



3M™ Controltac™ Plus Graphic Film Series 180

Product Description

Controltac Plus Graphic Marking Film Series 180 are durable, dimensionally stable, glossy vinyl films which may be screen printed for the production of attractive multi-coloured emblems, labels, markings, striping and signs for commercial and industrial applications which will withstand severe weather and handling conditions.

Series 180 films are intended for use on flat and corrugated surfaces with and without rivets. These films are not intended for use where markings may be subjected to petrochemical spillage.

Key Features

- Positionable adhesive, making it an excellent choice for large exterior and interior graphics
- Pressure-activated adhesive (this 3M technology is a mechanical feature, not an adhesive property. Pressure on the film surface bonds the adhesive to the substrate.)
- Suitable for screen printing
- Up to 10 years warranty
- Easy to temporarily position during application
- For flat and corrugated surfaces with and without rivets
- Wide application temperature range
- High performance permanent adhesive, can be removed with chemicals and/or heat with little or no adhesive residue.
- Meets Building Regulation Class 0

Applications and Uses

Film series 180 is intended for making durable graphics when used with the listed **Compatible Products** in the following applications. These types of applications are warranted by the 3M™ MCS™ Warranty.

- For interior and exterior applications including commercial signs, emblems, labels, graphics, striping, and graphics for fleet and vehicle, rail cars, and recreational equipment

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 warrant this film for the following:

- Graphics regularly subjected to petroleum vapours or spills
- Graphics applied to stainless steel substrates
- Compound contours. For these surfaces please use 3M™ Scotchcal™ Contour Graphic Film 1100, specially developed for highly irregular surfaces
- Graphics made for automotive Original Equipment Manufacturers (OEM). Please contact 3M Automotive Division

Product Line

Please contact the 3M Sales Office for stock availability and lead times.

Product Number/Colour
180-10 White
180-114 Transparent

Custom colour matching is available on this product with the following minimum order quantities*:

Roll Width	Minimum Order Qty
0.610m x 45.72m	20 Rolls
0.914m x 45.72m	14 Rolls
1.219m x 45.72m	10 Rolls
1.219m x 91.44m	5 Rolls
1.219m x 228.6m	5 Rolls

* Contact the 3M Sales Office for stock available and lead times and both standard and colour matched material.

Compatible Products

- 3M™ Screen Printing Ink Series 1900 (line colour and 4-colour)
- 3M™ Screen Printing UV Ink Series 9800 (line colour and 4-colour)
- 3M™ Screen Print Clear Coats
- Selected 3M application tapes

Main Characteristics

Property	Description
Film Type	0.05 mm opaque vinyl
Adhesive type	Positionable, permanent, pressure activated
Adhesive colour	180-10 Grey Pigmented 180-114 Clear
Thickness (film plus adhesive)	0.08 to 0.10 mm
Liner	Premium Performance Liner 150g/m ²
Suitable application surface	Flat and corrugated surfaces with and without rivets, simple curves, moderate compound curves
Suitable application substrates	ABS resins, aluminum, chrome, glass fiberglass-reinforced plastic, paint (check adhesion to powder or water-base paints)
Application temperature range*	Flat surfaces with and without rivets: 4° to 38°C Corrugated surfaces with rivets: 10° to 38°C

**For applications nearing the minimum temperature range, please contact your local technical service representative to confirm suitability of application*

Chemical and Physical Properties

Values given are typical and are not for use in specifications. If a custom specification is desired, a request should be submitted through your sales representative. The data given below is for unprinted film

Physical Properties

Property	Metric Units
Thickness (ISO 4593)	0.08mm - 0.10mm
Tensile Strength (ISO 1184-1983)	22 N/25mm min at 23°C
Elongation (ISO 1184-1983)	50% at 23°C
Dimensional Stability (FTM 14)	0.4mm
Temperature Range	-60°C to +107°C
Reverse impact Resistance at 23°C at 4°C	No effect No effect

Adhesion (FTM1)

Substrate	Metric Units (N/25mm)
Etched Aluminium	23.0
Anodised Aluminium	27.0
Chrome	22.0
Acrylic Enamel	16.0
ABS	19.0

These adhesion values are 24 hours after application.

Note: ISO refers to standards of the International Standards Organisation. FTM (Fimat Test Methods) refers to test methods listed by Fimat, the Association of European Tape Manufacturers.

Flammability

Meets Building Regulation Class 0.

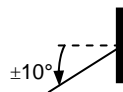
Warranty

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 table below. The actual performance depends on the:

- Correct combination of film and ink
- Ink formulation
- Drying methods
- Selection and preparation of the substrate
- Application methods
- Exposure conditions
- Cleaning methods

Warranted Durability

The following tables show the warranties, in years, for exposure where the face of the graphic is vertical at $90^\circ \pm 10^\circ$.



Colour	Ink Series	Protective Clears	Fleet			Exterior Sign 1st Surface			Interior		
ZONE			1	2	3	1	2	3	1	2	3
White/Black	Unprinted		10	8	6	10	8	6	10	10	10
	1900/9800	1920/9720	8	6	4	8	6	4	10	10	10
	1900	1955 abc	7	5	3	7	5	3	-	-	-
	1900/9800	9800CL	6	4	3	6	4	3	10	10	10
	1900/9800	639	6	4	3	6	4	3	8	8	8
Colours/Special Colours	Unprinted		8	6	4	8	6	4	10	10	10
	1900/9800	1920/9720	8	6	4	8	6	4	10	10	10
	1900	1955 abc	7	5	3	7	5	3	-	-	-
	1900/9800	9800CL	6	4	3	6	4	3	10	10	10
	1900/9800	639	6	4	3	6	4	3	8	8	8
Metallics/Transparent	Unprinted		6	4	2	6	4	2	8	8	8
	1900/9800	1920/9720	6	4	2	6	4	2	8	8	8
	1900	1955abc	5	4	3	5	4	3	-	-	-
	1900/9800	9800CL	6	4	3	6	4	3	8	8	8
	1900/9800	639	6	4	3	5	4	3	8	8	8

1. Unprinted white film 3M™ Controltac™ Plus Graphic Marking Film 180-10 has a tendency to chalk upon exterior exposure. Film intended for use on signs where cleaning is not practical must be clear coated with 3M™ Screen Print Gloss Clear 1920, 3M™ Screen Print Gloss Clear 9720UV or 3M™ Screen Print UV Gloss Clear 9800CL.
2. Metallic inks have a maximum warranty of 5 years in Zone 1.
3. 3M™ Scotchcal™ Matte Overprint Clear 1930 and 3M™ Scotchcal™ Overprint Clear 9730 (Low-Gloss) are warranted for a maximum of 3 years in Zone 1.
4. Horizontal applications can be used on the rooftops of vehicles where identification from the air is needed. Horizontal applications are subjected to the maximum sunlight and environmental conditions. The graphic will change colour, lose gloss, and chalk

Zone 1: Northern and Central Europe

Austria, Baltic States, Belgium, Bosnia, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greenland, Hungary, Iceland, Ireland, Italy (North of Rome), Liechtenstein, Luxembourg, Netherlands, Norway, Poland, Romania, Serbia, Slovakia, Slovenia, Sweden, Switzerland, UK

Zone 2: Mediterranean Europe

Albania, Bulgaria, Corsica, Crete, Greece, Italy (South of Rome), Macedonia, Malta, Portugal, Russia, Sardinia, Spain, Turkey

Zone 3: Middle East and Africa

Afghanistan, Bahrain, Cyprus, Dubai, Israel, Kuwait, Iran, Iraq, Jordan, Lebanon, Oman, Pakistan, Qatar, Saudi Arabia, Syria, UAE, Yemen, Algeria, Angola, Benin, Botswana, Burkina, Burundi, Cameroon, CAR, Chad, Congo, Djibouti, Egypt, Eritrea, Gabon, Ghana, Guinea, Ivory Coast, Libya, Liberia, Madagascar, Mali, Mauritania, Morocco, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somali Republic, South Africa, Sudan, Togo, Tunisia, Uganda, Zaire, Zambia, Zimbabwe

Fabrication

This bulletin does not contain detailed printing, processing or application procedures for the subject products. The appropriate Instruction Bulletin(s) may be obtained by contacting your 3M sales representative or 3M Technical Service.

Cutting

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
- Cold and hot steel-rule die cutting

The following minimum values for electro-cutting text from film series 180 are based on upper case Helvetica medium type. Weeding can be more difficult with smaller text.

Minimum stroke width: 6.35 mm (0.25 inch)
Minimum height: 76.2 mm (3.0 inch)
Minimum radius for end of stripe: 3.18 mm (0.125 inch)

Application Tapes

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

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

Overprint Clear	Prespacing Tape	Premasking Tape
Unprinted	SCPS-100	SCPM-19
1920DR 1930 1955abc	SCPS-100 SCPS-2	SCPS-100
9720UV 9730UV 9800CL	SCPS-53X	SCPM-44X

Application

Refer to the Instruction Bulletin 5.4 and 5.5 for application details.

The following application details are for film series 180.

Temperature

The application temperature range is:

- Flat surfaces with and without rivets is 4° to 38°C (40° to 100°F).
- Corrugated surfaces with rivets is 10° to 38°C (50° to 100°F)

Positioning

This film has a positionable adhesive. Application pressure bonds the adhesive to the substrate and destroys the positionability feature. The film loses its positionability feature at application temperatures above 38°C (100°F).

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

Finishing

Graphics produced from this film do not normally require edge sealing. However, under certain conditions edge sealing may be beneficial. If required use 3M™ 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).

Removal

Controltac *Plus* Graphic Marking Film Series 180 films are warranted to be removable with procedures recommended in Instruction Bulletins 6.5 for up to 8 years.

Shelf Life

The shelf life of the film is 2 years and should be applied within 2 years of the receipt of film if unprocessed. Processed film should be applied within 1 year of processing and within 2 years of receipt of the film.

Related 3M Literature

Listed below is related 3M Technical Literature which may be of interest:

Subject	Product Bulletin	Instruction Bulletin
Design of Markings		2.1
3M™ Screen Printing Ink Series 1900	1900	3.11, 3.12
3M™ Screen Printing Ink Series 9700UV	9700	3.4, 3.13
3M™ Screen Printing UV Ink Series 9800	9800	3.20, 3.21
Scoring and Cutting		4.1
Premasking and Prespacing		4.3
Surface Preparation		5.1
Application		5.4, 5.5
Storage, Maintenance and Removal		6.5

Glossary of Terms

Matched Component System™ or MCS™

The system pursuant to which Finished Graphics are produced by a Graphic Manufacturer using only 3M Products and components and manufactured in accordance with 3M's Product or Instruction Bulletins, 3M Specification Document and using 3M Approved Technologies.

3M™ Controltac™ Plus

A film with 3M™ Controltac™ Plus positionable adhesive system has million of precision-placed microscopic glass spheres embedded within its adhesive layer. These spheres help to prevent the adhesive from fully contacting the application surface until pressure is applied. This enables the graphic to be positioned, then re-positioned as many times as necessary, until it is in exactly the right place before final application.

Permanent Adhesive

Films with a permanent adhesive can be removed but will often require heat and/or chemicals for effective removal.

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.

Technical Assistance

For help on specific questions relating to 3M Commercial Graphics Division Products, contact your local Technical Service Representative.

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Bulletin Change Summary

3M™ Screen Printing Ink Series 9700UV replaced with 3M™ Screen Printing UV Ink Series 9800. Warranty table updated.