

3M™ Controltac™ Graphic Film

- IJ180-10
- With Comply™ Adhesive IJ180C-10
- With Comply™ v3 Adhesive IJ180Cv3-10

For Solvent and UV Inkjet Printing Only

Product Description

These 50 micron cast films 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 with Comply adhesive IJ180C and IJ180Cv3 have air release channels for fast and easy, bubble-free graphic installations. In addition, the air release channels for films with Comply v3 adhesive are non-visible and have improved air release.

Use these films for solvent and UV inkjet printing.

Recommended Types of Graphics and End Uses

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

- Indoor and outdoor graphics and signs, including point-of-purchase and displays
- 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

Limitations of End Uses

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

Unsuitable End Uses for This Film

- Graphics applied to:
 - stainless steel
 - non-3M films (see Removal Warranty)
 - 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)
- For film with Comply v3 adhesive only: Do not use prespacing tape in cut and weeded applications where the tape must adhere to the exposed liner.
- Film without graphic protection under these conditions:
 - printed 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 film
 - watercraft
- 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 for alternatives.

Wall Graphics

50 micron 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.

Compatible Products

3M Graphic Materials

This Bulletin provides details about the base film and construction options and warranty. Additional specific information about compatible products can be found in the Product and Instruction Bulletins listed in 3M Related Literature at the end of this bulletin.

Solvent Inkjet Inks and Printers

Ink Series	Printer
• 3M™ Piezo Inkjet Ink Series 1500v2	EFI™ VUTEkR 150, 2360/3360, 3300/5300 and 3000/5000 Printers
• 3M™ Piezo Inkjet Ink Series 4400	HP XLJet 1200 and 1500 Printers
• 3M™ Piezo Inkjet Ink Series 4600	HP Scitex Pressjet-W™ Printer
• 3M™ Piezo Inkjet Ink Series 4800	HP Scitex TJ8300, TJ8350 Series Digital Press
• 3M™ Piezo Inkjet Ink Series 5500	Océ Arizona 600 Printer
• 3M™ Piezo Inkjet Ink Series 6000	Océ Arizona 30s Printer
• 3M™ Piezo Inkjet Ink Series 6800	Océ Arizona 180 and 90 Printers

UV Inkjet Inks and Printers

Ink Series	Printer
• 3M™ Piezo Inkjet Ink Series	2200UV EFI™ VUTEkR PV 200 Printer
• 3M™ Piezo Inkjet Ink Series 2600UVv2	3M™ Printer 2500UV
• 3M™ Piezo Inkjet Ink Series 2700UV	Durst Rho 160R and 351R Printers
• 3M™ Piezo Inkjet Ink Series 2800UV	EFI™ VUTEkR QS2000/QS3200 Printers
• 3M™ Piezo Inkjet Ink Series 5400UV	HP Designjet 788 Printer
• Mimaki LF-200 Ink Series	Mimaki UJV-160 Printer
• Mimaki F-200 Ink Series	Mimaki JF-1610, 1631 Printers

Graphic Protection

- 3M™ Scotchcal™ Luster Overlamine 8519
- 3M™ Scotchcal™ Matte Overlamine 8520
- 3M™ Piezo Inkjet Protective Clear 8530
- 3M™ Scotchcal™ Overlamine 8580
- 3M™ Screen Print Gloss Clear 1920DR
- 3M™ Screen Print Clear 9720UV
- 3M™ Screen Print UV Clear 9800clUV

Other Products

- 3M™ Premasking Tape SCPM-19
- 3M™ Premasking Tape SCPM-44X
- 3M™ Prespacing Tape SCPS-2
- 3M™ Prespacing Tape SCPS-55
- 3M™ Edge Sealer 3950

Characteristics

Physical Characteristics

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

Characteristic	Value	
Film	Vinyl, cast	
Film colour	White, opaque	
Thickness	Without adhesive: 0.05 mm With adhesive: 0.08-0.10 mm	
Adhesive	Films IJ180 (all versions): Pressure-activated, slideable, repositionable Films IJ180C, IJ180Cv3: Pressure-activated, slideable, repositionable, air release channels	
Adhesive colour	Grey	
Liner	Polyethylene-coated paper	
Adhesion, Typical 24 hours after application	Substrate	Adhesion
	Aluminum, anodized	27N/25mm
Tensile strength	22N/25mm at 23°C	
Chemical resistance	<ul style="list-style-type: none"> Resists mild alkalis, mild acids, and salt Excellent resistance to water (<i>does not include immersion</i>) 	

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 with gel coat Application temperature: <ul style="list-style-type: none"> Flat without rivets: 4°-38°C (40°-100°F) Curves or corrugations with rivets: 10°-38°C (50°-100°F) Compound curves and/or watercraft: 16°-32°C (60°-90°F) Application method: Dry	
Applied shrinkage	0.4 mm (0.015 inches)	
Temperature range after application	-60° to +107°C (-65° to +225°F)	
Graphic removal	Removable with heat and/or chemicals from most substrates within the warranty period at 10°C (50°F) minimum (air and substrate)	

Warranty Information

Only a Scotchprint® Graphics Authorised Manufacturer or 3M™ MCS™ Qualified Manufacturer can produce 3M™ MCS™ Warranted Graphics. The warranty period is based on field experience and exposure tests. When the graphics are processed and used according to the 3M recommendations, they should have the performance life shown in the 3M™ MCS™ Product Warranty Chart.

Factors that Affect Graphic Performance Life

The actual performance life of a graphic is affected by all of the following.

- The combination of graphics materials used
- Adequate ink drying or curing
- Selection, condition and preparation of the substrate
- Surface texture
- Application methods
- Angle and direction of sun exposure
- Environmental conditions
- Cleaning or maintenance methods

Warranted Durability



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

The 3M™ MCS™ warranty statement for these Controltac Graphic Film Series IJ180 is based on chosen media construction. The maximum warranty for graphics in North and Central Europe is 6 years.

Please refer to the MCS™ Product Warranty Chart for details. The Product Warranty Chart is available on request from your local 3M contact.

Durability Unprocessed film

The vertical outdoor durability of these films is 10 years. This statement is given for unprocessed white film. Since graphic durability is largely determined by the climate, the durability stated is based on average middle European exposure conditions. It may vary according to the geographic location of the application. For further information refer to: www.3M.uk/graphicsolutions for details about 3M™ Performance Guarantee.

Printer Support Information

Ink

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

Total Ink Coverage For 3M™ MCS™ Warranty and Performance Guarantee Constructions

The maximum recommended total ink coverage for this film is:
270% when printed with all approved 3M solvent inkjet inks.
280% when printed with all approved 3M UV inkjet inks.
250% when printed on the Mimaki JV5 Series printer with HS ink series (3M 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, overlamine 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 overlamine, rolling or applying the graphic. See the ink's Instruction Bulletin for more details.

Application Tapes

When to Use Premasking Tape

- As an application aid to increase stiffness, and prevent stretching and damage during application.
- When little or no liner is exposed.

When to Use Prespacing Tape

- Hold cut and weeded letters or graphics in registration after removing the film liner.
- Protect cut graphic parts from scratching or damage during application.
- Use when large amounts of liner are exposed.

Note: Prespacing tape does not adhere to the exposed liner of film IJ180Cv3, but it does adhere to the top of the film. Therefore, prespacing tape 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 used on your graphic in the table below, and use the corresponding tape. See Instruction Bulletin 4.3 for complete details.

EXAMPLE: To premask a film includes overlamine 8519, use premasking tape SCPM-19.

See the Table.

Tape	Graphic Protection				
	None	8519 8520	8530	1920DR	9800CL 9720UV
Premasking SCPM-19	✓	✓	✓	✓	—
Prespacing SCPS - 2 <i>IJ180, RG180 only</i>	✓	✓	NR	✓	—
Premasking SCPM-44X	—	—	—	—	✓
Prespacing SCPS- 55 films with any Comply Adhesive only	✓	✓	NR	✓	✓

NR = The use of an application tape is not recommended in this construction.

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

All films in this Bulletin

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 is applied with a squeegee or other application tool
- at application temperatures above 38°C (100°F) even if only light finger pressure was used for tacking
- 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 and is retained by the film also affects slideability and positionability.

*Films IJ180C, IJ180Cv3
(all versions) with Comply™
Adhesive*

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.

**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 complex 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 100°C (212°F).

Using additional heat in the post-application process may also cause UV piezo inkjet ink to crack.

For the best results, *always do a test application* of a UV piezo printed graphic to determine how much heat can be used without damaging the image.

Maintenance and Cleaning

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline.)

Removal

Removal requires heat and/or chemicals. A chemical remover system is available for graphics printed with solvent-based ink. Follow the procedures in Instruction Bulletin 6.5 for using film remover R-221 and adhesive remover R-231 and for additional removal details.

Shelf Life, Storage and Shipping

Shelf Life

Total shelf life: 2 years from the date of manufacture on the original box. Up to 2 years unprocessed, *OR* process within 1 year *and* then apply within 1 year of processing.

Storage Conditions

- 40° to 100°F (4° to 38°C)
- Out of sunlight
- Clean dry area
- Original container
- Bring the film to print room temperature before using

Shipping Finished Graphics

Flat, or rolled printed side out on 13 cm (5 inch) or larger core. This helps prevent the application tape, if used, from popping off.

Health & Safety

Refer to the package label and the Material Safety Data Sheet for health, safety, and handling information on the products referenced in this bulletin. For 3M products, if necessary, you may contact our Toxicology/Product Responsibility Department on 01344 858000.

IMPORTANT NOTICE TO PURCHASER

The 3M products described in this publication are covered by a 3M warranty and limitation of liability.

3M's warranty provides that if 3M finds that goods are defective in material or workmanship they will be replaced or the price refunded at 3M's option but note that 3M does not accept liability for other direct losses (except for personal injury or death) or consequential losses relating to defective products or from information supplied by 3M.

Purchasers and users of 3M products, and not 3M supplying companies, are always solely responsible for deciding on the suitability of the 3M product for their required or intended use.

3M Related Literature

Before starting any job, be sure you have the most current Product and Instruction Bulletins which can be obtained from your 3M contact.

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