

# **Controltac ™ Graphic Film**

IJ180-10 and RG180-10

# **Controltac**<sup>™</sup> **Graphic Film with Comply™ Adhesive**

IJ180C-10, RG180C-10 and FN180C-10

# Controltac <sup>™</sup> Graphic Film with Comply<sup>™</sup> v2 Adhesive

IJ180Cv2-10, RG180Cv2-10 and FN180Cv2-10

# Controltac<sup>™</sup> Graphic Film with Comply<sup>™</sup> v3 Adhesive

IJ180Cv3-10, RG180Cv3-10 and FN180Cv3-10

### **Product Description**

### Recommended Types of Graphics and End Uses

Limitations of End Uses

Unsuitable End Uses

for This Film

### For Piezo Inkjet Printing Only

These are 2 mil films that offer versatility along with slideable, repositionable, pressure activated adhesive. These long term durable and removable films have excellent hiding power and stability, making them perfect for signs and fleet graphics and watercraft, including surfaces with corrugations and rivets.

Films IJ180C and IJ180Cv2 and IJ180Cv3 (all versions) with Comply adhesive have air release channels for fast and easy, bubble-free graphic installations.

The air release channels for films with Comply v2 and Comply v3 adhesive are not visible.

The channels in IJ180Cv3 also have improved air release.

Use these films for piezo inkjet printing.

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the  $3M^{\text{TM}}$  MCS  $^{\text{M}}$  Warranty or the 3M Performance Guarantee. Please read the entire Bulletin for details.

- Indoor and outdoor graphics and signs
- Commercial vehicle and fleet graphics, emblems or striping
- Bus graphics
- Standard vehicle graphics
- Watercraft graphics (above the static water line only)
- Small format original equipment manufacturer's (OEM) decorative and identification graphics, cautionary and safety labeling

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

- Graphics applied to:
  - stainless steel
  - non-3M films (see Removal Warranty)
  - watercraft when the graphic is below the static water line
  - watercraft graphics that are not edge sealed
  - painted substrates with poor paint to substrate, or paint-to-paint bond
  - substrate surfaces that are not clean and smooth (little or no variation in texture)

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#### - 1101-3 - water

- For film IJ180Cv3 (all versions) only: Using prespacing tape in cut and weeded applications where the tape must adhere to the exposed liner
- Film without graphic protection under these conditions:
  - vehicle graphics
  - watercraft graphics
  - exposure to abrasive conditions, harsh cleaners or chemicals
- 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, including those at or on gas pumps, automobile fuel-tank ports, watercraft or top-feeding, petroleum tankers
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684 for alternatives.

Wall Graphics	Two-mil cast films are typically the best choice for indoor smooth surface wall graphics. However, 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 change-able films. Instruction Bulletin 5.37 provides comprehensive information for the most successful wall graphics film selection and application.
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

#### **Piezo Inkjet Printers and Inks**

See the Warranty Matrix to determine if you need an IJ, FN or RG prefix film.

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.

#### Ink Series

- 3M<sup>™</sup> Piezo Inkjet Ink Series 2200UV
- 3M<sup>™</sup> Piezo Inkjet Ink Series 2600UVv2
- 3M<sup>™</sup> Piezo Inkjet Ink Series 2700UV
- 3M<sup>™</sup> Piezo Inkjet Ink Series 2800UV
- 3M<sup>™</sup> Piezo Inkjet Ink Series 5400UV
- Mimaki LF-200 Ink Series manufactured by 3M
- Mimaki F-200 Ink Series manufactured by 3M
- 3M<sup>™</sup> Piezo Inkjet Ink Series 1500v2
- 3M<sup>™</sup> Piezo Inkjet Ink Series 4400
- 3M<sup>™</sup> Piezo Inkjet Ink Series 4600
- 3M<sup>™</sup> Piezo Inkjet Ink Series 4800
- 3M<sup>™</sup> Piezo Inkjet Ink Series 5500
- 3M<sup>™</sup> Piezo Inkjet Ink Series 6000
- 3M<sup>™</sup> Piezo Inkjet Ink Series 6800

#### **Graphic Protection Options**

- 3M<sup>™</sup> Scotchcal<sup>™</sup> Gloss Overlaminate 8518 3M Performance Guarantee Only
  - 3M<sup>™</sup> Scotchcal<sup>™</sup> Luster Overlaminate 8519
- 3M<sup>™</sup> Scotchcal<sup>™</sup> Matte Overlaminate 8520
- 3M<sup>™</sup> Scotchcal<sup>™</sup> Luster Overlaminate 8908
- 3M<sup>™</sup> Scotchcal<sup>™</sup> Matte Overlaminate 8909
- Continued on the next page

#### Printer

EFI™ VUTEk® PV 200 Printer 3M<sup>™</sup> Printer 2500UV Durst Rho 160R Printer EFI<sup>™</sup> VUTEk® QS2000/QS3200 Printers HP Designiet 788 Printer Mimaki UJV-160 Printer Mimaki JF-1610, 1631 Printers EFI<sup>™</sup> VUTEk<sup>®</sup> 150, 2360/3360, 3300/5300 and 3000/5000 Printers HP XLJet 1200 and 1500 Printers HP Scitex Pressjet-W<sup>™</sup> Printer HP Scitex TJ8300 Series Digital Press Océ Arizona 600 Printer Océ Arizona 30s Printer Océ Arizona 180 and 90 Printers

Graphic Protection Options, continued

- 3M<sup>™</sup> Piezo Inkjet Protective Clear 8530
- 3M<sup>™</sup> Screen Print Gloss Clear 1920DR
- 3M<sup>™</sup> Screen Print UV Gloss Clear 9720i
- 3M<sup>™</sup> Screen Print Clear 9720UV

#### **Other Products**

- 3M<sup>™</sup> Premasking Tape SCPM-3
- 3M<sup>™</sup> Premasking Tape SCPM-44X
- 3M<sup>™</sup> Prespacing Tape SCPS-2
- 3M<sup>™</sup> Prespacing Tape SCPS-55
- 3M<sup>™</sup> Prespacing Tape SCPS-53X
- 3M<sup>™</sup> Edge Sealer 3950
- 3M<sup>™</sup> Edge Tape 8914

### **Characteristics**

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

Physical Characteristics	Characteristic	Value							
	Film	Vinyl							
	Film color	White, opaque							
	Thickness	Without adhesive: 2 mil (0.05 mm) With adhesive: 3-4 mil (0.08-0.10 mm)							
	Adhesive	Films IJ180 (all versions): Pressure-activated, slideable, rep Films IJ180C, IJ180Cv2, IJ180C Pressure-activated, slideable, rep	v3 (all versions):						
	Adhesive color	Gray							
	Liner	Polyethylene-coated paper							
	Adhesion, Typical	Substrate	Adhesion						
	24 hours after application	ABS Acrylic enamel Aluminum, anodized Aluminum, etched Chrome Fruehauf pre-painted panels	<ul> <li>4.2 pounds/inch (0.75 kg/cm)</li> <li>3.5 pounds/inch (0.63 kg/cm)</li> <li>7.9 pounds/inch (1.42 kg/cm)</li> <li>5.2 pounds/inch (0.93 kg/cm)</li> <li>4.8 pounds/inch (0.87 kg/cm)</li> <li>4.0 pounds/inch (0.7 kg/cm)</li> </ul>						
	Tensile strength	5 pounds/inch at 73°F (0.9 kg/cm at 23°C )							
	Chemical resistance	<ul> <li>Resists mild alkalis, mild acids, and salt</li> <li>Excellent resistance to water (does not include immersion)</li> <li>Resists occasional fuel spills</li> </ul>							
	Flammability	Call 1-800-328-3908 for information							
Application Characteristics	Finished graphic application recommendation	Surface type: Flat, with and without rivets, simple curves, moderate compound curves, and corrugations Substrate type: ABS resins, aluminum, chrome, glass, fiberglass reinforced plastics, paint (check adhesion to powder-coated or							
		water-based paints) fiberglass wit							
		Application temperature:							
		<ul> <li>Flat surfaces without rivets: 40°-100°F (4°-38°C)</li> <li>Curved or corrugated surfaces with rivets: 50°-100°F (10°-38°C)</li> </ul>							
		• Compound curves and/or watercraft: 60°-90°F (16°-32°C)							
		Application method: Dry							
	Continued on the next	Continued on the next page							

Application Characteristics, continued

Characteristic	Value
Applied shrinkage	0.015 inches (0.4 mm)
Temperature range after application	-65° to +225°F (-60° to +107°C )
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<sup>™</sup> MCS<sup>™</sup> Warranty

for Finished Graphics

 $\begin{array}{l} \mbox{Veh} = \mbox{Vehicle Graphics} \\ \mbox{Water} = \mbox{Watercraft} \\ \mbox{Out} = \mbox{Outdoor Signage} \\ \mbox{In} = \mbox{Indoor Signage} \end{array}$ 

	EFI™ VUTEk® 150, 2360/ 3360, 3300/5300, 3000/5000				ł	ΗP			HPS	Scitex			HPS	Scitex		
				XLJ	et Serie	s 1200, 1	500	Pressjet™ -W			TJ8300 Series Digital Press					
	l	nk Serie	es 1500v2	2		Ink Ser	ies 4400			Ink Sei	ries 4600		Ink Series 4800			
Graphic		Use I	J Films			Use I	J Films			Use I	J Films			Use I	J Films	
Protection	Veh	Out	Water	In	Veh	Out	Water	In	Veh	Out	Water	In	Veh	Out	Water	In
8519, 8520	5	4	2	8	5	4	2	8	5	4	2	8	5	4	2	8
8908, 8909	—	1		3	—	1		3	—	1		3	—	1		3
8915	5	4	2	8	5	4	2	8	5	4	2	8	5	4	2	8
1920DR	—	—	_	—	—	—	_	—	5	4	2	8	3	3	2	8
9720UV	—	—		_	—	—		_	5	4	2	8	3	3	2	8
9720i	5	4	2	8	5	4	2	8	5	4	2	8	5	4	2	8
8530	2	2	_	3	2	2	_	3	—	_	_	_	2	2	_	3
none	—	2	—	2	_	2	—	3		3	—	3	_	2	—	3

		C	)cé			C	)cé			C	)cé		
		Arizo	na 30s			Arizona 600				Arizona 180 and 90			
		Ink Ser	ies 6000			Ink Ser	ies 5500			Ink Series 6800			
Graphic		Use I	J Films			Use F	N films			Use F	RG films		
Protection	Veh	Out	Water	In	Veh	Out	Water	In	Veh	Out	Water	In	
8519, 8520	5	4	2	8	5	4	2	8	5	4	2	8	
8908, 8909	—	1	—	3	—	1		3	—	1	—	3	
8915	5	4	2	8	5	4	2	8	5	4	2	8	
1920DR	5	4	2	8	5	4	2	8	5	4	2	8	
9720UV	5	4	2	8	5	4	2	8	5	4	2	8	
9720i	5	4	2	8	5	4	2	8	5	4	2	8	
8530	2	2	—	3	2	2		3	2	2	—	3	
none	—	3	—	3	—	3	_	3	—	3	_	3	
					NOTE: FN180		not offer filr	n					

Continued on the next page

		EFI™				3	BM			Durst			EFI™			
		VUTEk	® PV200			Printer 2500UV			Rho 160R and 351R				VUTEk® QS2000, QS3200			3200
	I	nk Serie	es 2200U\	1	In	Ink Series 2600			Ink Series 2700UV				Ink Series 2800UV			
Graphic		Use I	J Films			Use I	J Films			Use I	J Films			Use I	J Films	
Protection	Veh	Out	Water	In	Veh	Out	Water	In	Veh	Out	Water	In	Veh	Out	Water	In
8519, 8520	5	4	2	8	5	4	2	8	5	4	2	8	5	4	2	8
8915	5	4	2	8	5	4	2	8	5	4	2	8	5	4	2	8
1920DR	_	—			5	4	2	8	—	—	—	_	_	—		—
9720UV	5	4	2	8	5	4	2	8	5	4	2	8	5	4	2	8
9720i	5	4	2	8	5	4	2	8	5	4	2	8	5	4	2	8
none	—	3		3		3		3		3	—	3		3		3

			HP			Mimaki	i		Mimaki	
	Desi	gnjet H3	35000/H4	5000		UJV-160	)	JF-1610, 1631		
		nk Serie	es 5400U\	/	Ink S	Series LI	-200	Ink Series F-200		
Graphic		Use I	J Films		U	se IJ Filr	ns	Us	se IJ Filn	ns
Protection	Veh	Out	Water	In	Veh	Out	In	Veh	Out	In
8519, 8520	5	4	2	8	5	4	8	5	4	8
8915	5	4	2	8	5	4	8	5	4	8
1920DR	—	—	—	—	—	—		—	—	—
9720UV	5	4	2	8	—	—		—	_	_
9720i	5	4	2	8	—	—		—	—	—
none	-	3	_	3	—	2	3		2	3

3M<sup>™</sup> MCS<sup>™</sup> Warranty for Graphics in a Non-Vertical or Desert Southwest Orientation Use the years of warranted durability indicated in the tables, 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)	$0.5 \times 5$ years = 2.5 years
Desert Southwest Vertical	70% (0.7)	0.7 x 5 years= 3.5 years
Desert Southwest Non-vertical	35% (0.35)	0.35 x 5 years = 1.75 years

#### Paint Refurbishing Reimbursement Policy for 3M<sup>™</sup> MCS<sup>™</sup> Warranty

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

#### Watercraft Warranty Stipulations

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.

This policy specifically does not include vehicles identified by 3M as watercraft.

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.

#### **Removal Warranty**

Removal Labor Reimbursement Remedy

for Removable and Changeable Films

Removal

Warrantv

Exceptions

If the film cannot be successfully removed or an excessive amount of adhesive residue remains on the surface, 3M will reimburse a portion of extra removal costs.

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.

Orientation	Remedy
Vertical	Same as Warranted Durability
Non-vertical (for 3M <sup>™</sup> MCS <sup>™</sup> Warranty constructions only)	50% of the U.S. Vertical Warranted Durability, not to exceed 3.5 years

- This film is not designed for short-term graphics on painted wallboard and may cause damage upon removal from painted surfaces.
- Removal from a pre-existing graphic will damage that graphic.
- Aged paint and metals must be tested to ensure removability. Surface oxidation or chalking may result in adhesive residue upon removal.
- Paint that is not firmly bonded to the substrate may be damaged when removing the film.
- Paint that is not properly cured may prevent the film from being removed.
- Outdoor horizontal applications may not remove cleanly.

#### 3M Performance Guarantee

Graphic Constructions and Durability

For 3M Product Performance Only

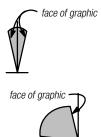
Graphics constructed as described in the table below are eligible for the 3M Performance Guarantee when exposed in a vertical exposure in the United States. This warranty covers the performance of only the recommended 3M products used in the graphic construction when imaged with the printers and OEM 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.

		Warr		
Film	Graphic Protection	Vehicle Outdoor, Indoor	Watercraft	Inks and Printers
IJ180-10 IJ180C-10 IJ180Cv2-10 IJ180Cv3-10	1920DR 8518 8519 8520 9720UV	3	2	See Product Bulletin: PG Matrix

#### Definitions

#### Vertical Exposure

Non-vertical Exposure



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

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

Desert SouthwestGraphics exposed to solar energy more than half of the time in Arizona, New Mexico and<br/>the desert areas of California, Nevada, Utah and Texas. A detailed map is available at<br/>3Mgraphics.com under Warranties.OEMLabels and decorative graphics produced for original equipment manufacturers.SignsGraphics applied outdoors and exposed to the elements.

Railroad	Graphics applied on railroad cars but not railroad engines.
Fleet vehicle	Straight trucks and trailers used in commercial fleets.
Recreational vehicle	Vehicles used for personal pleasure, such as campers, motor homes and trailers, that are not used in connection with any commercial or business enterprise. 3M specifically excludes watercraft from this definition.
Watercraft	Watercraft intended for personal pleasure such as runabouts and speedboats having aluminum and/or smooth fiberglass/gel coat bodies, including boats used in fishing tour- naments and off-shore racing boats, but not other boats used in connection with commer- cial or business enterprise. 3M specifically excludes all other recreational vehicles from this definition.
Standard vehicle	Buses, vans, automobiles, recreational vehicles unless otherwise noted.
Indoor and Outdoor	Refers to graphics for signs used indoors or outdoors.
Factors that Affect Graphic Performance Life	<ul> <li>The actual performance life of a graphic is affected by all of the following.</li> <li>Correct combination of 3M-recommended graphics products.</li> <li>Ink formulation</li> <li>Adequate ink drying or curing</li> <li>Selection and preparation of the substrate</li> <li>Surface texture</li> <li>Application methods</li> <li>Angle and direction of sun exposure</li> <li>Environmental conditions</li> <li>Cleaning or maintenance methods</li> </ul>
Application Outside the U.S.	Contact the 3M organization for that country.
Graphics Made with Components Not Sold or Recommended by 3M	The 3M <sup>™</sup> MCS <sup>™</sup> Warranty does not cover finished graphics made with other manufac- turers' inks, film, graphic protection and/or application tapes. The user is solely responsible for the graphic appearance, performance and durability of graphic constructions that in- clude 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 and watercraft), 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 <b>merchantability</b> 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.

### **Printer Support Information**

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. 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, 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.					
Graphics Manufacturing						
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.					
	Before using any equipment, always follow the manufacturers' instructions for safe operation.					
Cutting	<ul> <li>The following are common cutting methods for this film. See Instruction Bulletin 4.1 for details.</li> <li>Bandsawing</li> <li>Hot kiss cutting</li> <li>Hot and cold steel rule</li> <li>Drum-type electronic cutting</li> <li>Flat-bed electronic cutting</li> <li>Guillotine</li> <li>Hand cut</li> <li>Cold and hot steel-rule die cutting</li> </ul>					
Size of Cut Text	These values are based on upper case Helvetica medium type.Weeding can be more difficult with smaller text.Minimum stroke width:0.25 inch (6.35 mm)Minimum height:3.0 inch (76.2 mm)Minimum radius for end of stripe:0.125 inch (3.18 mm)					
Graphic Protection	<ul> <li>Graphic protection can improve the appearance, performance and durability of your graphic.</li> <li>Clear 8530 must be applied with a liquid laminator.</li> <li>Overlaminates must be cold roll applied.</li> </ul>					
Application Tapes						
When to Use Premasking Tape	<ul> <li>As an application aid to increase stiffness, and prevent stretching and damage during application.</li> <li>When little or no liner is exposed.</li> </ul>					

• When little or no liner is exposed.

Continued on the next page.

When to Use Prespacing Tape	<ul><li>Hold cut and weeded letters or graphics in registration after removing the film liner.</li><li>Protect cut graphic parts from scratching or damage during application.</li><li>Use when large amounts of liner are exposed.</li></ul>
	Note: Prespacing tape does not adhere to the exposed liner of film IJ180Cv3, 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. Use film IJ180 or IJ180C for more intricately cut and weeded graphics.
How to Select a Tape	Determine whether you want to premask the graphic or prespace cut pieces of film such as letters. 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.

#### **Graphic Protection**

Refer to the Warranty tables on pages 4-5 to determine which Graphic Protection options are approved for your ink series and graphic construction.

Таре	None	8519 8520	8908 8909	8530	1920DR	9720i 9720UV	8518	
Premasking SCPM-3							NR	
Prespacing SCPS 2 IJ180, RG180 only				NR				
Premasking SCPM-44X								
Prespacing SCPS-55 films with any Comply Adhesive only			NR	NR			NR	
Prespacing SCPS-53X								

 $\mathbf{NR}$  = The use of an application tape is not recommended in this construction.

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

All Films in this Bulletin

Films IJ180C. IJ180Cv2. IJ180Cv3

(all versions) with Comply<sup>™</sup> 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 100°F (38°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.

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

These films also have air release channels, a characteristic of Comply adhesive. Removing and attempting to change liners or reapply the same liner damages air release channels.

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.

*Films IJ180, RG180* 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.

# Application and Installation

Graphics Printed with UV Piezo Inkjet Inks are Heat Sensitive!	UV piezo inkjet inks may crack if too much heat is used during graphic application to com- plex 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 piezo inkjet ink to crack.
	For the best results, <b>always do a test application</b> 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 <i>3M Watercraft Graphics Pre-installation</i> <i>Inspection Record</i> in Instruction Bulletin 5.42 before manufacturing or applying any graphic to a watercraft.
Finishing	Vehicle, indoor and outdoor graphics. These films may require edge sealing. Applications such as rail cars may benefit from using edge sealer 3950 when subject to external sources such as abrasion and/or power-washing.
	<b>Watercraft graphics.</b> 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	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 Shipp	ing
Shelf Life	Total shelf life: 2 years from date of manufacture Up to 2 years unprocessed, <i>OR</i> process within 1 year <i>and</i> apply within 1 year of processing
Storage Conditions	<ul> <li>40° to 100°F (4° to 38°C)</li> <li>Out of sunlight</li> <li>Clean dry area</li> <li>Original container</li> <li>Bring the film to print room temperature before using</li> </ul>
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 inform-

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.

## 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.

Rullatin types PR - Product Rullati	n, PR_IR — Product & Instruction	Rullatin IR – Instruction Rullatin
Bulletin types: PB = Product Bulleti		i Dulletin, id – instruction Dulletin

Duiletii types. FD = FTOUUCT Duiletiii, FD = FTOUUCT & IIIstruction Duiletiii, ID =		Danoan
Subject	Туре	Bulletin No.
3M™ Piezo Inkjet Ink Series 2200UV	PB-IB	2200UV
3M™ Piezo Inkjet Ink Series 2600UVv2	PB-IB	2600UVv2
3M <sup>™</sup> Piezo Inkjet Ink Series 2700UV	PB-IB	2700UV
3M™ Piezo Inkjet Ink Series 2800UV	PB-IB	2800UV
3M™ Piezo Inkjet Ink Series 5400UV	PB-IB	5400UV
Mimaki Ink Series LF-200	PB-IB	LF-200
Mimaki Ink Series F-200	PB-IB	F-200
3M™ Piezo Inkjet Ink Series 1500v2	PB-IB	1500
3M™ Piezo Inkjet Ink Series 4400	PB-IB	4400
3M™ Piezo Inkjet Ink Series 4600	PB-IB	4600
3M™ Piezo Inkjet Ink Series 4800	PB-IB	4800
3M™ Piezo Inkjet Ink Series 5500	PB-IB	5500
3M™ Piezo Inkjet Ink Series 6000	PB-IB	6000
3M™ Piezo Inkjet Ink Series 6800	PB-IB	6800
3M <sup>™</sup> Scotchcal <sup>™</sup> Gloss Overlaminate 8518	PB	8518
3M <sup>™</sup> Scotchcal <sup>™</sup> Luster Overlaminate 8519 and 8520	PB	8519/8520
3M™ Piezo Inkjet Protective Clear 8530	PB	8530
3M™ Scotchcal™ Luster Overlaminate 8908	PB	8908
3M <sup>™</sup> Scotchcal <sup>™</sup> Matte Overlaminate 8909	PB	8909
3M™ Screen Print Gloss Clear 1920DR	PB	1900
- Applying screen printing clear 1920DR	IB	3.12
3M <sup>™</sup> Screen Print UV Gloss Clear 9720i	PB-IB	9720i
3M <sup>™</sup> Screen Print Gloss Clear 9720UV and Matte Clear 9730UV	PB	9700
-Applying screen printing clear 9720UV or 9730UV	IB	3.4
Design of graphics	IB	2.1
Scoring and cutting	IB	4.1
Using 3M application tapes; premasking and prespacing for films	IB	4.3
Cold roll lamination	IB	4.22
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
Applicator's quick reference guide for vehicle film	IB	5.35
Application techniques for automobiles, vans and buses, and inspection forms	IB	5.36
A guide to understanding and applying graphics to common indoor and outdoor wall surfaces	IB	5.37
Application: special considerations for watercraft	IB	5.42
Storage, handling, maintenance, removal	IB	6.5
3M Graphics Center Warranty Brochure Go to www.3Mgra		n Warranties

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#### Bulletin Change Summary

Added new film IJ180Cv3-10 (all versions). This film has improved air release channels. Added 3M<sup>™</sup> Piezo Inkjet Ink Series 4400 for HP XLJet 1200 and 1500 Printers. Added Mimaki LF-200 Ink Series for the Mimaki UJV-160 Printer and Mimaki L-200 Ink series for the Mimaki JF-1610, 1631 Printers. Corrected warranty matrix for Performance Guarantee: Overlaminate 8518 on the listed films is warranted for two years for watercraft application. Refer to the black bars in the margin to identify areas where text may have been added or modified.



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