



# Controltac™ Plus Graphic Film with Comply™ Adhesive IJ180C-10, RG180C-10 and FN180C-10

## For Piezo Ink Jet Printing Only

### Description

3M™ Controltac™ Plus Graphic Film with Comply™ Adhesive IJ180C-10, 3M™ Controltac™ Plus Graphic Film with Comply™ Adhesive RG180C-10 and 3M™ Controltac™ Plus Graphic Film with Comply™ Adhesive FN180C-10, designed for piezo ink jet printing, are 2-mil films. These films combine the features found in Controltac and Comply adhesive technologies, including pressure activation, positionability and air release channels, that allow for the fastest and easiest bubble-free graphic installations. These long-term durable and removable films have excellent hiding power and stability, making them perfect for indoor and outdoor signs and fleet graphics, including surfaces with corrugations and rivets with most inks.

### Recommended Types of Graphics and End Uses

These types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty. Please read the entire bulletin for details. A Performance Guarantee is also offered for films IJ180C-10; see page 4 for details.

- Indoor and outdoor graphics and signs
- Commercial vehicle and fleet graphics, emblems or striping
- Bus graphics

### Limitations of End Uses

We do not normally warrant other applications, but please contact us to discuss your needs or let us suggest other 3M products.

### Unsuitable End Uses for This Film

- Graphics applied to:
  - Stainless steel
  - Non-3M films (see Removal Warranty, page 4)

- Substrate surfaces that are not clean and smooth (little or no variation in texture)
- Riveted or corrugated surfaces when printed with ink series 2500UV
- 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 For 3M™ MCS™ Warranted Graphics

#### Inks and Printers for Film IJ180C-10

This film is forward wound on a 3-inch unnotched core.

- 3M™ Piezo Ink Jet Ink Series 1500
  - VUTEk UltraVu™ 150 Printer
  - VUTEk UltraVu™ 2360/3360 Printers
  - VUTEk UltraVu™ 3300/5300 Printers
- 3M™ Piezo Ink Jet Ink Series 2600UV or
- 3M™ Piezo Ink Jet Ink Series 2500UV
  - 3M™ Printer 2500UV
- 3M™ Piezo Ink Jet Ink Series 6000
  - Océ Arizona 30s Printer

Order films for the Scitex printer on a forward wound 6-inch unnotched core.

- 3M™ Piezo Ink Jet Ink Series 4600
  - Scitex Pressjet-W™ Printer

### Inks and Printers for Film RG180C-10

This film is reverse wound on a 3-inch, 4-notch core.

- 3M™ Piezo Ink Jet Ink Series 6800
  - Océ Arizona 180 Printer
  - Océ Arizona 90 Printer

\*May use Océ Piezo Ink Jet Ink Series 1700 for non-warranted finished graphics.

### Inks and Printers for Film FN180C-10

This film is forward wound on a 3-inch, 4-notch core.

- 3M™ Piezo Ink Jet Ink Series 5500
  - Océ Arizona 600 Printer

### Graphic Protection Options

- 3M™ Scotchcal™ Luster Overlamine 8519
- 3M™ Scotchcal™ Matte Overlamine 8520
- 3M™ Scotchcal™ Luster Overlamine 8908
- 3M™ Scotchcal™ Matte Overlamine 8909
- 3M™ Screen Print Gloss Clear 1920DR
- 3M™ Screen Print Gloss Clear 9720UV
- 3M™ Piezo Ink Jet Protective Clear 8530

## Characteristics

All values given are typical for unprocessed film unless noted otherwise and are not for use in specifications. Processing film may change certain values. If you have questions about your construction, contact the Technical Service helpline at 1-800-328-3908.

### Physical Characteristics

Characteristic	Description
Film	Vinyl
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, positionable, with air release channels
Adhesive color	Gray
Liner	Polyethylene-coated paper
Tensile strength	5 pounds/inch at 73°F (0.9 kg/cm at 23°C)

Adhesion <i>24 hours after application</i>	<b>ABS:</b> 4.2 pounds/inch (0.75 kg/cm) <b>Acrylic enamel:</b> 3.5 pounds/inch (0.63 kg/cm) <b>Aluminum, anodized:</b> 7.9 pounds/inch (1.42 kg/cm) <b>Aluminum, etched:</b> 5.2 pounds/inch (0.93 kg/cm) <b>Chrome:</b> 4.8 pounds/inch (0.87 kg/cm) <b>Fruehauf pre-painted panels:</b> 4 pounds/inch (0.7 kg/cm)
Chemical resistance	Resists mild alkalis, mild acids, and salt  Excellent resistance to water <i>(this does not include immersion)</i>  Resists occasional fuel spills
Flammability	Call 1-800-328-3908 for information

### Application Characteristics

Characteristic	Description
Finished graphic application recommendation	<b>Surface type:</b> - <b>Printed with ink series 2500UV:</b> Flat only - <b>Printed with other ink series:</b> Flat, with and without rivets, simple curves, moderate compound curves, and corrugations  <b>Substrate type:</b> ABS resins, aluminum, chrome, glass, fiberglass reinforced plastics, paint (check adhesion to powder-coated or water-based paints)  <b>Application temperature:</b> - <b>Flat surfaces without rivets:</b> 40° to 100°F (4° to 38°C) - <b>Flat, curved or corrugated surfaces with rivets:</b> 50° to 100°F (10° to 38°C)
Applied shrinkage	0.015 inches (0.4 mm)
Service temperature range	-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)

Note: For the full product names of the 3M products listed on this page, please see pages 1 and 2.

## Warranty Information

### Graphic Performance Life

The actual performance life of a graphic depends on the:

- Use of 3M recommended products and printers
- Correct combination of film, ink and graphic protection (if required)
- Adequate ink drying
- Selection and preparation of the substrate
- Surface texture
- Application methods
- Angle and direction of sun exposure
- Environmental conditions
- Cleaning or maintenance methods

### 3M™ MCS™ Warranted Graphic Constructions

The warranty 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 this table are for graphics exposed in the U.S. in a vertical orientation. See **Warranty Notes** for how to determine other warranty combinations.

Warranted Durability				
Film IJ180C-10, FN180C-10 or RG180C-10 plus...		U.S. Vertical Exposure (in years)		
Ink Series	Graphic Protection	Fleet & Comm'l Vehicle Graphics	Outdoor Signs	Indoor Signs
1500 4600 5500 6000 6800	None	0	3	3
	8519 8520 9720UV 1920DR	5	4	8
	8908 8909	0	1	3
1500 5500 6000 6800	8530	2	2	3

Warranted Durability, <i>continued</i>				
Ink Series	Graphic Protection	Fleet & Comm'l Vehicle Graphics	Outdoor Signs	Indoor Signs
2600UV	None	0	3	3
	8519 8520 1920DR 9720UV	5	4	8
2500UV <i>flat surfaces only</i>	None	0	1	3
	8519 8520 9720UV	2	2	5

## Warranty Notes

### Graphic Exposure Definition



*face of graphic*

#### Vertical Exposure

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



*face of graphic*

#### Non-Vertical Exposure

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

### How to Determine U.S. Non-Vertical and Desert Southwest Warranties

All other exterior warranties are based on a percentage of the vertical U.S. warranties given in the Warranted Durability Table. The calculation for determining these warranties is given below. A “construction” is the base film, inks and graphic protection (if required). The examples are based on a vertical U.S. warranty of 5 years.

- **Warranty for Non-Vertical U.S. Exposure**  
50% (0.5) of the vertical warranty for your construction  
Example:  $0.5 \times 5 \text{ years} = 2.5 \text{ years}$
- **Warranty for U.S. Desert Southwest Exposure**  
For 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 upon request.
  - **Vertical U.S. Desert Southwest**  
70% (0.7) of the U.S. vertical warranty for your construction  
Example:  $0.7 \times 5 \text{ years} = 3.5 \text{ years}$
  - **Non-Vertical U.S. Desert Southwest**  
35% (0.35) of the U.S. vertical warranty for your construction  
Example:  $0.35 \times 5 \text{ years} = 1.75 \text{ years}$

Note: For the full product names of the 3M products listed on this page, please see pages 1 and 2.

### Application Outside the U.S.

Contact the 3M organization for that country.

### Graphics Made with Components Not Sold or Recommended by 3M

The user is solely responsible for the graphic appearance, performance and durability when this film is used with any other manufacturers' inks, graphic protection and/or application tapes. See *Performance Guarantee for other options*.

### Special Warranty Stipulations for Automobile, Van and Bus Graphics

Automobiles, vans and buses require the completion of a Pre-Installation and Inspection Report for each vehicle that must be readily available if a claim is made. Refer to Instruction Bulletin 5.36 for the appropriate form.

### Clears

Clears 1920DR and 9720UV should be applied by screen printing.

Clear 8530 must be applied with 3M approved liquid laminators.

### All Overlaminates

Overlaminates must be cold roll applied.

### Application to Glass

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

### Removal Warranty for 3M MCS Warranted Graphics

The removal warranty for standard fleet and sign substrates is the same as the Warranted Durability. Refer to page 1, *Limitations of End Uses, Graphic removal from*, for restrictions.

#### Removal Details

The ease and rate of removal depends on several factors. Also see Instruction Bulletin 6.5.

- Substrate type and condition
- Piezo ink series and the total ink coverage used
- Graphic age and weathering conditions
- Angle of removal, which should be less than 90 degrees

### Removal Warranty Exceptions

- A signed Pre-installation Review is required as a condition for warranty on automobiles, vans and buses. See *Instruction Bulletin 5.36*.
- This film is not designed for short-term graphics and may cause damage upon removal from painted surfaces.
- Removability is not warranted for outdoor, horizontal applications or painted wallboard.
- 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.

### Warranty and Limited Warranty

*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:* Films IJ180C-10, RG180C-10 and FN180C-10 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. See the worldwide 3M MCS Warranty ([www.Scotchprint.com](http://www.Scotchprint.com) or Fax-on-Demand), which gives the terms and limitations of the warranty.

**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.**

### 3M Performance Guarantee Constructions

The 3M Performance Guarantee covers only product performance of 3M films and the required 3M graphic protection product when used with the printers and OEM inks listed in this table for the types of graphics, construction methods and application techniques specified in the base film's 3M Product Bulletin and related Instruction Bulletins. This is not a finished graphics warranty. The sole remedy is the replacement cost of 3M films and graphic protection product used in the construction for the durability term. See the Performance Guarantee details at [www.Scotchprint.com](http://www.Scotchprint.com).

Performance Guarantee		
<b>Film IJ180C-10</b> <i>with graphic protection 8519, 8520, 1920DR or 9720UV</i>		<b>U.S. Vertical Exposure</b>
<b>Printer</b>	<b>Ink Series</b>	<b>Fleet Outdoor Signs</b> <b>Indoor Signs</b>
ColorSpan DisplayMaker® 72	SolaChrome HR	2 years
Mimaki JV 3 Series	MS, SS, S2	
Mutoh Falcon II Outdoor	Eco-Solvent Plus™	
Mutoh Toucan	Toucan Solvent Based	
Mutoh Toucan LT	LT	
Océ CS6060	Océ IJC610	
Roland SOLJET Pro II Ex Series	Roland Eco-SOL	
Seiko ColorPainter™ 64S	EG-Outdoor	
Scitex Vision TURBOjet	TJ100 Supreme	
Scitex Vision XLJet	XL200, XL300 Supreme	
VUTEK™ x300, x360	Inkware Series 5	

### Corrugations and Selected Printers

Do not apply graphics printed on the Mutoh Toucan LT, Océ CS6060, Seiko ColorPainter or VUTEK x300 or x360 to corrugations.

### Total Ink Coverage for Performance Guarantee Films

We recommend a maximum total ink coverage of 270%. Make sure that the ink lay down is within the limits of what the drier can handle to prevent ink smearing.

## Printer Support Information

### Ink

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


### Total Ink Coverage

Do not exceed the recommended total ink coverage for 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 the recommended total ink coverages.


### Color Profiles

Many color profiles are available on our website at [www.scotchprint.com](http://www.scotchprint.com).

## Drying

 <b>Caution</b>
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

 <b>Caution</b>
When using any equipment, always follow the manufacturers' instructions for safe operation.

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

## Application Tapes

The type of application tape to use depends on the type of graphic produced and the ink or graphic protection that was applied last. See Instruction Bulletin 4.3 for details.

Ink	Graphic Protection	Prespacing Tape	Premasking Tape
1500 4600 5500 6000 6800	None 8519 8520 1920DR	SCPS-55	SCPM-3
	8530 8908 8909	None	SCPM-3
All inks	9720UV	SCPS-55	SCPM-44X
2500UV 2600UV	None 1920DR 8519 8520	SCPS-55	SCPM-44X SCPM-3

Note: For the full product names of the 3M products listed on this page, please see pages 1 and 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

The combined features found in Controltac and Comply adhesive technologies, including pressure activation, positionability and air release channels, allow for the fastest and easiest bubble-free graphic installations. Applying firm pressure bonds the adhesive to the substrate, and by design, destroys the positionability feature.

The adhesive characteristics may be reduced under these conditions:

- The film has been removed, even partially, from the original liner and reapplied to the same liner or another liner.
- Application at higher than 100°F (38°C), the film loses its positionability even with light hand pressure.

### Finishing

These films do not require edge sealing. However, applications such as cut graphics, may benefit from using edge sealer 3950.

## Maintenance and Cleaning

### Cleaning Graphics

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.)

### Cleaning Face-side Idler Rollers

3M recommends cleaning face-side idler rolls before printing this film to ensure producing the highest quality image. Refer to the printer operating guide or to the printer manufacturer for specific instructions.

### 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 Shipping

Activity	Recommendation
Shelf life	<b>Total shelf life: 2 years</b> Up to 2 years unprocessed, <b>OR</b> process within 1 year <b>and</b> apply within 1 year of processing
Storage conditions	<ul style="list-style-type: none"><li>• 100°F (38°C) maximum</li><li>• Out of sunlight</li><li>• Clean dry area</li><li>• Original container</li></ul>
Shipping finished graphics	Flat, or rolled printed side out on 5 inch (13 cm) or larger core; processed film may block if wound too tightly

### Attention:

#### Authorized Graphics Manufacturers

Visit our password-protected website for exclusive product information, profiles and services. Certain restrictions apply.

1. Go to [www.scotchprint.com](http://www.scotchprint.com).
2. Select a country.
3. Click *Login* on upper left side of screen.
4. Click Register.
5. Enter authorization code: **CGD\_SGN**.
6. Complete the information and submit.  
An e-mail will be sent when your authorization is completed.

## 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:

- By fax, call 1-800-364-0768 in the US and Canada or 1-650-556-8417 for all other locations.
- Electronically, visit us at <http://www.3m.com/msds>.
- 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 bulletins is subject to change. Current bulletins, as well as a list of all bulletins updated within the last three months, are available at [www.scotchprint.com](http://www.scotchprint.com) or through our Fax-on-Demand system. Any warranty, if offered, is based on information in the bulletin that was current at the time you purchased the 3M products. The following bulletins provide the information and processes you need to properly make the graphics described in this bulletin.

Fax-on-Demand phone numbers:  
United States or Canada: 1-800-364-0768  
International: 1-651-732-6506

Subject	Bulletin No.	FOD No.
<b>Product Bulletins</b>		
3M™ Piezo Ink Jet Ink Series 1500	1500	4578
3M™ Piezo Ink Jet Ink Series 2500UV	2500UV	4575
3M™ Piezo Ink Jet Ink Series 2600UV	2600UV	4594
3M™ Piezo Ink Jet Ink Series 4600	4600	4582
3M™ Piezo Ink Jet Ink Series 5500	5500	4592
3M™ Piezo Ink Jet Ink Series 6000	6000	4560
3M™ Piezo Ink Jet Ink Series 6800	6800	4574
3M™ Screen Printing Ink Series 1900	1900	2501
3M™ Screen Printing Ink Series 9700UV	9700	2507
3M™ Piezo Ink Jet Protective Clear 8530	8530	4565
3M™ Scotchcal™ Overlamine 8519 and 8520	8519/ 8520	4524
3M™ Scotchcal™ Luster Overlamine 8908	8908	3554
3M™ Scotchcal™ Matte Overlamine 8909	8909	3565
3M™ Edge Sealer 3950	3950	9006
<b>Instruction Bulletins</b>		
Design of graphics	2.1	5501
Printing with piezo ink jet series 1500	4.45	6545
Printing with piezo ink series 2500UV	4.41	6541
Printing with piezo ink jet series 2600UV	4.50	6550
Printing with piezo ink jet ink series 4600	4.43	6543
Printing with piezo ink series 5500	4.47	6547
Printing with piezo ink jet ink series 6000	4.39	6539



### Graphics Market Center

3M Center, Building 220-12E-04  
PO Box 33220  
St. Paul, MN 55144-3220 USA  
General Info. 1-800-374-6772  
Technical Info. 1-800-328-3908  
Fax 1-651-736-4233

Fax-on-Demand 1-800-364-0768 US/Canada or 1-651-732-6506 International  
Fax-on-Demand document: 4539  
[www.scotchprint.com](http://www.scotchprint.com)

### 3M Canada

P.O. Box 5757  
London, Ontario  
Canada N6A 4T1  
1-800-265-1840  
Fax 519-452-6245

Subject	Bulletin No.	FOD No.
Printing with piezo ink series 6800	4.40	6540
Screen printing with ink series 1900	3.12	6012
Screen printing with ink series 9700UV	3.4	6004
Cold roll lamination	4.22	6522
Scoring and cutting	4.1	6501
Using 3M application tapes; premasking and prespacing for films	4.3	6503
Application, substrate selection, preparation and substrate-specific application techniques	5.1	7001
Application: Special considerations for complex contours of automobiles, vans and buses and inspection forms	5.36	7036
Application, special applications and vehicles	5.4	7004
Application, general procedures for interior and exterior dry applications	5.5	7005
Applying 3M Graphic Films with Comply™ Adhesive	5.31	7031
A Guide to Understanding and Applying Graphics to Common Interior Wall Surfaces	5.37	7037
Storage, handling, maintenance, removal	6.5	8505
<b>Warranties</b>		
Worldwide 3M™ MCS™ Warranty		9503

*3M, Controltac, Comply, MCS and Scotchcal are trademarks of 3M Company. UltraVu is a trademark of VUTEK Inc. Pressjet-W is a trademark of Scitex Corporation Ltd. ColorPainter is a trademark of Seiko I Infotech Inc. DisplayMaker is a registered trademark of McDermid ColorSpan Inc. Mutoh is a registered trademark of Mutoh America, Inc. Roland and SOLJET are trademarks of Roland DGA Company. All other trademarks are the property of their respective owners.*

### Bulletin Change Summary

For our Performance Guarantee program, we are continually testing popular piezo ink jet printers and inks with our graphic films to identify those that meet our standards and ensure satisfactory results for your applications. Please refer to the 3M Performance Guarantee table on page 4 to determine the most current approved printers and inks for this film.

### 3M México, S.A. de C.V.

Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México, D.F. 01210  
52-55-52-70-04-00  
Fax 52-55-52-70-22-77

### 3M Puerto Rico, Inc.

Puerto Rico Industrial Park  
P.O. Box 100  
Carolina, PR 00986-0100  
787-620-3000  
Fax 787-750-3035