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

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:
  - 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 4600	HP Scitex Pressjet-W™ Printer
• 3M™ Piezo Inkjet Ink Series 4800	HP Scitex TJ8300 Series Digital Press

Graphic Protection Options

- 3M™ Scotchcal™ Gloss Overlaminate 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	**Without adhesive:** 2 mil (0.05 mm) **With adhesive:** 3-4 mil (0.08-0.10 mm)	
Adhesive	Pressure-activated, slideable, repositionable	
Adhesive color	Gray	
Liner	Polyethylene-coated paper	
Adhesion, Typical *24 hours after application*	**Substrate**	**Adhesion**
	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	• Resists mild alkalis, mild acids, and salt • Excellent resistance to water *(does not include immersion)* • Resists occasional fuel spills	
Flammability	Call 1-800-328-3908 for information	

Application Characteristics

Characteristic	Value
Finished graphic application recommendation	**Surface type:** Flat, simple curves, compound curves and concave channels
Finished graphic application recommendation	**Substrate type:** ABS resins, chrome, glass, paint **Application temperature:** 60° - 90°F (16° - 32°C) **Application method:** 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)

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 for Finished Graphics

Ink Series	Graphic Protection	Vertical Orientation *Warranty in Years*
1500v2 4600 4800	8580 1920DR	3
2200UV 2600UVv2 2700UV 2800UV 5400UV *See Important Note! below*	8580	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.

3M™ MCS™ Warranty for Finished Graphics in a Non-Vertical Orientation or Desert Southwest Location

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

Exposure	Percentage of U.S. Vertical Exposure	Example
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

Paint Refurbishing Reimbursement Policy for 3M™ MCS™ Warranty

Warranty Stipulations for Van, Bus, Recreational Vehicles or Automobile ("Vehicle")

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.

3M Performance Guarantee Graphic Constructions and 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 Product Bulletin PG Matrix. That Bulletin 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.

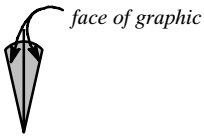
Film	Ink Type	Graphic Protection	Vertical Exposure, *Warranty in Years*	Inks and Printers
IJ380Cv3	Solvent	8580 1920DR	3	See Product Bulletin: PG Matrix
	UV*	8580	3	

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

Warranty Details and General Exceptions

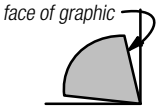
Definitions

Vertical Exposure



The face of the graphic is ± 10° from vertical.

Non-vertical Exposure



The face of the graphic is greater than 10° from vertical and greater than 5° 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.

Factors that Affect Graphic Performance Life

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 for 3M™ MCS™Warranty Constructions

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, overlaminate 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.

Ink Series	Maximum Total Ink Coverage
1500v2	270%
4600	250%
4800	270%
5500	300%
6000	300%
6800	300%

Ink Series	Maximum Total Ink Coverage
2200UV	280%
2600UVv2	280%
2700UV	280%
2800UV	280%
5400UV	280%

Total Ink Coverage for 3M Performance Guarantee Constructions

We recommend 270% maximum total ink coverage, except the Mimaki JV5 Series printers using the HS ink series, which has a 250% maximum total ink coverage. Make sure that the ink lay down is within the limits of what the drier can handle to prevent ink smearing.

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 overlaminate, 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 5
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.

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.

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, 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. 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
Storage, handling, maintenance, removal	IB	6.5

Warranties

3M Graphics Center Warranty Brochure	Go to www.3Mgraphics.com, Warranties

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