



# Controltac™ Wrap Film with Comply™ v3 Adhesive IJ380Cv3

For Piezo Inkjet Printing Only

## Product Description

This is a 2-mil film with slideable, repositionable, pressure-activated adhesive and non-visible air release channels for fast and easy, bubble-free installations. This long-term durable and removable cast film offers new technology that has superior conformability and lifting resistance, making it perfect for vehicle wraps with deep channels or concave areas. Use for piezo inkjet printing.

## 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.

- Vehicle wrap graphics
- Watercraft graphics applied above the static water line only

## Limitations of End Uses

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs or recommend other products.

### *Unsuitable End Uses for This Film*

- Graphics applied to:
  - watercraft when the graphic is below the static water line
  - watercraft graphics that are not edge sealed
  - stainless steel
  - non-3M films (see Removal Warranty)
  - substrate surfaces that are not clean and smooth (little or no variation in texture)
- Using prespacing tape in cut and weeded applications where the tape must adhere to the exposed liner
- Film without graphic protection
- Graphic removal from:
  - applications with poor paint-to-substrate adhesion
  - existing graphics that must remain intact; damage may occur during removal of this film
- Graphics subjected to gasoline vapors or spills at gas pumps, automobile fuel-tank ports, or top-feeding, petroleum tankers
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684 for alternatives.

## 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.

## 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.

## Piezo Inkjet Printers and Inks

Ink Series	Printer
• 3M™ Piezo Inkjet Ink Series 2200UV	EFI™ VUTEk® PV 200 Printer
• 3M™ Piezo Inkjet Ink Series 2600UVv2	3M™ Printer 2500UV
• 3M™ Piezo Inkjet Ink Series 2700UV	Durst Rho 160R Printer
• 3M™ Piezo Inkjet Ink Series 2800UV	EFI™ VUTEk® QS2000/QS3200 Printers
• 3M™ Piezo Inkjet Ink Series 5400UV	HP Designjet H35000/H45000 Printer Series
• 3M™ Piezo Inkjet Ink Series 1500v2	EFI™ VUTEk® 150, 2360/3360, 3300/5300 and 3000/5000 Printers
• 3M™ Piezo Inkjet Ink Series 4400	HP XLJet 1200 and 1500 Printers
• 3M™ Piezo Inkjet Ink Series 4600	HP Scitex Pressjet-W™ Printer
• 3M™ Piezo Inkjet Ink Series 4800	HP Scitex TJ8300 Series Digital Press

## Graphic Protection Options

- 3M™ Scotchcal™ Gloss Overlamine 8580
- 3M™ Screen Print Gloss Clear 1920DR

## Other Products

- 3M™ Premasking Tape SCPM-3
- 3M™ Premasking Tape SCPM-19
- 3M™ Prespacing Tape SCPS-2
- 3M™ Vehicle Channel Applicator Tool VCAT-2
- 3M™ Roller L (larger hard roller)
- 3M™ Roller S (small hard roller)

## Characteristics

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

### Physical Characteristics

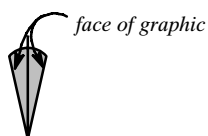
Characteristic	Value	
Film	Cast vinyl with superior conformability	
Film color	White, opaque	
Thickness	<b>Without adhesive:</b> 2 mil (0.05 mm) <b>With adhesive:</b> 3-4 mil (0.08-0.10 mm)	
Adhesive	Pressure-activated, slideable, repositionable	
Adhesive color	Gray	
Liner	Polyethylene-coated paper	
Adhesion, Typical <i>24 hours after application</i>	<b>Substrate</b>	<b>Adhesion</b>
	ABS	4.7 pounds/inch (0.84 kg/cm)
	Acrylic enamel	4.6 pounds/inch (0.82 kg/cm)
	Aluminum, anodized	7.6 pounds/inch (1.36 kg/cm)
	Automotive clear coats	3-5 pounds/inch (0.54-0.89 kg/cm)
Tensile strength	4.3 pounds/inch at 73°F (0.77 kg/cm at 23°C)	
Chemical resistance	<ul style="list-style-type: none"> <li>• Resists mild alkalis, mild acids, and salt</li> <li>• Excellent resistance to water (<i>does not include immersion</i>)</li> <li>• Resists occasional fuel spills</li> </ul>	
Flammability	Call 1-800-328-3908 for information	

## Application Characteristics

Characteristic	Value
Finished graphic application recommendation	<b>Surface type:</b> Flat, simple curves, compound curves and concave channels
Finished graphic application recommendation	<b>Substrate type:</b> ABS resins, chrome, glass, paint <b>Application temperature:</b> 60° - 90°F (16° - 32°C) <b>Application method:</b> Dry
Applied shrinkage	0.015 inches (0.4 mm)
Temperature range after application	Equivalent to temperatures to which recommended substrates are typically exposed
Graphic removal	Removable with heat and/or chemicals from most substrates within the warranty period at 50°F (10°C) minimum (air and substrate)

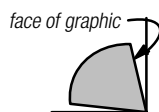
## Definitions

### Vertical Exposure



The face of the graphic is  $\pm 10^\circ$  from vertical.

### Non-vertical Exposure



The face of the graphic is greater than  $10^\circ$  from vertical and greater than  $5^\circ$  from horizontal.

### Desert Southwest

Graphics exposed to solar energy more than half of the time in Arizona, New Mexico and the desert areas of California, Nevada, Utah and Texas. A detailed map is available at 3Mgraphics.com under Warranties.

### Standard Vehicle

Buses, vans, and automobiles unless otherwise noted.

## Warranty Information

The warranted durability given in the Product Bulletin that is current at the time you purchased the film is the one that 3M will honor. **The warranties in the following table(s), given in years, are for finished graphics exposed in a vertical exposure in the United States except the Desert Southwest.** See the warranty sections following this table for additional information.

### 3M™ MCS™ Warranty Durability for Finished Graphics

Veh = Vehicle  
Water = Watercraft

Printer	VUTEK® 150, 2360/ 3360, 3300/5300, 3000/5000		XLJet Series 1200, 1500		Pressjet™ -W		TJ8300 Series Digital Press	
Ink Series	1500v2		4400		4600		4800	
Application	Veh	Water	Veh	Water	Veh	Water	Veh	Water
8580	3	2	3	2	3	2	3	2
1920DR	3	2	3	2	3	2	3	2

Printer	VUTEK® PV200		Printer 2500UV		Rho 160R and 351R	
Ink Series	2200UV		2600UVv2		2700UV	
Application	Veh	Water	Veh	Water	Veh	Water
8580	3	2	3	2	3	2

*Important Note! Effect of UV Piezo Ink on Stretched Film*

Printer	VUTEK® QS2000 and QS3200		Designjet H35000 and H45000	
Ink Series	2800UV		5400UV	
Application	Veh	Water	Veh	Water
8580	3	2	3	2

See *Important Note! Effect of UV Piezo Ink on Stretched Film*, on page 3.

**3M Performance Guarantee**  
Graphic Constructions and  
Warranted Durability  
For 3M Product Performance Only

Graphics constructed as described in the table below are eligible for the 3M Performance Guarantee when exposed in a vertical exposure in the United States. This warranty covers the performance of only the recommended 3M products used in the graphic construction when imaged with the printers and OEM inks listed in the most current version of Performance Guarantee Printer and Ink Matrix at [www.3Mgraphics.com](http://www.3Mgraphics.com). That Matrix may also list certain restrictions for using the film covered in this Bulletin. 3M will honor the warranty given in the version of this Bulletin that was current at the time you purchased the film.

Film	Ink Type	Graphic Protection	Vertical Exposure, Warranty in Years		Inks and Printers
			Vehicle	Watercraft	
IJ380Cv3	Solvent	8580 1920DR	3	2	See Performance Guarantee Printer and Ink Matrix at <a href="http://www.3Mgraphics.com">www.3Mgraphics.com</a>
	UV*	8580 only	3	2	

\*See *Important Note! Effect of UV Piezo Ink on Stretched Film*, on page 3.

**Important Note!**  
*Effect of UV Piezo Ink on Stretched Film*

Graphics printed with UV piezo inkjet inks cannot be stretched as much as graphics printed with solvent inkjet inks without the UV inks showing signs of cracking, which is normal and not covered by the warranty. Keep this in mind when selecting a printing platform. Refer to additional details on page 6, *Graphics Printed with UV Piezo Inkjet Inks are Heat Sensitive!* Also read the recommendations and limitations for using UV inks in Instruction Bulletin 5.36.

**Warranty Stipulations**

These stipulations apply to both the 3M™ MCS™ Warranty and 3M Performance Guarantee unless otherwise noted. Also see the Graphics Market Center Warranty Brochure.

**Reduced Durability Stipulations for Graphics in a Non-Vertical or Desert Southwest Exposure**

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

If the Graphic Exposure is	Use this Percentage of U.S. Vertical Exposure Warranty	Examples
U.S. Non-vertical	50% (0.5)	0.5 x 3 years = 1.5 year
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
U.S. Horizontal	0%	0 years

**Watercraft Warranty Stipulations**

Refer to Instruction Bulletin 5.42 for complete details.

- A Pre-Installation and Inspection Report must be completed prior to graphic installation and submitted with any claim. A separate report for each watercraft involved in the claim is required.
- Graphics must be cut at seams and all edges and seams must be sealed.
- Graphics must be applied above the static water line.

**Paint Refurbishing  
Reimbursement Stipulations for  
Van, Bus, Recreational Vehicle,  
Automobile (“Vehicle”)**  
for 3M™ MCS™ Warranty only

**Factors that  
Affect Graphic  
Performance Life**

Claims for paint damage for certain vehicle graphics will be considered only if a Pre-Installation and Inspection Report (see Instruction Bulletin 5.36) was completed prior to graphic installation and is 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 the claim is required.

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

- Correct combination of 3M-recommended graphics products
- Adequate ink drying or curing
- Selection and preparation of the substrate
- Surface texture
- Application methods
- Angle and direction of sun exposure
- Environmental conditions
- Cleaning or maintenance methods

**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 other manufacturers' inks, film, graphic protection and/or application tapes. The user is solely responsible for the graphic appearance, performance and durability of graphic constructions that include non-3M graphic products.

The 3M Performance Guarantee covers selected 3M graphic products when used with qualified printers and OEM inks. See Product Bulletin: PG Matrix.

**Application to Glass**

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

**Graphic Protection**

Any graphic exposed to abrasive conditions (including vehicles), harsh cleaners or chemicals must include graphic protection in order to be warranted. Abrasion damage and gloss loss are not covered.

**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 Graphics Market Center Warranty Brochure, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

**Piezo Inkjet Printing**

**Ink**

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

**Total Ink Coverage**

The maximum recommended total ink coverage for this film is:  
**270%** when printed with all approved 3M piezo solvent inks and most inks listed in the Performance Guarantee program  
**280%** when printed with all approved 3M UV inks.  
**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, inadequate drying, overlamine lifting, and/or poor graphic performance. Refer to the Instruction Bulletin for the ink system being used for additional details about total ink coverage.

**Important Note!**  
***Adequately Dry Graphics***

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

Always build enough time into your process to ensure adequate drying of the graphic. Poorly dried film may become soft and stretchy, and the adhesive may become too aggressive. This can cause difficulty when applying an overlamine, rolling the graphic, and applying the film. See the ink's Instruction Bulletin for more details.

## **Cutting**

The following are common cutting methods for this film. See Instruction Bulletin 4.1 for details.

- Flat-bed electronic cutting
- Guillotine
- Hand cut

## **Application Tapes**

### **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.
- Use premasking tape SCPM-3 or SCPM-19.

### **When to Use Prespacing Tape**

- Prespacing tape does not adhere to the exposed liner of film IJ380Cv3, but it does adhere to the top of the film. Therefore, it may still be useful when applying large graphics—even large cut graphics—with some smaller cut and weeded graphics to hold the elements in alignment.
- To protect cut graphic parts from scratching or damage during application.
- Use prespacing tape SCPS-2.

## **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.

### **Adhesive**

This film has a pressure-activated adhesive that allows the film to slide easily on the substrate, be positioned with light finger pressure, and repositioned if it is not in the right place. However, by design so that a good adhesive bond is established, the positionability feature is lost when firm pressure with a squeegee or other application tool is applied, at application temperatures above 90°F (32°C) even if only light finger pressure was used for tacking, and if any part of the film is removed from the original liner and reapplied to the same or another liner.

### **Effect of Solvent on Adhesive**

Solvent from piezo inkjet ink that has not completely dried also affects slideability and positionability.

### **Squeegee Technique**

Using a gold PA-1 squeegee with the appropriate sleeve/protection, always work from the center out to the edges of the graphic to minimize trapped air. Use an air release tool to aid in removing air bubbles. See Instruction Bulletin 5.4 for details.

### **Use Heat in Post-Application**

After the film has been applied, apply heat to the graphic to reduce the internal stress in the vinyl film.

1. Adjust the heat source so that the film temperature is too hot to touch—about 200°F (94°C).
2. Move the heat source slowly across the stretched film surface.
3. For best performance, press the stretched areas of film with 3M roller S while the vinyl is still hot. This helps fully wet-out the adhesive onto the substrate and reduces the risk of lifting.

Note: If the graphics are printed with UV ink, please see the next section.

**FIGURE 3**  
**Use Roller S for Post-Application**  
**Finishing to Help Prevent Lifting**



### **Graphics Printed with UV Piezo Inkjet Inks are Heat Sensitive!**

UV piezo inkjet inks will crack if too much heat is used during graphic application, **especially when the film is stretched** into complex curves and deep contours and around rivets. This will limit the amount of stretching you can do when applying this film. 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 piezo inkjet ink to crack.

For the best results, **always do a test application** of a UV piezo printed graphic to determine how much heat can be used without damaging the image.

## **Application to Watercraft**

Read and follow all instructions, and complete the 3M Watercraft Graphics Pre-installation Inspection Record in Instruction Bulletin 5.42 before manufacturing or applying any graphic to a watercraft.

### **Finishing**

These films do not require edge sealing. However, applications such as cut graphics may benefit from using edge sealer 3950 when subject to external forces such as abrasion and/or power-washing.

### **Watercraft Graphics Only**

Graphics applied to watercraft require edge sealing. Refer to Instruction Bulletin 5.42 for details.

## **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.)

## **Removal**

Removal requires heat and/or chemicals. The ease and rate of removal depends on a number of factors. See Instruction Bulletin 6.5 for details.

A chemical remover system is available for graphics printed with solvent-based ink. Follow the procedures in Instruction Bulletin 6.5 for using film remover R-221 and adhesive remover R-231 and for additional removal details.

## **Shelf Life, Storage and Shipping**

### **Shelf Life**

#### **Total shelf life: 2 years**

Up to 2 years unprocessed, **OR** process within 1 year **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 application tape, if used, 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](http://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](http://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 1500v2	PB-IB	1500
3M™ Piezo Inkjet Ink Series 4600	PB-IB	4600
3M™ Piezo Inkjet Ink Series 4800	PB-IB	4800
3M™ Piezo Inkjet Ink Series 2200UV	PB-IB	2200UV
3M™ Piezo Inkjet Ink Series 2600UVv2	PB-IB	2600UVv2
3M™ Piezo Inkjet Ink Series 2700UV	PB-IB	2700UV
3M™ Piezo Inkjet Ink Series 2800UV	PB-IB	2800UV
3M™ Piezo Inkjet Ink Series 6000	PB-IB	6000
3M™ Scotchcal™ Gloss Overlaminate 8580	PB	8580
3M™ Screen Print Gloss Clear 1920DR and Low Gloss 1930 - Applying screen printing clear 1920DR and 1930	PB IB	1900 3.12
Performance Guarantee Printer Matrix	PB	PG Matrix
Design of graphics	IB	2.1
Cold roll lamination	IB	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, general procedures for indoor and outdoor dry applications	IB	5.5
Application, special applications and vehicles	IB	5.4
Applicator's quick reference guide for vehicle film	IB	5.35
Application: Special considerations for automobiles, vans and buses and inspection forms	IB	5.36
Application: special considerations for watercraft	IB	5.42
Storage, handling, maintenance, removal	IB	6.5

### Warranties

3M Graphics Center Warranty Brochure

Go to [www.3Mgraphics.com](http://www.3Mgraphics.com), Warranties

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## Bulletin Change Summary

Added watercraft as an approved application. Please notes the special limitations and application requirements marked by black bars in the margins. Simplified the Total Ink Coverage values: all 3M solvent inks is 270%; all 3M UV inks is 280%; most inks used in the Performance Guarantee program are 270%.



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