

Series 3650

Product Description

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

Product Features

- Pressure-sensitive adhesive
- Not removable
- Available in white, black, and transparent
- Expected performance life of 10 years (white and black) or eight years (transparent) (unwarranted period for unprinted film with no graphic protection, applied to a flat, vertical, outdoor surfaces in a non-abusive environment)

Recommended Types of Graphics and End Uses

- Clear window or two-way graphics
- Outdoor and indoor graphics and signs
- Information labels
- Commercial fleet/vehicle graphics and emblems
- 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. Please read the entire bulletin for details.

Recommended Compatible Products

See 3M.com/graphicswarranties for a complete list of compatible products approved by 3M for use with the base film covered in this bulletin and used for the creation of a graphic that may be eligible for the 3M™ MCS™ Warranty.

- [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](#)

OEM Inks and Clears (for OEM graphics only)

- Sericol™ Duracal™ UV Screen Print Inks
- Sericol™ Duracal™ Screen Print Clear (approved for OEM applications only)

Other Products

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

NOTE: For non-digitally printed finished graphics, check your eligibility for the 3M™ MCS™ Warranty by viewing the warranty period found within the product bulletin or using the warranty selector at www.3m.com/graphicswarranties.

Quick Links

- [3M Graphics Warranties](#)
- [Technical Information Selector](#)
- [Safety Data Sheets \(SDS\)](#)
- [Flammability](#)
- [Videos](#)

Some of these links lead to web-based resources that are not product-specific.

Characteristics

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

Physical Characteristics

Characteristic	Value
Material	Cast vinyl
Film Color	3650-10: White 3650-12: Black 3650-114: Clear
Thickness	Without adhesive: 2 mil (0.05 mm) With adhesive: 3–4 mil (0.08–0.10 mm)
Adhesive	Pressure-sensitive
Adhesive Color	3650-10: Gray 3650-12, 3650-114: Clear
Liner	Polyethylene-coated layflat paper
Typical Adhesion 24 Hours After Application	ABS: 4–5 lbs/in. (0.72–0.89 kg/cm) Acrylic enamel: 4–5 lbs/in. (0.72–0.89 kg/cm) Aluminum, anodized: 5–6 lbs/in. (0.89–1.07 kg/cm) Automotive clear coats: 3–5 lbs/in. (0.54–0.89 kg/cm)
Tensile Strength	5 lbs/in. at 73°F (0.9 kg/cm at 23°C) minimum
Chemical Resistance	Resists mild alkalis, mild acids, and salt Excellent resistance to water (does not include immersion)
Flammability	Refer to the online product catalog at 3M.com/graphics or call 1-800-328-3908.

Application Characteristics

Characteristic	Value
Finished Graphic Application Recommendation	Surface type: Flat, with and without rivets Surface type: Glass, metal, paint, fiberglass reinforced plastic, rigid plastic Application method: Fleet and vehicles: Dry Windows: Wet All other surfaces: Wet or dry Application temperature: 50°F to 100°F (10°C to 38°C), air and substrate
Temperature Range After Application	-65°F to +225°F (-54°C to +107°C) (Though not for extended periods of time at the extremes.)
Graphic Removal	Not removable

Factors Affecting Graphic Performance Life

The actual performance life of a graphic is affected by:

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

Graphics Manufacturing

CAUTION

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

Cutting

See [3M Instruction Bulletin 4.1](#) 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.

IMPORTANT NOTE

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

Application Tapes

There are two types of application tapes. See [3M Instruction Bulletin AT-1](#) to determine what application tape is recommended for your film or finished graphic.

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 4.3](#) 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 4.3](#) for complete details.

Application and Installation

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

- [3M Instruction Bulletin 2.1](#) Design of Graphics
- [3M Instruction Bulletin 4.22](#) Lamination Basics for Inkjet Printed Graphics
- [3M Instruction Bulletin 5.4](#) Application: Fleet Trucks
- [3M Instruction Bulletin 5.42](#) Application: Special Considerations for Watercraft
 - Complete the 3M Pre-Installation Inspection Record found in 5.42 prior to manufacturing or applying a graphic to a watercraft.
- [3M Instruction Bulletin 5.5](#) Application, General Procedures for Interior and Exterior Dry Application
- [3M Instruction Bulletin 5.7](#) Application, Wet Method for Translucent, Inkjet, Screen Printed and Cut Graphics
- [3M Instruction Bulletin 6.5](#) Storage, Handling, Maintenance and Removal of Films and Sheetings

Stretchability

Many finished graphic constructions can be stretched without primer or relief cuts and maintain lift resistance.

- For straight trucks, semi-trucks, and semi-trailers, see [3M Instruction Bulletin 5.4](#) for details and exceptions.

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 6.5](#) for details.

Removal

These films are not removable. See [3M Instruction Bulletin 6.5](#) for 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.

If you process the film, the shelf life is changed to **one year** from the processing date, but no later 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 6 in. (15 cm) or larger core. This helps prevent the application tape, if used, from popping off.

Health and Safety

CAUTION

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety, and environmental information. To obtain SDS for 3M products go to [3M.com/SDS](https://www.3m.com/SDS). To request SDS by mail, or in case of an urgent situation, call 1-800-364-3577 or 1-651-737-6501.

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 vertical warranty period by product type, ink type, film name, and/or ink/printer platform.
- [U.S. Desert Southwest Region Map](#)
 - Use this map of hot, arid desert areas to determine if you are subject to reduced warranted durabilities.

Technical Information

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Product Selection and Use

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Commercial Solutions

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