



Controltac™ Plus Graphic Film IJ180-10

For Piezo Ink Jet Printing Only

Description

3M™ Controltac™ Plus Graphic Film IJ180-10 is a 2 mil, piezo ink jet printable film that offers wide versatility for medium to long term, removable signs and fleet graphics, including application to surfaces with corrugations and rivets. It features 3M's repositionable adhesive to aid in large graphic application.

Advantages

- Can be used on several piezo ink jet printing platforms (See Compatible Products)
- Positionable and repositionable until firm pressure is applied
- Pressure-activated adhesive
- Fast, clean removal with little or no adhesive residue
- Excellent hiding power

Application and End Uses

Film IJ180-10 is intended for making durable, removable graphics. The following applications may be warranted by the 3M™ MCS™ Warranty. See page 2.

- Interior and exterior 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.

Specifically, we do not recommend or warrant this film for the following:

- Graphics applied to:
 - Stainless steel vehicles
 - Non-3M films (also see Removal on page 4)
 - Substrates that do not have a clean, smooth surface
- Graphic removal from:
 - Applications with poor paint-to-substrate adhesion
 - Existing graphics that must remain intact. Damage may occur during removal of film IJ180-10
- Graphics subjected to:
 - Gasoline vapors or spills at gas pumps, automobile fuel-tank ports, or top-feeding, petroleum tankers

- Graphics printed with 3M™ Piezo Ink Jet Series 2500UV are for flat surfaces only. They are not recommended for rivets or corrugations.
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684, Ext. 444, for alternatives.

NOTE: Film used on buses must not be applied so as to restrict the safe use of emergency window exits. See Instruction Bulletin 5.4, Release G, July 2003 or later for details.

Compatible Products

3M Inks and 3M Printer Platforms

- 3M™ Piezo Ink Jet Ink Series 2500UV
 - 3M™ Printer 2500UV

3M Inks and Other Printer Platforms

- 3M™ Piezo Ink Jet Ink Series 1600
 - Scitex PressJet-W™ Digital Press
- 3M™ Piezo Ink Jet Ink Series 2300
 - VUTEk UltraVu™ 2360/3360 Printers
- 3M™ Piezo Ink Jet Ink Series 4000
 - VUTEk UltraVu™ 3000/3300 and 5000/5300 Printers
- 3M™ Piezo Ink Jet Ink Series 6000
 - Océ Arizona 30 Printer

Overlaminates and Screen Print Clears

- 3M™ Screen Print Gloss Clear 1920DR
- 3M™ Screen Print Gloss Clear IJ9720UV
- 3M™ Scotchcal™ Luster Overlamine 8519
- 3M™ Scotchcal™ Matte Overlamine 8520
- 3M™ Scotchcal™ Luster Overlamine 8908
- 3M™ Scotchcal™ Matte Overlamine 8909
- 3M™ Piezo Ink Jet Protective Clear 8530

Other Products

- 3M™ Edge Sealer 3950
- 3M™ Prespacing Tape SCPS-2
- 3M™ Premasking Tape SCPM-3

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

Characteristics

This information is subject to change. Be sure this is the most current Product Bulletin. See **3M Related Literature** at the end of this bulletin.

Characteristic	Description
Film	Cast vinyl
Film color	White
Thickness	2 mil (0.05 mm) <i>without adhesive</i> 3-4 mil (0.08-0.10 mm) <i>with adhesive</i>
Adhesive	Positionable, pressure activated
Adhesive color	Gray
Liner	Polyethylene-coated layflat paper
Application surface	Printed with ink series 2500UV: Flat only Printed with other ink series: Flat, with and without rivets, corrugated, simple curves, moderate compound curves


Characteristic	Description
Application substrates	ABS resins, aluminum, chrome, glass, fiberglass reinforced plastics, paint (check adhesion to powder-coated or water-based paints)
Application temperature range	<ul style="list-style-type: none"> Flat surfaces with and without rivets: 40° to 100°F (4° to 38°C) Corrugated surfaces with rivets: 50° to 100°F (10° to 38°C)
Removal	Removable with heat or chemicals up to the warranted durability; see page 4
Roll sizes	24" x 50/100 yards (57 cm x 45/90 m) 36" x 50/100 yards (91 cm x 45/90 m) 48" x 50/100 yards (122 cm x 45/90 m) 54" x 50/100 yards (137 cm x 45/90 m) 60" x 50/100 yards (152 cm x 45/90 m)

Effective Performance Life

Only a Scotchprint® Graphics Authorized Manufacturer or 3M Piezo Ink Jet Registered Fabricator can produce 3M™ MCS™ Warranted Graphics. The effective performance life is based on field experience and exposure tests conducted throughout the United States. When the graphics are processed and used according to the 3M recommendations, they should have the performance life shown in the table below. The actual performance depends on the:

- Correct combination and processing of film, ink and overlamine or screen print clear
- Adequate drying
- Proper selection and preparation of the substrate
- Application methods
- Angle and direction of exposure
- Environmental conditions
- Cleaning and maintenance methods

Warranted Durability

Construction and Usage	 Vertical Exposure <i>face of graphic is ± 10° from vertical</i>											
	Overlamine or Screen Print Clear¹											
	None		8519 8520		IJ9720UV ²		8908 ³ 8909 ³		1920DR ²		8530	
	US ⁵ years	SW ⁶ years	US ⁵ years	SW ⁶ years	US ⁵ years	SW ⁶ years	US ⁵ years	SW ⁶ years	US ⁵ years	SW ⁶ years	US ⁵ years	SW ⁶ years
Approved for graphics printed with Ink Series 1600, 2300, 4000, 6000												
Fleet³	0	0	5	3	3	2	0	0	5	3	See Product Bulletin 8530	
Exterior Signs	3	2	4	2	3	2	1	6 mos.	4	3		
Interior Signs	3	3	8	8	8	8	3	3	8	8		
Approved for graphics printed with Ink Series 2500UV (flat surfaces only)												
Fleet³	0	0	2	1	2	1						
Exterior Signs	2	1	2	1	2	1						
Interior Signs	3	3	5	5	5	5						

See Notes for Warranty Table on page 3.

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

Notes for Warranty Table (see page 2)

- ¹ See **When to Use an Overlamine or Screen Print Clear** and **How to Select an Overlamine or Screen Print Clear**.
- ² 1920DR and IJ9720UV must be screen printed in order to be warranted.
- ³ Overlaminates 8908 and 8909 are not warranted or recommended for fleet or vehicle applications.
- ⁴ This warranty is for ink series 1600 with clear IJ9720UV ONLY
- ⁵ For warranty periods outside the United States, contact the 3M sales organization for that country.
- ⁶ The U.S. Desert Southwest includes Arizona, New Mexico, and the desert areas of California, Nevada, Utah and Texas. A detailed map is available by request. The warranty for this area is reduced because there is more solar energy. This warranty applies to graphics exposed to solar energy in the U.S. Desert Southwest more than 50% of the time.

When to Use an Overlamine or Screen Print Clear

An overlamine or screen print clear provides protection to a graphic as well as changing gloss. Typically, only graphics that are subjected to harsh conditions require this protection in order to be warranted. They include:

- Vehicle and fleet graphics; such graphics are subjected to abrasion such as road debris and automatic/power washing.
- Any graphic exposed to abrasive washing conditions, including automatic/power washing, harsh cleaners or chemicals.

How to Select an Overlamine or Screen Print Clear

Typically, an overlamine or screen print clear is selected based on the following criteria. Refer to the overlamine or screen print clear's Product Bulletin for details.

1. Intended application: make sure the film and overlamine or screen print clear you select are recommended for your end use
2. Type of available processing equipment (screen printing or laminator)
3. Desired durability
4. Gloss
5. Cost

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.

Support Information for the 3M Printer 2500UV Only

Contact 3M Technical Support (1-800-328-3908) for questions about using 3M inks, printing media, color profiles, color calibration, temperature and machine settings or for machine service information. New ICC profiles for the 2500UV printer are available on the www.scotchprint.com website at extranet level.

Managing the Total Physical Amount of Ink on Media

Please refer to Instruction Bulletin 4.41 for details.

Support Information for All Other Piezo Ink Jet Systems

The ink Instruction Bulletin provides detailed information for successful printing and graphic application. You must follow these instructions to get the durability given in the Effective Performance Life. See **3M Related Literature** on page 6.

The operator who has an excellent understanding of pre-press operations, including color management and using software profiles, and who understands the relationship between film characteristics, printer setup, total ink coverage and drying time can produce graphics that achieve the performance expectations of the film and the customer.

The operator should work with the graphic designer and/or color conversion operator so there is a common understanding of print and media parameters.

The operator should also work with the film applicator so you are both aware of any special handling or application techniques that may be needed for the selected film construction.


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.


Total Ink Coverage	Printer
270%	UltraVu Printers 2360/3360
300%	UltraVu Printers 3000/3300 and 5000/5300
300%	PressJet-W Printer
300%	Arizona 30 Printer

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

Drying

 Caution
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

 Caution
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

The following minimum values for electronic cutting text from film IJ180-10 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)
Flat bed cutter with dual edge blade
 6.0 inch (152 mm)
Standard friction feed plotter

Minimum radius for end of stripe: 0.125 inch (3.18 mm)

Note: Weeding must be done carefully. Cut graphics are difficult to re-adhere to the liner if mistakenly pulled off.

Application Tapes

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

- Use a prespacing tape if the graphic has large amounts of liner exposed.
- Use a premasking tape if there is very little of the liner exposed.

Overlaminate or Screen Print Clear	Prespacing Tape	Premasking Tape
Printed, uncleared 1920DR IJ9720 8519 8520	SCPS-2	SCPM-3
8908 ES 8909 ES 8530	None	SCPM-3

Application

Refer to the Instruction Bulletins listed in the **3M Related Literature** section, page 6, for more complete information.

The following application details are for film IJ180-10.

Temperature

See Characteristics, page 3.

Positioning

This film has a positionable adhesive. This 3M technology is a mechanical feature, not an adhesive property. Application pressure bonds the adhesive to the substrate and destroys the positionability feature. The film loses its positionability feature at application temperatures above 100°F (38°C).

Do not use detergent and water or a commercial application liquid to position the graphic on a vehicle.

Finishing

If needed, use edge sealer 3950.

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.)

Removability

Film IJ180-10 is warranted to be removable using heat, accessories, and/or chemicals within 7 years or the Warranted Durability, whichever comes first. See page 2.

Removing film IJ180-10 from a pre-existing graphic will damage that graphic. Refer to the Instruction Bulletin 6.5 for removal 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.

Continued on the next page.

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

Removal Warranty

The ease and rate of removal depends on a number of factors. See Instruction Bulletin 6.5 for details.

- Substrate type and condition
- Piezo ink series, amount and type
- Graphic age and weathering conditions
- Pull-off angle, which should be less than 90 degrees

Removability Exceptions

- A signed Pre-installation Review is required as a condition for warranty on buses. See *3M Bus Graphics Policy and Warranty Statement* in the **Related 3M Literature** section on page 6.

Note: This film is not designed for short-term graphics and may cause damage upon removal from painted surfaces.

- Removability is not warranted for exterior, horizontal applications.
- 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.

Shelf Life, Shipping, and Storage

- Unprocessed film IJ180-10 has a shelf life of two years after receipt. Processed film has a shelf life of one year. However, the total shelf life of a graphic before and after processing cannot exceed two years.
- Store film in a clean, dry area in the original container.
- Store the film out of the direct sunlight and at less than 100°F (38°C).
- Ship the finished graphic lying flat or in a roll. To roll the graphic, roll the film printed-side-out onto a core that is 5 inches (13 cm) or larger in diameter. These methods help prevent the film and prespacing tape from wrinkling or popping off the liner.

Note: Processed film may block if wound too tightly.

- See Instruction Bulletin 6.5 for details.

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.

Product Data

Values given are typical for film IJ180-10 and are not for use in specifications. For a custom specification, submit a request to your 3M sales representative. The data given below are for unprinted film.

Physical Characteristics

Property	Value
Tensile strength (minimum)	5 pounds/inch at 73°F (0.9 kg/cm at 23°C)
Applied shrinkage	0.015 inch (0.4 mm)
Service temperature range	-65° to +225°F (-60° to +107°C)

Adhesion Characteristics

These adhesion values are 24 hours after application.

Substrate	Values
ABS	4.2 pounds/inch (0.75 kg/cm)
Acrylic enamel	3.5 pounds/inch (0.63 kg/cm)
Aluminum, anodized	7.9 pounds/inch (1.42 kg/cm)
Aluminum, etched	5.2 pounds/inch (0.93 kg/cm)
Chrome	4.8 pounds/inch (0.87 kg/cm)
Fruehauf prepainted panels	4 pounds/inch (0.7 kg/cm)

Chemical Resistance Characteristics

- Resists mild alkalis, mild acids, and salt.
- Excellent resistance to water.

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

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: Film IJ180-10 is 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 bulletin, 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 material charges.

Attention:

Scotchprint® Graphics Authorized Manufacturers

There's a whole other world behind the Scotchprint® Graphics Internet site (www.scotchprint.com) and you can travel there with the Scotchprint® Graphics Network. This password-protected Web site opens the door to exclusive Scotchprint® Graphics product information, services and product promotions for 3M's Scotchprint® Graphics Authorized Manufacturers.

There's no charge and you can sign up today. Just ask your Commercial Graphics Division sales representative.

3M Related Literature

Before starting any job, be sure you have the most recent product and instruction bulletins.

Listed below is related 3M technical literature that may be of interest. You may view and print these Bulletins from our Web site at www.scotchprint.com, or order them via our Fax-on-Demand (FOD) system. Call one of these phone numbers to order the desired bulletins, and specify the FOD document number provided in the chart.

United States or Canada: 1-800-364-0768
International: 1-651-732-6506

Subject	Bulletin No.	FOD No.
Product Bulletins		
3M™ Piezo Ink Jet Ink Series 1600	1600	4526
3M™ Piezo Ink Jet Ink Series 2300	2300	4538

3M™ Piezo Ink Jet Ink Series 2500UV	2500UV	4575
3M™ Piezo Ink Jet Ink Series 4000	4000	4515
3M™ Piezo Ink Jet Ink Series 6000	6000	4560
3M™ Screen Printing Ink Series 1900	1900	2501
3M™ Screen Printing Ink Series 9700UV	9700	2507
3M™ Scotchcal™ Overlamine 8519 and 8520	8519/ 8520	4524
3M™ Scotchcal™ Luster Overlamine 8908 ES	8908	3554
3M™ Scotchcal™ Matte Overlamine 8909 ES	8909	3565
3M™ Piezo Ink Jet Protective Clear 8530	8530	4565

Instruction Bulletins

Design of graphics	2.1	5501
Printing with piezo ink jet ink series 1600	4.30	6530
Printing with piezo ink jet ink series 2300	4.35	6535
Printing with piezo ink series 2500UV	4.41	6541
Printing with piezo ink jet ink series 4000	4.27	6527
Printing with piezo ink series 6000	4.39	6539
Screen printing with ink series 1900	3.12	6012
Screen printing with ink series 9700 UV	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 applications and vehicles	5.4	7004
Application, general procedures for interior and exterior dry applications	5.5	7005
Application:Special Considerations for Complex Contours of Automobiles, Vans and Buses and Inspection Forms	5.36	7036
Storage, handling, maintenance, removal	6.5	8505

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PressJet-W is a trademark of Scitex Corporation Ltd.

Bulletin Change Summary

Warranty Clarification: The warranty for fleet graphics printed with ink series 1600 with clear IJ9720UV is 5 years US and 3 years Desert Southwest. The warranty remains as 3/2 for all other 3M piezo ink jet ink series and IJ9720UV.



Commercial Graphics Division
3M Center, Building 220-6W-06
PO Box 33220
St. Paul, MN 55133-3220 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: 4540
www.scotchprint.com

3M Canada
P.O. Box 5757
London, Ontario
Canada N6A 4T1
1-800-265-1840
Fax 519-452-6245

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