



Scotchgard™

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

Description

Scotchgard™ Graphic and Surface Protection Film 8991 and 8991R are 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 also removable from many surfaces.

Advantages

- UV, abrasion and gouge protection
- Graffiti-resistant for easy cleaning
- Exterior durability up to 3 years
- Interior durability up to 8 years

Applications and End Uses

Film 8991 is 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. Such 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 may show entrapped air under film 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
- Using film 8991 (permanent) where removability may be needed

- Gasoline vapors or spills if allowed to penetrate the edges of the graphic
- Graphics made for automotive Original Equipment Manufacturers (OEM); contact 3M Automotive Division at 1-800-328-1684, Ext. 444, for alternatives

Compatible Substrates

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

Characteristics

Characteristic	Description
Film	4 mil (0.10 mm) transparent polyester
Gloss	High gloss
Thickness (film and adhesive)	5.3 to 5.7 mils
Adhesive type and color	8991: Permanent, pressure sensitive, clear 8991R: Removable, pressure sensitive, clear
Liner	polycoated paper
Recommended application surfaces	Flat, smooth, untextured; simple curves
Application temperature range	50°-90°F (10°-32°C)
Removal	8991: Permanent 8991R: Removable
Applied shrinkage	5 mil (0.13 mm)
Service temperature range	-65° to +225°F (-54° to +107°C)
Chemical resistance	Resists most organic solvents and fluids; mild alkalis, mild acids and salt.
Roll sizes	48" × 50 yards (122 cm × 45 m)

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

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:

- Use of listed compatible products
- Selection and preparation of the substrate
- Application methods
- Cleaning and maintenance methods
- Amount of abuse
- Exposure conditions

Note: Refer to the Limitations of End Uses for warranty limitations

Warranted Durability for 3M Graphic Constructions

3M warrants the graphic construction and durability of film 8991/8991R when the graphic is constructed and applied as specified in 3M literature.

Interior: warranted for up to 8 years*

Exterior, vertical ($\pm 10^\circ$) application: warranted for up to 3 years*

Exterior, horizontal ($>10^\circ$) application: warranted for up to 2 years*

Removal warranty for 8991R only: same as above

*Or the period stated in the base film's bulletin for the best construction listed (unprinted film or film/ink/clear or film/toner/overlaminated) and the same orientation, whichever comes first.

Warranted Durability for Compatible Substrates

3M warrants the durability of film 8991/8991R on the Compatible Substrates listed on page 1.

Interior: warranted for 8 years

Exterior, vertical ($\pm 10^\circ$) application: warranted for 3 years

Exterior, horizontal ($>10^\circ$) application: warranted for 2 years

Removal warranty for 8991R only: same as above

Expected Performance for Non-3M Base Film/Ink Graphics

3M expects film 8991/8991R to perform the same or very similarly to graphics constructed with 3M products. However, due to the wide variety of possible constructions, we cannot warrant premature graphic failure where other manufacturer's products have also been used.

Fabrication

For Application Using a Laminator

Film 8991 is compatible with most squeeze roll laminators. No heat is required. Refer to Instruction Bulletin 4.22.

For Application in the Field or When Not Using a Laminator

For wet application (recommended), refer to Instruction Bulletin 5.7.

For dry application, refer to Instruction Bulletin 5.5.

How to Apply Multiple Panels of Pre-laminated Graphic Film

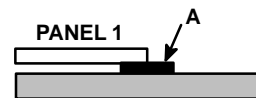
Edge-to-edge panel seaming is recommended (see instructions below). For applications where overlaps are not subject to picking or environmental stresses, normal panel overlaps can be used.

- 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 Overlaps*. Only a dry application can be used.

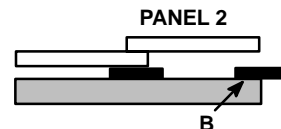
Making Perfect Fit Hand Cut Overlaps for Dry Application

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

1. Apply panel 1.
 - a. Measure the width of panel 1.
 - b. Center and apply a strip of tape (A) onto the substrate where the first panel overlap will occur. This protects the substrate during a cutting.
 - c. Apply the first panel as usual, except do not apply hard squeegee pressure on the edge where the substrate has been taped.



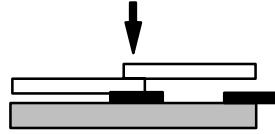
2. Apply panel 2.
 - a. Measure the width of panel 2.
 - b. Center and apply a strip of tape (B) onto the substrate where the second panel overlap will occur.
 - c. Apply the second panel as usual, overlapping the previous panel where they meet, except do not apply hard squeegee pressure on the edges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



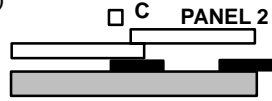
Note: For the full product names of the 3M products listed on this page, please see page 1.

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

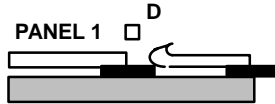
4. With a sharp razor blade in a safety holder, cut down the center of the panel overlap, using just enough pressure to cut through both panels. Do not cut through the tape, which protects the substrate.



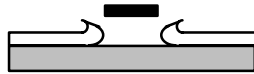
5. Remove the narrow piece (C) from the cut overlap from panel 2.



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.

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

Air Quality Regulations

State Volatile Organic Compound (VOC) regulations may prohibit the use of certain cleaning solutions. For example, the California South Coast Air Quality Management District prohibits use of certain solvent-based solutions without a permit and other California AQMD's prohibit use of certain solutions without a permit or a regulatory exemption. You should check with your State environmental authorities to determine whether use of this solution is restricted or prohibited.

Stain and Cleaning Table

Stain	Cleaning Method			
	Dry Cloth	Detergent and Water	Isopropyl Alcohol or Household Cleaner	3M™ Citrus Based Cleaner
Ballpoint pen ink		●		●
Crayon			●	
Coffee/Tea	●			
Fruit Juice	●			
Grease			●	
Lipstick			●	
Ketchup			●	
Paint				●
Permanent marking pen			●	●
Shoe polish			●	

Note: Old and/or thicker stains may require longer soaking time or reapplication of the cleaner.

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 86°F (30°C).
- Ship the finished graphic lying flat or in a roll. To roll the graphic, wrap it film-side out onto a core that is 6 inches (15 cm) or larger in diameter. These methods prevent the graphics and premask from wrinkling and popping off the liner.

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

Health and Safety

 Caution
<p>When handling any chemical products, read the manufacturers' container labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information.</p> <p>To obtain MSDS sheets for 3M products:</p> <ul style="list-style-type: none"> • 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. <p>When using any equipment, always follow the manufacturers' instructions for safe operation.</p>

Flammability Characteristics

For film 8991/8991R 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. Specific Optical Density (Ds) <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">1.5 minutes</th> <th style="text-align: center;">4.0 minutes</th> </tr> </thead> <tbody> <tr> <td>Flaming:</td> <td style="text-align: center;">0.08</td> <td style="text-align: center;">0.28</td> </tr> <tr> <td>Non-flaming:</td> <td style="text-align: center;">0.03</td> <td style="text-align: center;">0.03</td> </tr> </tbody> </table>		1.5 minutes	4.0 minutes	Flaming:	0.08	0.28	Non-flaming:	0.03	0.03
	1.5 minutes	4.0 minutes								
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 aluminum 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.									
BS476:Part 7	Fire tests on building materials and structures; surface flame spread. Passed Category II Trains.									

Warranty and Limited Remedy

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 8991/8991R 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 materials 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

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		
Films and sheetings Order an index from the Fax-on-Demand system to identify the FOD No. for the film or sheeting bulletins you need.		
Instruction Bulletins		
Clear coating and overlaminating	4.8	6508
Overlaminating electrostatic imaging paper	4.9	6509
Cold roll lamination	4.22	6522
Application, general procedures for interior and exterior dry applications	5.5	7005
Application, wet method for translucent screen printed, thermal mass transfer and cut graphics	5.7	7007
Storage, handling, maintenance, removal	6.5	8505

Scotchprint is a registered trademark of 3M in the US and other countries.
3M and Scotchgard are trademarks of 3M.

Bulletin Change Summary

A minor change was made to the Scotchgard trademark.



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