrate-specific application techniques	IB	5.1
Application, general procedures for indoor and outdoor dry applications	IB	5.5
Application, wet method for translucent screen printed, thermal mass transfer and cut graphics	IB	5.7
Storage, handling, maintenance, removal	IB	6.5
3M Graphics Center Warranty Brochure	go to www.3Mgraphics.com	

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12. Bulletin Change Summary

Total shelf life has increased from 2 years to 3 years. Films 7125-10 and 7125-20 are transitioning to a blue liner; existing stock cannot be exchanged for blue liner. Changed minimum application temperature from 40° to 50°F.

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