



# ControTac™ Plus Graphic Film

IJ180-10 and RG180-10

## For Piezo Ink Jet Printing Only

### Description

Film IJ180-10 and RG180-10 are 2-mil films that offer great versatility along with repositionable, pressure-activated adhesive. 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 (except when printed with ink series 2500UV). Use for piezo ink jet printing.

### Recommended Types of Graphics and End Uses

These end uses are recommended for this film and may be covered by the 3M™ MCS™ Warranty and/or the 3M Performance Guarantee. Certain restrictions may apply; please read the entire bulletin 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 end uses, but please contact us to discuss your needs or let us suggest other 3M products.

### 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 changeable films. Instruction Bulletin 5.37 provides comprehensive information for the most successful wall graphics film selection and application.

### 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.
- Film without graphic protection under these conditions:
  - vehicle 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 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

Refer to the durability tables for 3M MCS warranty and the 3M Performance Guarantee for the proper combination of printers, inks, films and graphic protection.

### Inks and Printers for Film IJ180-10

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

- 3M™ Piezo Ink Jet Ink Series 2200UV
  - VUTEk PressVu® UV 200/600 printer
- 3M™ Piezo Ink Jet Ink Series 2600UV or
- 3M™ Piezo Ink Jet Ink Series 2500UV
  - 3M™ Printer 2500UV
- 3M™ Piezo Ink Jet Ink Series 2700UV
  - Durst Rho 160R Printer
- 3M™ Piezo Ink Jet Ink Series 1500
  - VUTEk UltraVu™ 150 Printer
  - VUTEk UltraVu™ 2360/3360 Printers
  - VUTEk UltraVu™ 3300/5300 Printers
  - VUTEk UltraVu™ 3000/5000 Printers
- 3M™ Piezo Ink Jet Ink Series 6000
  - Océ Arizona 30s Printer
- 3M™ Piezo Ink Jet Ink Series 4600
  - HP Scitex Pressjet-W™ Printer\*
- 3M™ Piezo Ink Jet Ink Series 4800
  - HP Scitex TJ8300 Series Digital Press\*

\*Order films for the Scitex printers on a forward wound 6-inch unnotched core.

### Inks and Printers for Film RG180-10

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 graphics.

### Graphic Protection Options

- 3M™ Scotchcal™ Gloss Overlamine 8518  
*only for Performance Guarantee constructions*
- 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 help line 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
Adhesive color	Gray
Liner	Polyethylene-coated paper
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)
Tensile strength	5 pounds/inch at 73°F (0.9 kg/cm at 23°C)
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
Finished graphic application recommendation	<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° - 100°F (4° - 38°C) - <b>Flat, curved or corrugated surfaces with rivets:</b> 50° - 100°F (10° - 38°C) <b>Application method:</b> Dry
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

See the 3M Graphics Center Warranty Brochure for the complete warranty and remedy details. The warranty given in the Product Bulletin that is current at the time you purchased the film is the one that 3M will honor.

### 3M™ MCS™ Warranty

for Finished Graphics

#### 3M MCS Warranty Finished Graphic Constructions and Durability

U.S. Vertical Exposure <i>ONLY</i> (in years)												
Graphic Type	Vehic	Outd	Indoc	Vehic	Outd	Indoc	Vehic	Outd	Indoc	Vehic	Outd	Indoc
Ink Series	1500			4600			4800			6000		
Graphic Protection	Film IJ180-10											
8519	5	4	8	5	4	8	5	4	8	5	4	8
8520	5	4	8	5	4	8	5	4	8	5	4	8
8908	0	1	3	0	1	3	0	1	3	0	1	3
8909	0	1	3	0	1	3	0	1	3	0	1	3
1920DR	5	4	8	5	4	8	3	3	8	5	4	8
9720UV	5	4	8	5	4	8	3	3	8	5	4	8
8530	2	2	3	—	—	—	2	2	3	2	2	3
none	0	3	3	0	3	3	0	2	3	0	3	3
Ink Series	2200UV			2500UV <i>flat only</i>			2600UV			2700UV		
8519	5	4	8	2	2	5	5	4	8	5	4	8
8520	5	4	8	2	2	5	5	4	8	5	4	8
1920DR	5	4	8	—	—	—	5	4	8	5	4	8
9720UV	5	4	8	2	2	5	5	4	8	5	4	8
none	0	3	3	0	1	3	0	3	3	0	3	3
Ink Series	6800											
Graphic Protection	Film RG180-10											
8519	5	4	8									
8520	5	4	8									
8908	0	1	3									
8909	0	1	3									
1920DR	5	4	8									
9720UV	5	4	8									
8530	2	2	3									
none	0	3	3									

Warranties are continued on the next page.

### Formulas for Other U.S. Warranted Durabilities

Use the 3M MCS warranted durability for your construction if exposed in a U.S. vertical orientation and use 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 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

### 3M Performance Guarantee

for Product Performance Only

#### 3M Performance Guarantee Graphic Constructions and Durability

Graphics constructed as described in the table below are eligible for the 3M Performance Guarantee warranty. This is not a finished graphics warranty; it covers product performance **only** for the 3M specified products 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 this film.

U.S. Vertical Exposure (in years)			
Film	Graphic Protection	Vehicle Outdoor Indoor	Inks and Printers
IJ180-10	8518 8519 8520 1920DR 9720UV	3	See Product Bulletin PG Matrix

### Other Warranties

#### Warranty Stipulations for Van, Bus, Recreational Vehicles or Automobile ("Vehicle") Paint Refurbishing Reimbursement

A Pre-Installation and Inspection Report (see Instruction Bulletin 5.36), completed prior to graphic installation, must be 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. A claim cannot be authorized without these reports.

### Labor Reimbursement Remedy for Removable and Changeable Films

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.

See warranty removal limitations on page 1.

Orientation	Remedy
Vertical	Same as Warranted Durability
Non-vertical	50% of the U.S. vertical Warranted Durability, not to exceed 3.5 years

### Removal Warranty Exceptions

- 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.

### Warranty Notes

#### 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 upon request.

**Vehicles.** Refers to commercial fleet, buses, vans and automobiles unless otherwise noted.

**Outdoor and Indoor.** Refers to graphics for signs used indoors or outdoors.

## Graphic Performance Life

The actual performance life of a graphic depends on all of the following.

- 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.

## 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.

## 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.

## Application to Glass

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

## Warranty and Limited Liability

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.

## Printer Support Information

### 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, 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.

Ink Series	Maximum Total Ink Coverage	Ink Series	Maximum Total Ink Coverage
1500	270%	2200UV	300%
4600	250%	2500UV	300%
4800	270%	2600UV	300%
6000	300%	2700UV	300%
6800	300%		

### Total Ink Coverage for 3M Performance Guarantee Constructions

We recommend 270% 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.

## Drying

### Caution

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.


## Graphics Manufacturing

### Graphic Protection

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

- Screen print clears should be applied by standard screen printing methods.
- Clear 8530 must be applied with 3M approved liquid laminators.
- Overlaminates must be cold roll applied.

## Cutting

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

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

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

## 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.

NR= Not Recommended

Film	Graphic Protection								
	Refer to the Warranty tables on page 3 to determine whether the Graphic Protection option listed is approved for the ink series you are using with these films.								
IJ180	None	8519	8520	8908	8909	8530	1920DR	9720UV	8518 & Options Listed in Product Bulletin: PG Matrix
Premasking Tape <b>SCPM-3</b>	■	■	■	■	■	■	■	■	■
Prespacing Tape <b>SCPS-2</b>	■	■	■	■	■	NR	■		
Premasking Tape <b>SCPM-44X</b>								■	
Prespacing Tape <b>SCPS-53X</b>								■	

## 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 which allows the film to be positioned, slid into place and repositioned easily when only light finger pressure is used. Applying firm pressure, such as with a squeegee, 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.
- When applied at higher than 100°F (38°C), the film loses its positionability feature even if only light hand pressure is applied.

### Finishing

This film does 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>• 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.

### Attention:

#### Authorized Graphics Manufacturers

Visit our password-protected website for exclusive product information 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 [www.3m.com/msds](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 Product and Instruction 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 appropriate Bulletin(s) that was current at the time you purchased the 3M products. The following Product and/or Instruction 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 2200UV	2200UV	4597
3M™ Piezo Ink Jet Ink Series 2500UV	2500UV	4575
3M™ Piezo Ink Jet Ink Series 2600UV	2600UV	4594
3M™ Piezo Ink Jet Ink Series 2700UV	2700UV	4598
3M™ Piezo Ink Jet Ink Series 1500	1500	4578
3M™ Piezo Ink Jet Ink Series 4600	4600	4582
3M™ Piezo Ink Jet Ink Series 4800	4800	4602
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™ Overlaminates 8518	8518	4600
3M™ Scotchcal™ Overlaminates 8519 and 8520	8519/ 8520	4524

Subject	Bulletin No.	FOD No.
3M™ Scotchcal™ Luster Overlamine 8908	8908	3554
3M™ Scotchcal™ Matte Overlamine 8909	8909	3565
3M™ Edge Sealer 3950	3950	9006
3M Performance Guarantee Printer Matrix	PG Matrix	4599
<b>Instruction Bulletins</b>		
Design of graphics	2.1	5501
Printing with piezo ink series 2200UV	4.52	6552
Printing with piezo ink series 2500UV	4.41	6541
Printing with piezo ink series 2600UV	4.50	6550
Printing with piezo ink series 2700UV	4.53	6553
Printing with piezo ink series 1500	4.45	6545
Printing with piezo ink series 4600	4.43	6543
Printing with piezo ink series 4800	4.51	6551
Printing with piezo ink series 6000	4.39	6539
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
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>		
3M Graphics Market Center Warranty Brochure		9503

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 Pressjet-W is a trademark of HP Scitex Corporation Ltd.  
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## Bulletin Change Summary

**NOTE :** Changes made to Rev C of Product Bulletin PIJ180 are shown here as well as changes made to Rev D, which are only to clarify the Warranty Stipulations for removal of graphics from vehicles (see page 4) and to remove an incorrect removeability warranty limitation about horizontal applications.

Changes to the 3M Performance Guarantee program Overlamine 8518 has been added as a compatible product. Because we are continually testing and approving more platforms, the specific 3M-qualified printers and OEM inks are now listed only the Product Bulletin PG Matrix. To obtain this bulletin from the web, go to [www.scotchprint.com](http://www.scotchprint.com), select Technical Bulletins, select Product Bulletins, select Piezo Ink Jet Films, select Films for other printers. The Product Bulletin PG Matrix appears at the top of the page.

Other new products Added ink series 4800, 2200UV and 2700UV.

Warranty information. The bulletin has been updated to better show the differences between the 3M MCS Warranty and 3M Performance Guarantee durabilities.

Other changes. Information about suitability for indoor wall graphics has been expanded (page 5). Specific maximum total ink coverage values, by ink series, have been added (page 5). All additions or changes to text are marked with a black bar in the margin.



Regional Phone Numbers:  
 North East: 1-800-257-8226  
 South East: 1-800-537-4606  
 Great Lakes: 1-800-733-9942

Midwest: 1-800-736-7636  
 West: 1-800-252-7767  
 Mexico: 011-525-55-576-6667  
[www.sourceoneonline.com](http://www.sourceoneonline.com)