

## Product Description

- For solvent and UV screen printing only
- 2-mil vinyl film

## Product Features

- Ideal for low-surface energy substrates
- High tack pressure sensitive adhesive
- Not removable
- Layflat liner
- Expected performance life of 10 years (white, black) or eight years (clear) (unwarranted period for unprinted film without graphic protection applied to a flat, vertical, outdoor surface in a non-abusive environment.)

## Recommended Types of Graphics and End Uses

- Multicolor graphics including labels, emblems, and striping
- Small format original equipment manufacturer's (OEM) decorative and identification graphics, cautionary, safety, and vandal-resistant labeling

When constructed and used as described in this bulletin, these types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty or the 3M Performance Guarantee. Read this entire bulletin for details.

## Recommended Compatible Products

See [3M.com/graphicswarranties](https://www.3m.com/graphicswarranties) for a complete list of compatible products approved by 3M for use with the base film covered in this bulletin and for the creation of graphics that may be eligible for the 3M™ MCS™ Warranty.

## Screen Print Inks

- [3M™ Screen Printing Ink Series 1900 \(Solvent\)](#), line color and four color
- [3M™ Screen Printing UV Ink Series 9800](#), line color and four color

## Graphic Protection

- [3M™ Screen Print Gloss Clear 1920DR](#)
- [3M™ Screen Print UV Gloss Clear 9730i](#)
- [3M™ Screen Print UV Gloss Clear 9740i](#)
- [3M™ Screen Print UV Gloss Clear 9800CL](#)

## Other Products

- [3M™ Edge Sealer 3950](#)
- [3M™ Edge Sealer Tape 8914](#)

## Certificate of 3M™ MCS™ Warranty

Graphic manufacturers who produce digitally printed graphics made entirely with branded 3M Graphics products, including 3M ink purchased through a qualified 3M distributor or 3M printing partner, may register to be recognized with a Certificate of 3M™ MCS™ Warranty. Only graphic manufacturers having a current Certificate of 3M™ MCS™ Warranty are eligible to extend this warranty to their customers.

### NOTE

For non-digitally printed finished graphics, check your eligibility for the 3M™ MCS™ Warranty by viewing the warranty period found within this product bulletin or by using the warranty selector at [www.3mgraphics.com/warranties](https://www.3mgraphics.com/warranties).

## Characteristics

These are the typical values for unprocessed product. Processing may change the values.

### Physical Characteristics

Characteristic	Value
<b>Material</b>	Cast vinyl
<b>Film Color</b>	<b>3690LF-10:</b> White <b>3690LF-12:</b> Black <b>3690LF-114:</b> Clear
<b>Thickness</b>	<b>Without adhesive:</b> 2 mil (0.05 mm) <b>With adhesive:</b> 3–4 mil (0.08–0.10 mm)
<b>Adhesive</b>	Pressure-sensitive
<b>Adhesive Color</b>	<b>3690LF-10:</b> Gray <b>3690LF-12:</b> Gray <b>3690LF-114:</b> Clear
<b>Liner</b>	<b>3690LF-10:</b> White polyethylene-coated layflat paper <b>3690LF-12:</b> White polyethylene-coated layflat paper <b>3690LF-114:</b> Brown polyethylene-coated layflat paper
<b>Typical Adhesion</b> 24 Hours After Application	<b>ABS:</b> 4 to 5 lbf/in. (7.0 to 8.8 N/cm) <b>Acrylic enamel:</b> 4 to 5 lbf/in. (7.0 to 8.8 N/cm) <b>Aluminum, anodized:</b> 7 to 8 lbf/in. (12.3 to 14.0 N/cm) <b>Automotive clear coats:</b> 3 to 5 lbf/in. (5.3 to 8.8 N/cm)
<b>Tensile Strength</b>	5 lbf/in. at 73°F (8.8 N/cm at 23°C) minimum
<b>Chemical Resistance</b>	Resists mild alkalis, mild acids, and salt Excellent resistance to water (does not include immersion)
<b>Flammability</b>	Refer to the online product catalog at <a href="https://www.3m.com/graphics">3M.com/graphics</a> or call 1-800-328-3908.

### Application Characteristics

Characteristic	Value
<b>Finished Graphic Application Recommendation</b>	<b>Surface type:</b> Flat, or moderate compound curves, with and without rivets; also sand-cast, moderately rough <b>Surface type:</b> Metal, rigid low energy surfaces such as plastics (including polyethylene and polypropylene) and powder-coated paints <b>Application method:</b> Dry <b>Application temperature:</b> 40°F to 90°F (4°C to 32°C) air, substrate
<b>Temperature Range After Application</b>	-65°F to 225°F (-54°C to 107°C) (Though not for extended periods of time at the extremes.)
<b>Graphic Removal</b>	Not removable

## Factors Affecting Graphic Performance Life

The actual performance of a graphic is affected by:

- Complete ink drying or curing
- The combination of graphic materials used
- Selection, condition, and preparation of the substrate
- Surface texture
- Application methods
- Environmental conditions
- Angle and direction of sun exposure
- Cleaning and maintenance methods
- Removal methods and conditions

## Graphics Manufacturing



Before using any equipment, always read the manufacturer's instructions for safe operation.

### Cutting

See [3M Instruction Bulletin Production: Cutting](#) for sheeting, scoring, and film cutting details.

### Graphic Protection

Graphic protection may improve the appearance, performance, and durability of the graphic. Click on the graphic protection options listed in this product bulletin or see the [3M Graphics Materials Product Catalog](#), for more information.

#### NOTE

During installation, scratches may occur on films without graphic protection.

## Application Tapes

There are two types of application tapes. See [3M Instruction Bulletin Application: 3M™ Application Tapes for Graphic Films](#) to determine what application tape is recommended for your 3M Graphics Products. Finished graphics eligible for any 3M warranty must be constructed using approved 3M Graphics Products. See the [3M Graphics Warranty Bulletin](#) for more details.

### Premasking Tape

Premasking tape increases stiffness during application while preventing stretching and damage. Use when little or no liner is exposed. See [3M Instruction Bulletin Application: 3M™ Application Tapes for Graphic Films](#) for complete details.

### Prespacing Tape

Prespacing tape holds cut and weeded letters or graphics in place during application and after removal of the film liner, while preventing stretching and damage. Use when large amounts of liner are exposed. See [3M Instruction Bulletin Application: 3M™ Application Tapes for Graphic Films](#) for complete details.

## Application and Installation

### Stretchability

Many finished graphic constructions can be stretched without primer or relief cuts while maintaining lift resistance.

## Maintenance and Cleaning

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline). See [3M Instruction Bulletin Maintenance](#) for details.

## Removal

These films are not removable. See [3M Instruction Bulletin Removal](#) details.

## Shelf Life, Storage, and Shipping

### Shelf Life

The shelf life is **never more than three years** from the date of manufacture on the original box.

Processing the film changes its shelf life to **one year** from the processing date, but no more than three years from the manufacturing date.

### Storage Conditions

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

### Shipping Finished Graphics

Flat, or rolled printed side out on a 6 in. (15 cm) or larger core. This helps prevent the application tape, if used, from popping off.

## 3M Related Literature

In addition to other 3M bulletins specified in this document, the following bulletins provide details users may need to successfully apply a graphic.

- [3M Instruction Bulletin Production: Graphic Design, Handling, and Storage](#)
- [3M Instruction Bulletin Production: Lamination](#)
- [3M Instruction Bulletin Application: Vehicles](#)
  - Complete the 3M Pre-Installation Inspection Record found in this instruction bulletin to manufacturing or applying a graphic to an automobile, van, or bus.
- [3M Instruction Bulletin Application: Trailers](#)
- [3M Instruction Bulletin Application: Watercraft](#)
  - Complete the 3M Pre-Installation Inspection Record found in this instruction bulletin prior to manufacturing or applying a graphic to a watercraft.
- [3M Instruction Bulletin Application: General Installation Techniques](#)

## Health and Safety

### Tools and Equipment Usage

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

## Warranty Information

### Warranty Coverage Overview

The warranty coverage for eligible graphics is based on the user both reading and following all applicable and current 3M Graphics product and instruction bulletins. The warranty period for eligible graphics is as stated in the 3M Graphics Warranties Matrices at the time the film was purchased. Information found at [3M.com/graphicswarranties](https://www.3m.com/graphicswarranties) includes:

- [3M Graphics Warranties Bulletin](#)
  - This bulletin contains information on limitations, exceptions, and warranty period reductions for 3M Graphics warranties. The warranty period may be reduced and stipulations may apply for certain constructions, applications, and graphic exposures as covered in this bulletin.
- [3M Graphics Warranties Selector](#)
  - Use this selector to search for your warranty coverage by 3M Graphics Product(s), Inks, Printer, Application(s), and Exposure.
- [3M™ Global Geographical Zones](#)
  - Use this map to identify your warranty zone and determine if you are subject to reduced warranted durabilities.

### Technical Information

Technical information, guidance, and other statements provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license to any intellectual property rights is granted or implied with respect to this technical information.

### Product Selection and Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment, reviewing all applicable regulations and standards, and reviewing the product label and use instructions. Failure to properly evaluate, select, and use a 3M product in accordance with instructions or to meet all applicable safety regulations may result in injury, sickness, death, and/or harm to property.

### Warranty, Limited Remedy, and Disclaimer

Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

### Limitation of Liability

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#### Commercial Branding and Transportation

3M Center, Building 223-3N-30  
St. Paul, MN 55144

1-800-328-3908  
[3M.com/Graphics](https://www.3m.com/Graphics)

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