



Controltac™ Graphic Film

- IJ160
- with Comply™ Adhesive IJ160C

For Solvent, UV and Latex Inkjet Printing Only

1. Product Description

A. Product Features

- 4-mil, opaque white, vinyl film with a matte finish
- Pressure-activated adhesive for easy sliding, tacking, snap up and repositioning
- Film IJ160C-10 also has Comply™ Adhesive air release channels for fast, easy, bubble-free graphic installations
- Excellent hiding power
- Removable with heat

B. 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](#) or the 3M Performance Guarantee. Please read the entire Bulletin for details.

- Graphics, emblems and striping for straight trucks, semi-tractors and semi-trailers
- Outdoor and indoor graphics and signs
- Vending or dispensing machine and cooler graphics

C. Performance Overview

3M tests the performance of both individual products and finished graphic constructions. This table shows the best performance expected from this product both without a Warranty Period and with a Warranty Period.

For detailed graphic construction and application options along with specific Warranty Periods, please see the Warranty Information, Section 5.

| | |
|---|-------------------------------|
| Expected Performance Life. This is the estimated period of time the product should perform satisfactorily. | |
| Unprinted film with no graphic protection, applied to a flat vertical outdoor surface. | 7 years Unwarranted Period |
| 3M™ MCS™ Warranty. This is the maximum period of time 3M will warrant the finished graphic performance. | |
| Printed film with the best 3M ink and graphic protection option, applied to a flat, vertical, vehicle surface. | 3 years Warranty Period |
| 3M Performance Guarantee. This is the maximum period of time 3M will warrant the performance of the 3M materials used. | |
| Printed film with the best ink and graphic protection option, applied to a flat, vertical, vehicle surface. | 2 years Warranty Period |

D. Limitations of End Uses

(1) This film is not suitable for these uses

This 3M product is not designed or recommended for the following uses. Please contact us to discuss other options.

- Graphics applied to:
 - corrugated or highly-irregular surfaces or sharply raised areas.
 - stainless steel (use film IJ181-10 instead).
 - flexible substrates.
 - non-3M films.
 - substrate surfaces that are not clean and smooth (little or no variation in texture).
 - paint that is not thoroughly cured or dried.
- Printed film without graphic protection when they are:
 - used for vehicle graphics.
 - exposed to abrasive conditions, harsh cleaners or chemicals.
- Graphic removal from:
 - applications with poor paint-to-substrate adhesion.
 - wallboard.
 - existing graphics that must remain intact; damage may occur during removal.
 - aged paint or metal that may have surface oxidation or chalking.
 - outdoor, horizontal surfaces.
- Graphic subjected to gasoline vapors or spills at gas pumps, automobile fuel-tank ports, or top-feeding petroleum tankers.

(2) Wall Graphics

Two-mil cast films are typically the best choice for indoor smooth surface wall graphics, although thicker films may be suitable for intermediate or short term applications. In any case, the user is responsible for determining the product's suitability, including adhesion and, if required, removal characteristics. Due to the wide variability of smooth indoor walls, neither finished graphics nor removal is warranted, even for removable or changeable films. [Instruction Bulletin 5.37](#) provides comprehensive information for the most successful wall graphics film selection and application.

(3) Important Information About Bus Applications

Film used on buses must not be applied so as to restrict the safe use of emergency window exits. See the most current version of [Instruction Bulletin 5.4](#) for details.

2. Compatible Products

This section provides a list of 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 is covered by the 3M™ MCST™ Warranty or 3M Performance Guarantee. Refer to the Product and Instruction Bulletins listed in 3M Related Literature at the end of this Bulletin for more information about the compatible products.

See the **Warranty Information** section to determine which compatible products are approved for your graphic construction.

A. Solvent Inkjet Inks and Printers

Ink Series

- 3M™ Piezo Inkjet Ink Series 1500v2
- 3M™ Piezo Inkjet Ink Series 4400
- 3M™ Piezo Inkjet Ink Series 4800
- 3M™ Piezo Inkjet Ink Series 6200
- SIIT GX 3M™ Ink Series

Printers

EFI™ VUTEK® 150, 2360/3360, 3300/5300 & 3000/5000 Printers
HP XLJet 1200 & 1500 Printers
HP Scitex TJ8300 & TJ8350 Series Digital Press
Agfa :Jeti 3312, 3318, 3324 & 5024 [Gandinnovations] Printers
Seiko I Infotech ColorPainter™ H-74s, H2-74s, H-104s, H2-104s W-54s, & W-64s Printers

B. Latex Inkjet Inks and Printers

- HP 3M™ LX600 Specialty Latex Ink HP Designjet L65500 Printer and, Scitex LX600, LX800, LX820, LX850 Printers
- HP LX610 Latex Ink a 3M™ MCS™ Warranty Component HP Designjet L65500 Printer and Scitex LX600, LX800, LX820 & LX850 Printers
- HP 792 Latex Ink a 3M™ MCS™ Warranty Component HP Designjet L26100, L26500, L28500; and Latex 210, 260 & 280 Printers
- HP 881 Latex Ink a 3M™ MCS™ Warranty Component HP Latex 3000 Printer

C. UV Inkjet Inks and Printers

- 3M™ Piezo Inkjet Ink Series 2200UV EFI™ VUTEk® PV200 Printer
- 3M™ Piezo Inkjet Ink Series 2700UV Durst Rho 160R & 351R Printers
- 3M™ Piezo Inkjet Ink Series 2800UV EFI™ VUTEk® QS2000, QS3200, QS3220 & QS220 Printers
- EFI™ VUTEk® GS 3M™ Premium UV Inks EFI™ VUTEk® GS2000, GS3200 & GS3250 Printers, including GS Pro Series
- EFI™ VUTEk® GSr 3M™ Premium UV Inks EFI™ VUTEk® GS5000r, 3250r Printers
- EFI™ R3225 3M™ UV Ink EFI™ R3225 UV Roll-to-Roll Printer
- Mimaki LF-200 Ink Series *Manufactured by 3M* Mimaki UJV-160, JFX-1631 & 1615R Printers
- Mimaki UV Ink LUS-200 *Manufactured by 3M* Mimaki UJV500-160 Printers

D. OEM Inkjet Printers and Inks for the 3M Performance Guarantee

- For the most current information, please click here: [3M Performance Guarantee Matrix](#).

E. Graphic Protection

- 3M™ Scotchcal™ Gloss Overlaminates 8518
- 3M™ Scotchcal™ Luster Overlaminates 8519
- 3M™ Scotchcal™ Matte Overlaminates 8520
- 3M™ Scotchcal™ Gloss Overlaminates 8528
- 3M™ Scotchcal™ Ultra Matte Overlaminates 8915
- 3M™ Piezo Inkjet Protective Clear 8530
- 3M™ Screen Print Gloss Clear 1920DR
- 3M™ Screen Print UV Gloss Clear 9740i

F. Other Products

- 3M™ Edge Sealer 3950
- 3M™ Prespacing Tape SCPS-2
- 3M™ Prespacing Tape SCPS-55
- 3M™ Prespacing Tape SCPS-53X
- 3M™ Premasking Tape SCPM-3
- 3M™ Premasking Tape SCPM-44X

3. Characteristics

These are typical values for unprocessed product. Contact your 3M representative for a custom specification.

A. Physical Characteristics

| Characteristic | Value |
|---|---|
| Material | Vinyl |
| Color | White, opaque |
| Gloss | Matte |
| Thickness | Without adhesive: 4 mils (0.10 mm) With adhesive: 4.5 – 5 mils (0.11 – 0.13 mm) |
| Adhesive type | IJ160C: Pressure-activated (slide, tack, snap up, reposition) with air release channels IJ160: Pressure-activated (slide, tack, snap up, reposition) |
| Adhesive color | Gray |
| Liner | Polyethylene-coated paper |
| Adhesion <i>24 hours after application</i> | ABS: IJ160: 3.5 pounds/inch (0.65 kg/cm) IJ160C: 3.3 pounds/inch (0.78 kg/cm) Fruehauf pre-painted panels: IJ160: 1.0 pounds/inch (0.18 kg/cm) IJ160C: 0.9 pounds/inch (0.16 kg/cm) |
| Chemical resistance | Resists mild alkalis, mild acids, and salt Excellent resistance to water (<i>does not include immersion</i>) |
| Flammability | Call 1-800-328-3908, Option 1, for information |
| Tensile strength | 13 pounds/inch at 73°F (2.3 kg/cm at 23°C), minimum |

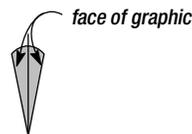
B. Application Characteristics

| Characteristic | Value |
|---|---|
| Finished graphic application recommendation | Surface type: Flat, with and without rivets Substrate type: Acrylic, aluminum, glass (uncoated), painted metal, polycarbonate, and painted wood (smooth) Application temperature: 40° – 100°F (4.4° – 38°C) <i>air and substrate</i> Application method: Dry |
| Applied film shrinkage | 0.032 inch (0.8 mm) |
| Finished graphic exposure temperature | -30° – +200°F (-34° – +93°C) |
| Graphic removal and temperature | Removable with heat at a minimum ambient and substrate temperature of 40°F (4°C) |

4. Definitions

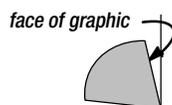
A. Exposure Types

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 truck and trailer 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. Click here for a [detailed map](#).

B. Graphic Construction

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

C. Graphic Protection

Overlamine films or clear coats used to protect the graphic and/or change gloss.

5. Warranty Information

**A. Warranty Coverage
Overview**

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

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.

B. 3M Basic Product Warranty

This product is 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 Commercial Graphics Warranties Brochure](#).

C. Limited Remedy

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.

D. 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 ABOVE), 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 SELLER'S 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 including breach of contract, breach of warranty, negligence, strict liability, or any other legal or equitable theory.

E. Additional Limitations

See the [3M Commercial Graphics Warranties Brochure](#) at 3Mgraphics.com, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

F. 3M Performance Guarantee

Subject to Stipulations set forth in Section H., below

Graphics constructed with the 3M materials specified and in the exposure specified in the Warranty Period, Section F.(1), are eligible for the 3M Performance Guarantee. This warranty only covers the performance of the recommended 3M products used in the graphic construction when imaged with the printers and OEM inks listed in the most current version of the [Performance Guarantee Matrix](#). The Matrix may also list certain restrictions for using the film covered in this Bulletin. For warranties for other exposures, see Section H.(1).

Warranty Period for 3M Product Performance, in Years

(1) Warranty Period for 3M Product Performance in a Standard U.S. Vertical Exposure

| Film | Graphic Protection | Vehicles, Outdoor & Indoor Signs | Inks and Printers** |
|-----------------------|--|----------------------------------|--|
| IJ160C-10 IJ160-10 | 8518 8519 8520 8528* 8915 1920DR 9740i | 2 | See the Performance Guarantee Matrix |

*Overlamine 8528 does not have a horizontal warranty when used on film IJ160 or IJ160C.

** Some of the graphic protection products and graphic types may not be approved for this film on certain printing platforms. Always refer to the Performance Guarantee Matrix.

G. 3M™ MCS™ Warranty

Subject to Stipulations set forth in Section H., below

Finished graphics constructed with the materials specified and the exposure specified in the Warranty Period tables, Section G.(1), is eligible for the 3M™ MCS™ Warranty. For warranties for other exposures, see Section H.(1).

(1) Warranty Period Table for Finished Graphics in a Standard U.S. Vertical Exposure

VEH = Vehicles and Straight Trucks
OUT = General Outdoor Sign
IN = General Indoor Signs

Warranty Period for Finished Graphics, In Years

| Solvent Inks and Printers | EFI™ VUTEk® 150, 2360/3360, 3300/5300, 3000/5000 Printers | | | HP XLJet Series 1200, 1500 Printer | | | HP Scitex TJ8300 and TJ8350 Digital Presses | | |
|---------------------------|---|-----|----|------------------------------------|-----|----|---|-----|----|
| | 3M™ Ink Series 1500v2 | | | 3M™ Ink Series 4400 | | | 3M™ Ink Series 4800 | | |
| Graphic Protection | VEH | OUT | IN | VEH | OUT | IN | VEH | OUT | IN |
| 8518, 8519, 8520, 8915 | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 3 | 5 |
| 8528* | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 3 | 5 |
| 1920DR | 3 | 3 | 5 | — | — | — | 3 | 3 | 5 |
| 9740i | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 3 | 5 |
| 8530 | 2 | 2 | 3 | 2 | 2 | 3 | 2 | 2 | 3 |
| none | — | 2 | 2 | — | 2 | 3 | — | 2 | 3 |

| Solvent Inks and Printers | Agfa Jeti 3312, 3318, 3324, 5024 [Gandinnovations] Printers | | | Seiko Infotech ColorPainter™ H-74s, H2-74s, H-104s, H2-104s W-54s, & W-64s Printers | | |
|---------------------------|---|-----|----|---|-----|----|
| | 3M™ Ink Series 6200 | | | GX 3M™ Ink Series | | |
| Graphic Protection | VEH | OUT | IN | VEH | OUT | IN |
| 8518, 8519, 8520, 8915 | 3 | 3 | 5 | 3 | 3 | 5 |
| 8528* | 3 | 3 | 5 | 3 | 3 | 5 |
| 1920DR | 3 | 3 | 5 | 3 | 3 | 5 |
| 9740i | 3 | 3 | 5 | 3 | 3 | 5 |
| 8530 | 2 | 2 | 3 | — | — | — |
| none | — | 3 | 3 | — | 2 | 2 |

Warranty Period Tables continued on the next page

Warranty Period for Finished Graphics, in Years

| Latex Inks and Printers | HP Designjet L65500 Printer and Scitex LX600, LX800, LX820 & LX850 Printers | | | HP Designjet L65500 Printer and Scitex LX600, LX800, LX820 & LX850 Printers | | | HP Designjet L26100, L26500, L28500, Latex 210, 260, 280 Printers | | |
|-------------------------|---|-----|----|---|-----|----|---|-----|----|
| | HP 3M LX600 Specialty Latex Ink | | | HP 3M LX610 Latex Ink a 3M™ MCS™ Warranty Component | | | HP 792 Latex Ink a 3M™ MCS™ Warranty Component | | |
| Graphic Protection | VEH | OUT | IN | VEH | OUT | IN | VEH | OUT | IN |
| 8518, 8519, 8520, 8915 | 2 | 2 | 4 | 2 | 2 | 4 | 2 | 2 | 4 |
| 8528* | 2 | 2 | 4 | 2 | 2 | 4 | 2 | 2 | 4 |
| 1920DR | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

| Latex Inks and Printers IJ5100 IJ5100R | HP Latex 3000 Printer | | |
|---|---|-----|----|
| | HP 881 Latex Ink a 3M™ MCS™ Warranty Component | | |
| Graphic Protection | VEH | OUT | IN |
| 8518, 8519, 8520, 8915 | 2 | 2 | 4 |
| 8528 | 2 | 2 | 4 |
| 1920DR | 2 | 2 | 2 |

| UV Inks and Printers | EFI™ VUTEK® PV200 Printer | | | EFI™ VUTEK® GS5000r and GS3250r Printers | | | EFI™ VUTEK® GS2000, GS3200, GS3250 Printers, including GS Pro Series | | |
|------------------------|---------------------------|-----|----|--|-----|----|--|-----|----|
| | 3M™ Ink Series 2200UV | | | GSr 3M™ Premium UV Inks | | | GS 3M™ Premium UV Inks | | |
| Graphic Protection | VEH | OUT | IN | VEH | OUT | IN | VEH | OUT | IN |
| 8518, 8519, 8520, 8915 | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 3 | 5 |
| 8528* | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 3 | 5 |
| 1920DR | — | — | — | — | 2 | 3 | — | 2 | 3 |
| 9740i | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 3 | 5 |
| none | — | 3 | 3 | — | 2 | 3 | — | 2 | 3 |

| UV Inks and Printers | Durst Rho 160R & 351R Printers | | | EFI™ VUTEK® QS2000, QS3200, QS3220, QS220 Printers | | | EFI™ R3225 UV Roll-to-Roll Printer | | |
|------------------------|--------------------------------|-----|----|--|-----|----|------------------------------------|-----|----|
| | 3M™ Ink Series 2700UV | | | 3M™ Ink Series 2800UV | | | EFI™ R3225 3M™ UV Ink | | |
| Graphic Protection | VEH | OUT | IN | VEH | OUT | IN | VEH | OUT | IN |
| 8518, 8519, 8520, 8915 | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 3 | 5 |
| 8528* | 3 | 3 | 5 | 3 | 3 | 5 | 3 | 3 | 5 |
| 1920DR | — | — | — | — | — | — | — | — | — |
| 9740i | 3 | 3 | 5 | 3 | 3 | 5 | — | 2 | 3 |
| none | — | 3 | 3 | — | 3 | 3 | — | 2 | 3 |

| UV Inks and Printers | Mimaki UJV-160, JFX-1631 & 1615R Printers | | | Mimaki UJV500-160 Printer | | |
|------------------------|---|-----|----|--|-----|----|
| | Mimaki Ink Series LF-200 <i>Manufactured by 3M</i> | | | Mimaki UV Ink LUS-200 <i>Manufactured by 3M</i> | | |
| Graphic Protection | VEH | OUT | IN | VEH | OUT | IN |
| 8518, 8519, 8520, 8915 | 3 | 3 | 5 | 3 | 3 | 5 |
| 8528* | 3 | 3 | 5 | 3 | 3 | 5 |
| 1920DR | — | — | — | — | 2 | 3 |
| 9740i | — | — | — | 3 | 3 | 5 |
| none | — | 3 | 3 | — | — | — |

*Overlaminated 8528 does not have a horizontal warranty when used on film IJ160 or IJ160C.

H. General Warranty Stipulations for 3M™ MCS™ Warranty and 3M Performance Guarantee

These stipulations apply to the 3M™ MCS™ Warranty and 3M Performance Guarantee. General provisions for these stipulations are covered in the [3M Commercial Graphics Warranty Brochure](#).

(1) Reduced Warranty Period for Other Graphic Exposures

For other graphic exposures, multiply the Warranty Period (in years) for your graphic construction as shown in the applicable Warranty Period tables, Section G.(1), by the percentage shown for the intended graphic exposure.

| If the Graphic Exposure is: | Use this Percentage of U.S. Vertical Exposure, Warranty Period | Calculation Examples |
|------------------------------------|---|-----------------------------|
| U.S. Non-vertical | 50% (0.5) | 0.5 x 3 years = 1.5 years |
| Desert Southwest Vertical | 70% (0.7) | 0.7 x 3 years = 2.1 years |
| Desert Southwest Non-vertical | 35% (0.35) | 0.35 x 3 years = 1.05 years |
| Horizontal | 0% | 0 |

(2) Removal Warranty with Heat

a. For the 3M™ MCS™ Warranty Only

Within the stated Warranty Period, if this film cannot be removed with heat, or if more than 30% of the adhesive residue remains on the substrate, 3M will reimburse a reasonable portion of extra removal costs.

b. For the 3M Performance Guarantee

Within the stated Warranty Period, if this film cannot be removed with heat and/or chemicals, or if more than 30% of the adhesive residue remains on the substrate, 3M will reimburse a reasonable portion of 3M material cost.

c. Removal Warranty Exceptions

The following exceptions are not covered by the Removal Warranty.

- Substrate damage due to:
 - removing film from a pre-existing graphic.
 - removing film that was applied to painted wallboard or unapproved substrates.
 - removing film from paint that is not firmly bonded to the substrate.
- No guarantee is made for:
 - paint staining. 3M does not warrant vehicle paint staining that may be visible after removing an inkjet printed graphic with an overlaminates. To reduce the risk of this problem, always remove the graphic by the end of the Warranty Period.
 - ease or speed of removal of any graphic.
 - removal from paint that is improperly cured.
 - removal from aged paint or metals, surface oxidation or chalking; user must test, approve and accept liability for such applications.
 - removal from horizontally-exposed outdoor applications.

(3) Paint Refurbishing Reimbursement Policy for Automobiles, Vans, Buses, Recreational Vehicles

This Policy applies to automobiles, vans, buses, and recreational vehicles only, and specifically does not include Watercraft. Refer to [Instruction Bulletin 5.36](#) for complete details.

- A *Pre-Installation and Inspection Report* (in Bulletin 5.36) must be completed *prior to graphic installation* and submitted with any claim for paint damage sustained during the removal of 3M removable or changeable graphic film from vehicles.
- A separate report for each vehicle involved in a claim is required.

(4) Application Outside the U.S.

Contact the 3M organization for that country.

(5) Application to Glass

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

(6) 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. However, to help maintain the appearance of your graphic, use the recommended graphic protection whenever:

- it is required for the construction and end use as shown in the Warranty Period tables.
- the graphic, **including printed vehicle graphics**, is exposed to abrasive conditions, harsh cleaners or chemicals.

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

The 3M™ MCS™ Warranty does not, under any circumstances, cover graphics made with inks, film, graphic protection and/or application tapes that are not sold or recommended by 3M.

The 3M Performance Guarantee does not, under any circumstances, cover OEM inks, even those approved by 3M for this program, or any type of 3M product failure that results from their use.

The user is solely responsible for the graphic appearance, performance and durability of graphic constructions that include any non recommended or qualified products.

6. Factors that Affect Graphic Performance Life

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

- combination 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.

7. Graphics Manufacturing



CAUTION

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

A. Inkjet Printing

Always read and follow the ink manufacturer's written instructions on usage.

(1) Total Ink Coverage

The maximum recommended total ink coverage for this film is:

- **270%** when printed with all approved 3M solvent inkjet inks.
- **280%** when printed with all approved 3M UV inkjet inks and latex ink.
- **250%** when printed on the Mimaki JV5 Series printer with HS ink series (Performance Guarantee).

Do not exceed the recommended total ink coverage for the ink series used on this film. Too high a total physical ink amount on the film results in media characteristic changes, incomplete drying, overlamine lifting, and/or poor graphic performance. Refer to the Product & Instruction Bulletin for the ink system being used, or the Performance Guarantee Matrix for an OEM ink, for additional details about total ink coverage.

(2) Completely Dry Graphics

Important Note!

Incomplete drying can result in graphic failure including curling, increased shrinkage and adhesion failure, which are not covered under warranty.

Do not exceed the recommended total ink coverage for the ink series used on this film. Too high a total physical ink amount on the film results in media characteristic changes, incomplete drying, overlamine lifting, and/or poor graphic performance. Refer to the Product & Instruction Bulletin for the ink system being used for additional details about total ink coverage.

B. Graphic Protection

Graphic protection can improve the appearance, performance and durability of your graphic.

- Clear 8530 must be applied with a liquid laminator.
- Overlaminates must be cold roll applied.

C. Cutting

The following are common cutting methods for this film. See [Instruction Bulletin 4.1](#) for details.

- Bandsawing
- Hot kiss cutting
- Drum-type electronic cutting
- Flat-bed electronic cutting
- Guillotine
- Hand cut

D. Application Tapes

(1) When to Use Premasking Tape

- Use as an application aid to increase stiffness, and prevent stretching and damage during application.
- Use 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 the film elements. Then locate the graphic protection on your graphic in the table below, and use the corresponding tape. See [Instruction Bulletin 4.3](#) for complete details.

EXAMPLE: If the film is protected by overlaminate 8519 and you want to premask the film, use premasking tape SCPM-3. If it is protected by clear 9740i, use premasking tape SCPM-44X.

Select the tape based on what is on top of the graphic

| Application Tape | None | 8519 8520 8915 | 8530 | 1920DR | 9740i | 8518 8528 |
|---|------|----------------------|------|--------|-------|--------------|
| Premasking Tape SCPM-3 | ■ | ■ | ■ | ■ | — | — |
| Premasking Tape SCPM-44X <i>Film IJ160 only</i> | — | — | — | — | ■ | — |
| Prespacing Tape SCPS-2 <i>Film IJ160 only</i> | ■ | ■ | — | ■ | — | — |
| Prespacing Tape SCPS-55 <i>Film IJ160C only</i> | ■ | ■ | — | ■ | ■ | — |
| Prespacing Tape SCPS-53X | — | — | — | — | ■ | — |

— = No application tape is recommended for this construction.

8. Application and Installation

Install the film using the dry application method.

Refer to the 3M Related Literature section, located at the end of this Bulletin, for a list of the Instruction Bulletins that may be needed to apply or install this film.

A. 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.

Continued on the next page.

- Snap up and repositionability is lost when:
 - firm pressure with a squeegee or other application tool is applied. This ensures a good adhesive bond while completing the installation.
 - 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.

B. Working with Air Release Channels

- Air release channels are a characteristic of 3M's Comply adhesive that allow fast, easy, virtually bubble-free installations.
- The channels will be damaged and effective air removal affected if you remove and attempt to change liners or reapply the same liner.
- For the best results, always work from the center out to the edges of the graphic to allow trapped air to exit through the air release channels. If the channels are closed off by firm pressure and air is trapped, use an air release tool to aid in removing air bubbles. See [Instruction Bulletin 5.4](#) for details.

Video

[See how 3M's Comply adhesive technology works](#)

C. Working with Rivets

- This film will tent when applied over rivets.
- If the rivets are closely spaced, the film will bridge between rivets.
- Tented or bridged film may fail prematurely, which is not covered by the 3M™ MCS™ Warranty or 3M Performance Guarantee.
- For the best appearance and durability, 3M recommends cutting around the rivet, removing the circle of film, and then re-squeegeeing around the rivet.

D. Graphics Printed with UV Inkjet Inks are Heat Sensitive!

UV inkjet inks may crack if too much heat is used during graphic application to complex curves and deep contours as well as around rivets. When using a heat gun or other heat source during application, make sure the film surface temperature does not exceed 212°F (100°C).

Using additional heat in the post-application process may also cause UV inkjet ink to crack. For the best results, always do a test application of a UV printed graphic to determine how much heat can be used without damaging the image.

E. Application to Vehicles

Read and follow all instructions, and complete the *3M Automobiles, Vans and Buses Pre-installation Inspection Record* in [Instruction Bulletin 5.36](#) prior to manufacturing or applying any graphic to a standard vehicle, van or bus.

F. Application to Other Substrates

3M offers several detailed Instruction Bulletins to help you achieve a successful graphic installation. Please see Section 13., 3M Related Literature.

9. Maintenance and Cleaning

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline.)

Refer to [Instruction Bulletin 6.5](#) for general maintenance and cleaning information.

10. Removal with Heat

This film can be removed with heat only. No other accessories or chemicals are needed. Most graphics can be removed and leave little or no adhesive residue on the substrate. The ease and rate of removal depends on several factors. See Instruction Bulletin 6.5 for details.

11. Shelf Life, Storage and Shipping

A. Shelf Life

Total shelf life: 3 years from the date of manufacture on the original box.
If you do process the film, do so within 2 years and apply within 1 year.
If you do not process the film, apply it within 3 years.

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 (may be separated by paper), 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.

12. 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.

13. 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™ Piezo Inkjet Ink Series 2200UV | PB-IB | 2200UV |
| 3M™ Piezo Inkjet Ink Series 2700UV | PB-IB | 2700UV |
| 3M™ Piezo Inkjet Ink Series 2800UV | PB-IB | 2800UV |
| GS 3M™ Premium UV Inks | PB-IB | GS |
| GSr 3M™ Premium UV Inks | PB-IB | GSr |
| HP 3M™ LX600 Specialty Latex Ink | PB-IB | LX600 |
| HP 792 Latex Ink a 3M™ MCS™ Warranty Component | PB-IB | 792 |
| HP LX610 Latex Ink a 3M™ MCS™ Warranty Component | PB-IB | LX610 |
| EFI™ R3225 3M™ UV Ink | PB-IB | R3225 |
| HP 881 Latex Ink a 3M™ MCS™ Warranty Component | PB-IB | 881 |
| Mimaki Ink Series LF-200 | PB-IB | LF-200 |
| Mimaki UV Ink LUS-200 <i>Manufactured by 3M</i> | PB-IB | LUS-200 |
| 3M™ Piezo Inkjet Ink Series 1500v2 | PB-IB | 1500 |
| 3M™ Piezo Inkjet Ink Series 4400 | PB-IB | 4400 |
| 3M™ Piezo Inkjet Ink Series 4800 | PB-IB | 4800 |
| 3M™ Inkjet Ink Series 6200 | PB-IB | 6200 |
| SIIT GX 3M™ Ink Series | PB-IB | GX |
| 3M™ Piezo Inkjet Protective Clear 8530 | PB | 8530 |
| 3M™ Screen Print UV Gloss Clear 9740i | PB-IB | UV Clears |

| Subject | Type | Bulletin No. |
|---|----------|--------------|
| 3M™ Screen Print Gloss Clear 1920DR - Applying screen printing clear 1920DR | PB IB | 1900 3.12 |
| 3M Graphic Protection Products - Hot and cold roll lamination | PB IB | GP-1 4.22 |
| Scoring and cutting | IB | 4.1 |
| 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, special applications and vehicles | IB | 5.4 |
| Application, general procedures for indoor and outdoor dry applications | IB | 5.5 |
| Storage, handling, maintenance, removal | IB | 6.5 |
| 3M Commercial Graphics Warranty Brochure | | |

14. Bulletin Change Summary

New and modified content is marked with a black bar in the margin. New compatible products: HP 792 Latex Ink is now approved for use with HP Latex 210, 260 and 280 Printers as well as HP Designjet L26100, L26500, L28500 Printers. Mimaki Ink Series LUS-200, manufactured by 3M, for Mimaki UJV500-160 Printer; HP 881 Latex Ink, a 3M™ MCS™ Component for HP Latex 3000 Printer



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