

181 Ideal for Stainless Steel Substrates

Product Description

- For Solvent and UV Screen Printing and Cut Graphics
- 2-mil cast vinyl film

Product Features

- Specifically formulated for use on stainless steel
- Pressure-activated adhesive for easy sliding, tacking, snap-up and repositioning
- Flexible; conforms to moderate curves, corrugations and rivets
- Not removable
- Expected Performance Life of 10 years (unwarranted period for unprinted film with no graphic protection, applied to a flat, vertical, outdoor surface in a non-abusive environment)

IMPORTANT NOTE

Metallic-finish custom-constructions made with this product are not warranted.

Recommended Types of Graphics and End Uses

- Outdoor stainless steel applications
- Indoor and outdoor graphics and signs
- Commercial vehicle and fleet graphics, emblems or striping
- Bus graphics
- Standard vehicle graphics
- Rail graphics

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](https://www.3m.com/graphicswarranties) for a complete list of compatible products that are 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](#)

Application Tapes

See [3M Instruction Bulletin AT-1](#) to determine what application tape is recommended for the film or finished graphic.

Other Products

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

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.

Certificate of 3M™ MCS™ Warranty

Graphic manufacturers who produce digitally printed graphics made with all 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 the Product Bulletin or using the warranty selector at www.3m.com/graphicswarranties.

Characteristics

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

Physical Characteristics

Characteristic	Value
Material	Cast Vinyl
Film Color	White, opaque
Thickness	Without adhesive: 2 mil (0.05 mm) With adhesive: 3–4 mil (0.08–0.10 mm)
Adhesive	Pressure-activated (slide, tack, snap-up, reposition)
Adhesive Color	Gray
Liner	Polyethylene-coated paper
Adhesion, Typical 24 hours after application	Stainless Steel: 5.5-6.5 lb/in (1.0-1.1 kg/cm)
Tensile Strength	5 pounds/inch at 73 °F (0.9kg/cm at 23 °C) minimum
Chemical Resistance	Resists mild alkalis, mild acids, and salt Excellent resistance to water (does not include immersion)
Flammability	Go to the On-line 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, simple curves, compound curves, and corrugations Substrate type: Stainless steel Application Method: Dry Application temperature (air and substrate): 60° to 90°F (16° to 32°C) flat, curved or corrugated surfaces with rivets Note: Cut completely around all rivets on stainless steel applications
Temperature Range After Application	-40 to +225 °F (-40 to +107 °C) Not for extended periods of time at the extremes
Graphic Removal	Not removable

IMPORTANT NOTE

Metallic-color films are not warranted for applications to stainless steel substrates.

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 that 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 and 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.

The warranties set forth in this Bulletin are made in lieu of all other express or implied warranties, including any implied warranty of merchantability, fitness for a particular purpose, or arising out of a course of dealing, custom, or usage of trade.

3M Basic Product Warranty

3M Graphics Products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in its applicable 3M Graphics Product Bulletin and as further set forth in the [3M Graphics Warranties Bulletin](#).

Limited Remedy

The limited remedy applicable to each warranty is addressed in the 3M Graphics Warranties Bulletin found at [3M.com/graphicswarranties](https://www.3m.com/graphicswarranties).

Limitation of Liability

Except where prohibited by law, 3M SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO PURCHASER OR USER FOR ANY DIRECT (EXCEPT FOR THE LIMITED REMEDY PROVIDED IN THE 3M GRAPHICS WARRANTIES BULLETIN), INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LABOR, NON-3M MATERIAL CHARGES, LOSS OF PROFITS, REVENUE, BUSINESS, OPPORTUNITY, OR GOODWILL) RESULTING FROM OR IN ANY WAY RELATED TO 3M'S GRAPHICS PRODUCTS, SERVICES, or THIS BULLETIN. This limitation of liability applies regardless of the legal or equitable theory under which such losses or damages are sought.

Warranty Period Matrices

See the 3M Graphics Warranties Matrices at [3M.com/graphicswarranties](https://www.3m.com/graphicswarranties), for vertical warranty period information specific to your film.

Additional Limitations

See the 3M Graphics Warranties Bulletin at [3MGraphics.com/warranties](https://www.3m.com/graphicswarranties), for terms, additional limitations of your warranty, if any, and limitations of liability.

Factors that Affect Graphic Performance Life

The actual performance life of a graphic is affected by:

- the combinations of graphics 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 or maintenance methods.

Graphics Manufacturing

CAUTION

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

Completely Dry Graphics

IMPORTANT NOTE

Incomplete drying or curing can result in graphic failure including curling, increased shrinkage and adhesion failure, which are not covered under any 3M Graphic Warranty.

See the specific ink's 3M Product and Instruction Bulletin for more details.

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 Product Bulletin or see the [3M Graphics Market 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 the film or finished graphic.

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

Holds cut and weeded letters or graphics in place during application and after removing 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 5.36](#) Application Techniques for Automobiles, Vans and Buses. Complete the 3M Pre-Installation Inspection Record found in this Instruction Bulletin prior to manufacturing or applying a graphic to an automobile, van, or bus.
- [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 this Instruction Bulletin 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 Product and Instruction Bulletin V-Tools](#) 3M™ Vehicle Channel Applicator Tools.

IMPORTANT NOTE

Install the film using the dry method. Do not use a detergent water mixture, or commercial application liquid, to apply this film.

IMPORTANT NOTE

Completely cut around all rivets on stainless steel substrates.

Pressure-activated Adhesive

The pressure activated adhesive on this film offers:

- Smooth sliding into position on a substrate;
- Fast finger tacking to check position; and
- Easy snap-up and repositioning when you need it.

The **snap-up and reposition feature is lost:**

- When firm pressure with a squeegee or other application tool is applied.
- At application temperatures above 100° F (38° C) even if only light finger pressure was used for tacking.
- If any part of the film is removed from the original liner and reapplied to the same or another liner.
- Solvent from inkjet ink has not completely dried or cured, which affects both slideability and snap-up.

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.

3M™ Tape Primer 94 and Adhesion Promoter 111

3M recommends that where the film will be stretched, use primer to maximize a graphic's bond to its substrate.

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

This film is not removable. 3M makes no claims as to the ease or speed of removal. See [3M Instruction Bulletin 6.5](#) for details.

Shelf Life, Storage and Shipping

Shelf Life

The shelf life is **never more than 3 years** from the date of manufacture on the original box.

If you process the film, the shelf life is changed to **1 year** from the processing date, but not later than the 3 year maximum from the manufacturing date.

Storage Conditions

- 40° to 100 °F (4° 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 inch (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 sheets for 3M products go to [3M.com/SDS](https://www.3m.com/SDS), 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 manufacturer's instructions for safe operation.

Commercial Solutions

3M Center, Building 220-12E-04
St. Paul, MN 55144

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

© 3M 2020. All rights reserved.

3M, Controltac, Comply, and MCS are trademarks of 3M. Used under license in Canada.

All other trademarks are property of their respective owners.

Revision J, March 2020 Please recycle.

