Scotchcal™ ElectroCut™ Graphic Film
Series 7725

For Electronic Cutting, Thermal Transfer Printing and Screen Printing

Product Description

Film series 7725 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. These films, which are the same color on both sides, have a transparent synthetic liner that resists moisture absorption and static buildup, lays flat for easier assembly of multicolor graphics, and allows superior cutting and weeding. This film series is available in 62 colors.

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
- Commercial and industrial graphic applications, including emblems, vehicle graphics, labels, striping, general signage, two-way window markings
- Thermal transfer printed graphics
- Screen printed graphics

Limitations of 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.

Do not use the film for these end uses

- Application to stainless steel for fleet applications
- Application to corrugated surfaces or surfaces with compound curves
- Graphics subjected to gasoline vapors or spills
- Thermoforming
- Backlit signage (Use 3M™ Scotchcal™ Translucent Graphic Film Series instead)
- Use in Summa's SummaChrome™ or DuraChrome® printers or similar printers
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684 for alternatives.

Compatible Products

3M Graphic Materials

This Bulletin provides details about the base film and construction options and warranty. 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.

Inks

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

Graphic Protection Options

- 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

3M Substrates

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

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

Characteristics

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

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)
Colors	See Color Chart
Adhesive type	Pressure sensitive
Adhesive color	Clear
Liner	Transparent synthetic
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 7725 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.

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:** 40° to 100°F (4° to 38°C) *air and substrate*
Applied film shrinkage	0.010 inch (0.3 mm) *maximum*

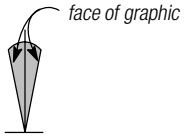
Application Characteristics

Characteristic	Description
Finished graphic exposure temperature	-40° to +225°F (-40° to +107°C)
Graphic removal	None, permanent

Definitions

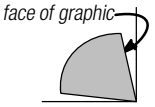
Exposure

U.S. Vertical Exposure



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

U.S. Non-vertical Exposure



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

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.

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.

Graphic Construction

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

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.

Warranty Information

Warranty and Limited Remedy

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: 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. 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.

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 Warranted Durability Table 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.

Color Chart

Number	Color	Number	Color	Number	Color
7725-10	White	7725-46	Kelly green	7725-99	Fawn
7725-11	Pearl grey	7725-47	Intense blue	7725-103	Magenta
7725-12	Black	7725-48	Purple	7725-105	Harvest gold
7725-13	Tomato red	7725-49	Beige	7725-120	Satin aluminum
7725-14	Bright orange	7725-53	Cardinal red	7725-130	Eggshell
7725-15	Bright yellow	7725-54	Light orange	7725-131	Satin gold
7725-17	Vivid blue	7725-56	Dark green	7725-139	Saddle brown
7725-19	Deep mahogany brown	7725-57	Olympic blue	7725-173	Salmon pink
		7725-58	Burgundy	7725-176	Aqua
7725-20	Matte white	7725-59	Putty	7725-177	Shadow blue
7725-22	Matte black	7725-63	Geranium	7725-186	Bright green
7725-23	Deep red	7725-64	Apricot	7725-187	Wedgewood blue
7725-24	Terra cotta	7725-66	Forest green	7725-193	Mauve
7725-25	Sunflower	7725-77	Peacock blue	7725-196	Apple green
7725-27	Indigo	7725-85	Vista yellow	7725-197	Light navy
7725-29	Russet brown	7725-86	Robin egg blue	7725-263	Perfect match red
7725-31	Medium grey	7725-88	Violet		
7725-37	Sapphire blue	7725-89	Sandstone	7725-273	Process magenta
7725-38	Royal purple	7725-90	Antique white	7725-276	Bottle green
7725-39	Tan	7725-96	Teal	7725-307	Dark aqua
7725-41	Dark grey	7725-98	Dark violet	7725-357	Bermuda blue

3M™ MCS™ Warranty

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

Finished graphics constructed as shown in the tables below are eligible for the MCS Warranty. For warranties for other exposures, see page 6.

Out = Outdoor Signs
In = Indoor Signs
Window = Inside of Exterior Window

Vertical Exposure

Graphic Protection	No Printing			Ink Series 1900			Ink Series 9800			Ink Series 9800 Metallic		
	Veh	Out	In	Veh	Out	In	Veh	Out	In	Veh	Out	In
	Film Colors: 7725-10, 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: 7725-114, 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	—	—	—	—	—	—	—	—	—

Continued on the next page

Graphic Protection	Vertical Exposure											
	No Printing			Ink Series 1900			Ink Series 9800			Ink Series 9800 Metallic		
	Veh	Out	In	Veh	Out	In	Veh	Out	In	Veh	Out	In
	Film Colors: All other colors of film series 7725											
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	6	6	6	—	—	—	—	—	—	—	—	—

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

3M™ MCS™ Warranty for Non-Vertical and Desert Southwest

Use the years of warranted durability indicated in the tables for your graphic construction and the following formulas to determine other durabilities.

Exposure	Percentage of U.S. Vertical Exposure	Example
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

Legibility Warranty for Horizontal Exposure of Vehicle Graphics Requiring Legibility Only

Refer to the definition of Horizontal Exposure. This orientation exposes graphics to the maximum sunlight and environmental conditions and is intended for use only on rooftops of commercially owned vehicles where identification from the air is needed.

This warranty covers legibility only. Color change, loss of gloss, and chalking will occur and are not covered by the warranty.

Film Color Numbers: 10, 11, 12, 13, 14, 15, 20, 22, 53

- U.S. 5 years
- U.S. Desert Southwest: 3 years

Signs

Graphics applied outdoors and exposed to the elements.

General Warranty Stipulations

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.

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

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 to Glass

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

Application Outside the U.S.

Contact the 3M organization for that country.

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.

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.

Graphic Protection

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

These graphics required protection to be warranted:

- Screen printed vehicle graphics require a clear to have a warranty against abrasion damage and loss of gloss.
- Graphics exposed to abrasive washing conditions, harsh cleaners or chemicals are not warranted.

Chalking

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

Harsh Washing

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

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.

Fabrication

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

Cutting

Minimum Cutting Heights

Based on cutting and weeding evaluations that used Helvetica medium upper case, the recommended minimum cutting height for text is 0.25 inch (0.64 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.

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.

Application Tapes

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

Note: When using prespacing tape with film series 7725, do not use a Heat Vacuum Applicator to try improve adhesion to the liner. Doing so can cause problems when removing the film liner.

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.

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.

How to Select a Tape

Determine whether you want to premask the graphic or prespace cut pieces of film such as letters. In the table below, locate the last coating applied to your graphic and use the corresponding tape. See Instruction Bulletin 4.3 for complete details.

	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		■	■	

Shelf Life, Storage and Shipping

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*** apply within 1 year of processing

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

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.

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.

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	PB	1900
• Screen printing with ink series 1900 - line color	IB	3.12
- 4-color	IB	3.11
3M™ Screen Printing UV Ink Series 9800	PB	9800
• Screen printing with UV ink series 9800 - line color	IB	3.20
- 4-color	IB	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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Bulletin Change Summary

Total shelf life has increased from 2 years to 3 years. DO NOT use a Heat Vacuum Applicator for applying application tape.

3M

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