



# 3M™ Scotchgard™

## Graphic and Surface Protection Film 8991, Removable Graphic and Surface Protection Film 8991R

---

### Product Description

3M™ Scotchgard™ Graphic and Surface Protection Films 8991 and 8991R clear, tough polyester overlaminates that provide resistance to many types of accidental and intentional stains and abrasion, and are easier to clean than traditional overlaminates. Film 8991R is removable.

### Key Features

- UV and abrasion protection
- Graffiti-resistant for easy cleaning
- Exterior warranty of 6 years
- Interior warranty of 8 years

### Applications and End Uses

Scotchgard™ Graphic and Surface Protection Films 8991 and 8991R are intended to provide protection for graphics and other substrates on smooth, flat or simple curved surfaces. When used as described in this bulletin and in the following types of applications. These types of applications may be warranted by the 3M™ MCS™ Warranty.

- Interior or exterior graphics and signs
- Commercial vehicle or fleet graphics and emblems
- Substrate and surface protection

### 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:

- Cut film graphics, which may show entrapped air under films 8991/8991R; use only on a customer test-and-approve basis
- Banners or other flexible substrates

- Solvent printed Piezo graphics must be thoroughly dried before application of film 8991/8991R. We recommend 24 hours room temperature drying or equivalent
- Painted or unpainted gypsum wall board
- Painted surfaces with poor paint-to-substrate adhesion, or uncured paint
- Porous or unsealed surfaces such as concrete
- Vandalism or excessive product abuse such as cutting or gouging or resulting damage to the substrate
- Application over rivets: rivets must be cut around
- Petroleum vapours or spills, if allowed to penetrate the edges of the graphic

### Compatible Substrates

- Most smooth graphic films, solid colour or imaged, and without a clear coat applied
- Smooth, untextured surfaces, such as plastics, painted metals, counter top laminates or laminated wallboard
- Film 8991R is removable from all compatible substrates, except printed and unprinted graphic films

### Product Line

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

Scotchgard™ Graphic and Surface  
Protection Film 8991  
Scotchgard™ Graphic and Surface  
Protection Film 8991R

## Main Characteristics

Characteristic	Description
Overlaminated	0.10mm (4mil)
Gloss	High gloss
Thickness (overlaminated and adhesive)	0.13 – 0.14mm (5.3 to 5.7 mils)
Adhesive type and colour	8991: Permanent, pressure sensitive, clear 8991R: Removable, pressure sensitive, clear
Liner	8991/8991R – polycoated paper
Recommended application surfaces	Flat, smooth, untextured; simple curves
Application temperature range*	Room temperature: minimum 10°C to 32°C (50°F to 90°F)
Removal	8991: Permanent 8991R: Removable

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

## Chemical and Physical Properties

Property	Value
Applied shrinkage	0.13mm (5mil)
Service Temperature Range	-54°C to +107°C (-65°F to +225°F)

### Chemical Resistance

- Resists most organic solvents and fluids
- Resists mild alkalis, mild acids and salt
- Excellent resistance to water

## Flammability Characteristics

For 8991R and 8991, when used as instructed.

Test Method	Results
ASTM E84	Flame Spread Index = 5 Class 1 Rating Smoke Developed Index = 65
ASTM E-162	Flame Spread Index = 0.0 Flame spread is non-existent Surface flammability of materials using a radiant heat source
ASTM E662	Specific optical density of smoke generated by solid materials.  <b>Specific Optical Density (Ds)</b> <b>1.5 minutes      4.0 minutes</b> Flaming            0.08            0.28 Non-flaming      0.03            0.03
NFPA259	Heat release per unit mass. Potential heat in BTU/LB is 24615. No Required Level
FMVSS302	Burn resistance of materials used in motor vehicles. Passed test on aluminium and glass. Neither ignited.
SMP800-C	Bombardier test method for toxic gas generation by materials on combustion. Passed: detected levels of the gases tested are less than the required limit or less than detectable.
BS 476: Part 7	Fire tests on building materials and structures; surface flame spread. Achieved Class 2, when applied to 3M™ Controltac™ Plus Graphic Film Series 180 on painted aluminium panel (results will vary, dependent upon substrate.).

## Effective Performance Life

The effective performance life of protection film 8991/8991R is based on field experience and exposure tests conducted throughout the United States. The actual performance depends on the following:

- Manufactured by a Scotchprint® Graphics Authorised Manufacturer
- Use of listed compatible products
- Selection and preparation of the substrate
- Application methods
- Cleaning and maintenance methods
- Exposure conditions

## 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 years in the table below. The actual performance depends on the:-

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

*Scotchprint is a registered trademark of 3M in the US and other countries. 3M, Controltac, MCS, Scotchcal and Scotchlite are trademarks of 3M Company.*

## Warranted Durability

Colour	Fleet			Exterior Sign 1 <sup>st</sup> Surface			Interior		
	1	2	3	1	2	3	1	2	3
8991	6	3	2	6	3	2	8	8	8
8991R	6	3	2	6	3	2	8	8	8

Zone 1 = Northern & Central Europe

Zone 2 = Mediterranean Europe

Zone 3 = Middle East and Northern Africa

Exceptions to the above are:-

The removability of 8991R is limited to 3 years.

Scotchgard™ Graphic and Surface Protection Film 8991 has a permanent adhesive and is not removable

The warranty applies to films that are exposed at a vertical angle (defined as 90°+/-10°). A significant decrease in durability may be experienced if films are exposed other than vertical. Such non-vertical applications must be on a test and approval basis to determine acceptable. 3M does not warrant non-vertical exposures.

Commercial Graphics Division products are not tested against automotive manufacturer's specifications and are, therefore, not warranted for use in fabricating graphics for automotive OEMs.

## Fabrication

3M™ Scotchgard™ Graphic and Surface Protection Film Series 8991 is compatible with most squeeze roll laminators. Not heat is required. Standard set-up of the laminator is recommended.

Film series 8991 is also intended for wet application.

### How to Apply Multiple Panels of Pre-laminated Graphic Film

Edge-to-edge panel seaming is recommended (see instructions below). For applications where overlaps are not subject to picking or environmental stresses, panel overlaps can be used.

### Exterior Graphics Using Panel Overlaps

It is important that, when using overlap joints with this product for exterior applications, that the hard coat surface on the underneath portion of the overlap joint is abraded/removed to enable the overlapping film to adhere correctly.

When producing a 10mm overlap the recommended method is to run a length of masking tape on the Scotchgard™ Graphic and Surface Protection Film Series 8991/8991R, approximately 10mm from the edge of the applied panel where the joint is to be positioned and use this as a guide when abrading the surface with a Scotch-Brite™ Washing Up Pad (green), alternatively a specific width of the Scotch-Brite™ pad can be used on the edge of the applied panel to control the width of the abrasion. Once the hard coat has been abraded/removed, a fine dust will be observed, remove the masking tape and then the area should be wiped with a wet cloth to remove any dust and then the surface prepared with a solvent wipe. The overlapping panel should then be applied.

It is important when applying the overlap on the joint that very firm pressure is used with the squeegee. Heat may be applied to the joint to reduce time for the adhesive to reach full bond strength, but is not obligatory.

For interior graphics, use normal panel overlaps.

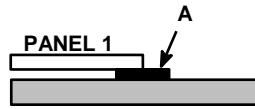
For exterior graphics, use edge-to-edge panels.

- If the edges that meet are factory cut, align the edges of each panel and squeegee well. A wet or dry application can be used.
- If the edges are hand cut, it is unlikely that they are straight enough for good edge-to-edge fit. See *Making Perfect Fit Hand Cut But Joints*. Only a dry application can be used.

## Making Perfect Fit Hand Cut But Joints for Dry Application

Note: The tape referenced in this procedure is one inch wide 3M filament or masking tape. The panels are graphic film to which protection film 8991/8991R has already been laminated.

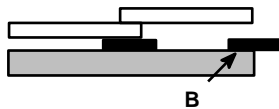
1. Apply panel 1.
  - a. Measure the width of panel 1.



- b. Centre and apply a strip of tape (A) onto the substrate where the first panel overlap will occur. This protects the substrate during cutting.
  - c. Apply the first panel as usual, except do not apply hard squeegee pressure on the edge where the substrate has been taped.

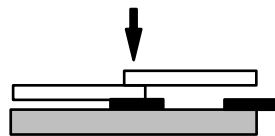
2. Apply panel 2.

- a. Measure the width of panel 2.
  - b. Centre and apply a strip of tape (B) onto the substrate where the second panel overlap will occur.
  - c. Apply the second panel as usual, overlapping the previous panel where they meet, except do not apply hard squeegee pressure on the edges where the substrate has been taped.

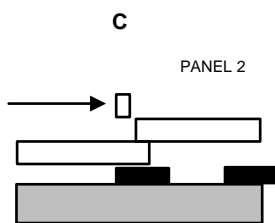


3. Continue with this process until all panels have been applied to the substrate.

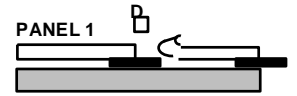
4. With a sharp razor blade or scalpel, in a safety holder, cut down the centre of the panel overlap, using just enough pressure to cut through both panels. Do not cut through the tape, which protects the substrate.



5. Remove the narrow piece (C) from the cut overlap from panel 2.



6. Lift the edge of panel 2 and remove the narrow piece (D) from panel 1.



7. Lift the edge of panel 1 and remove the remaining tape.



8. Inspect the substrate to make sure that it is clean and free from tape adhesive. Clean the area if necessary.



9. Press the cut edges together and re-squeegee the seams.

## Maintenance and Cleaning

Use a cleaner such as the kind used for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents or alcohol, and have a pH value between 3.0 and 11.0 (neither strongly acidic nor strongly alkaline). A cloth or soft bristle brush can be used to apply or wipe the cleaner.

Note: Graphics damaged by improper cleaning are not covered by the 3M warranty.

The table below shows the recommended cleaning method for various stains on graphics protected by protection film 8991/8991R. Always use the least aggressive cleaning method that provides satisfactory results.

## Removal

Film 8991 is a permanent product. Its adhesive is not intended to be removable.

Film 8991R can be removed, from most surfaces, at room temperature. Use heat if needed, to facilitate the removal. See Instruction Bulletin 6.5.

## Shelf Life, Storage, and Shipping

- Film has a shelf life of one year after receipt from 3M. Laminated film has a shelf life of one year. The total shelf life of a graphic before and after processing cannot exceed two years.
- Store the film in a clean, dry area, away from direct sunlight, and at an ambient temperature less than 30°C (86°F).
- Ship the finished graphic lying flat or in a roll. To roll the graphic, wrap it film-side out onto a core that is 15cm (6 inches) or larger in diameter. These methods prevent the graphics and premask from wrinkling and popping off the liner.

Stain	Cleaning Method					
	Dry Cloth	Cloth and Water	Detergent and Water	Isopropyl Alcohol or Household Cleaner	3M™ Citrus Based Cleaner	Scotchbrite® Pad
Ballpoint pen ink			●		●	
Coffee	●					
Grape Juice	●					
Grease				●		
Lipstick				●		
Ketchup				●		
Paint					●	● (thick, dried paint)
Permanent marking pen					●	
Shoe polish				●		
Tea		●				

## 3M Related Literature

Listed below is related 3M technical literature that may be of interest.

Subject	Instruction Bulletin
Application, general procedures for interior and exterior dry applications	5.5
Application, wet method for translucent screen printed, thermal mass transfer and cut graphics	5.7
Storage, handling, maintenance, removal	6.5

## 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.

Commercial Graphics Department  
3M United Kingdom PLC  
3M Centre  
Cain Road  
Bracknell  
Berkshire  
RG12 8HT

Tel: 01344 857850

Fax: 01344 857939

e-mail: [commgraphics.uk@mmm.com](mailto:commgraphics.uk@mmm.com)

internet: [www.3m.com/uk/graphicsolutions](http://www.3m.com/uk/graphicsolutions)

internet: [www.scotchprint.com/uk](http://www.scotchprint.com/uk)

## Sales Assistance

Commercial Graphics Group  
3M United Kingdom PLC  
3M House  
28 Great Jackson Street  
Manchester  
M15 4PA

Tel: (0161) 237 6394

Free Fax: (0800) 378127

e-mail: [commgraphics.uk@mmm.com](mailto:commgraphics.uk@mmm.com)

internet: [www.3m.com/uk/graphicsolutions](http://www.3m.com/uk/graphicsolutions)

internet: [www.scotchprint.com/uk](http://www.scotchprint.com/uk)

3M United Kingdom PLC, Commercial Graphics Group  
3M House 28 Great Jackson Street Manchester M15 4PA  
Tel: (0161) 237 6394 Free Fax: (0800) 378127  
e-mail: [commgraphics.uk@mmm.com](mailto:commgraphics.uk@mmm.com)  
internet: [www.3m.com/uk/graphicsolutions](http://www.3m.com/uk/graphicsolutions)  
internet: [www.scotchprint.com/uk](http://www.scotchprint.com/uk)

**Commercial Graphics**  
3M Ireland (Dublin)  
The Iveagh Building, The Park,  
Carrickmines Dublin 18, Ireland  
Tel: 00 353 1 280 3555 Fax: 00 353 1 280 3509  
e-mail: [commgraphics.uk@mmm.com](mailto:commgraphics.uk@mmm.com)  
[www.3m.com/uk/graphicsolutions](http://www.3m.com/uk/graphicsolutions)