



Diamond Grade™ Work Zone Sheeting

Series DG6 Orange and White

Prestriped Sheeting For Use on Barricades

Product Bulletin DG6

May 2006

Replaces PB DG4/6 dated November 1997

Health and Safety Information

Read all health hazard, precautionary, and first aid statements found in the Material Safety Data Sheet and/or product label of chemicals prior to handling or use.

Description

3M™ Diamond Grade™ Work Zone Sheeting Series DG6 are prestriped orange and white (OW) barricade sheetings intended for reflectorizing work zone traffic control barricades. Series DG6 sheeting is designed for use on aluminum or wood substrates as detailed in Information Folder 1.7.

Although series DG6 sheetings have worked well on some flat plastic substrates, the variability of plastics precludes making any general recommendations regarding application to them. Users must assess for themselves the suitability of DG6 series sheetings on plastic substrates.

Diamond Grade sheeting series DG6 OW consists of impact resistant prismatic lens reflective sheetings precoated with aggressive pressure sensitive adhesive and available in the following prestriped configurations:

Table I - Barricade Sheeting Configuration

	Orange/White
6" left stripe	DG6-L OW
6" right stripe	DG6-R OW

Note: "Left" sheetings have stripes that slope from upper right to lower left and are placed on the right to move traffic to the left. Right sheetings are the opposite.

Photometric - Coefficients of Retroreflection

The values in Table II are minimum coefficients of retroreflection expressed in candelas per foot candle per square foot (candelas per lux per square meter).

Table II

Minimum Coefficient of Retroreflection R_A
Candelas per Foot Candle per Square Foot
or Candelas per Lux per Square Meter
(90° Rotation)

Observation ¹	Entrance ²	White	Orange
Angle	Angle		
0.2	-4	600	200
0.2	+30	270	120
0.2	+45	80	20
0.5	-4	220	80
0.5	+30	105	50
0.5	+45	40	18

¹Observation Angle - The angle between the illumination axis and the observation axis.

²Entrance Angle - The angle from the illumination axis to the retroreflector axis. The retroreflector axis is an axis perpendicular to the retroreflective surface.

Measurements are made in accordance with ASTM E810 "Standard Test Method for Coefficient of Retroreflection of Retroreflective Sheeting". The Table II values shall be measured only at the 90° rotation angle*. The observation angles shall be 0.2° and 0.5°, the entrance angle (B_1) shall be -4°, +30°, and +45°, and the entrance angle (B_2) = 0°. All measurements shall be made after cleaning according to 3M recommendations.

*This sheeting does not have a preprinted datum mark. For testing purposes a datum arrow should be marked on the specimen per ASTM E 810. The direction of this arrow should be inclined 45° from the preprinted barricade stripes. The result is that measurements at 90° rotation are taken with the barricade stripes oriented ± 45° from the observation plane.

**Table III
Color Specification Limits ** (Daytime)**

Color	1		2		3		4		Reflectance Limit (Y) (%)	
	x	y	x	y	x	y	x	y	Min.	Max.
White	.305	.305	.355	.355	.335	.375	.285	.325	40	
Orange	.550	.360	.630	.370	.581	.418	.516	.394	7	27

** The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 standard colorimetric system measured with standard illuminant D65.

Color

Colors of the sheeting applied to aluminum test panels shall conform to the requirements of Table III when measured in accordance with ASTM E 1164. The values shall be determined on a HunterLab ColorFlex 45/0 spectrophotometer. Computations shall be done in accordance with ASTM E 308 for the 2° observer.

Recommended Application Procedures

Series DG6 sheetings may be applied to barricade panels using a squeeze roll applicator or by hand. The application temperature (and substrate temperature) should exceed 60°F. If hand applied, sheeting should be applied with firm pressure using a plastic squeegee or rubber roller.

3M recognizes that some customers will choose to apply DG6 series sheetings to plastic substrates. Without endorsement of the use of such substrates, some comments regarding their use can be made. Plastics, including fiberglass laminates, vary as to type, composition, and manufacture, so that their use as an application surface requires careful evaluation under actual use conditions. Some plastics embrittle on exposure and some plastics contain migrating constituents that may contaminate the adhesive or cause sheeting discoloration and adversely affect performance. Also, some plastics are affected by ingredients in the sheeting adhesives that migrate into the panel. Sheeting must NOT be applied to transparent or translucent materials as light transmission may adversely affect adhesion. Application of DG6 series sheeting to plasticized polyvinyl chloride (PVC) devices is not recommended.

Information Folder 1.7 may provide further insight into applications on plastic substrates.

Note: Care must be taken to avoid stretching series DG6 sheetings during application.

General Performance Considerations

The durability of Series DG6 Prestriped Barricade Sheeting will depend upon many factors including, but not limited to, substrate selection and preparation, compliance with recommended application procedures, geographic area, exposure conditions, and maintenance.

The user must determine the suitability of this material on any specific substrate (plastic, metal, or wood) for its intended use. Maximum durability can be obtained by following the recommendations contained in Information Folder 1.7 on Sign Base Surface Preparation. Applications on unprimed, excessively rough or non-weather-resistant surfaces, some plastics, or exposure to severe or unusual conditions can reduce the durability of such applications.

Warranty

3M warrants that Diamond Grade™ Work Zone Sheeting Series DG6 sold by 3M to be used as components for traffic control devices will remain effective for its intended use for three years, subject to the following provisions:

If a Diamond Grade work zone barricade surface is applied to barricade blank materials in accordance with all 3M application and fabrication procedures provided in 3M’s product bulletins, information folders and technical memos (which will be furnished upon request), including the exclusive use of 3M recommended application equipment; and if the barricade panel deteriorates within three years due to natural causes to the extent that:

1) the panel is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night driving conditions by drivers with normal vision, or 2) the coefficient of retroreflection is less than 50% of the values given in Table II, 3M's sole responsibility and purchaser's and user's exclusive remedy shall be that 3M will provide pro-rata replacement of the 3M materials.

Conditions

Such failure must be solely the result of design or manufacturing defects in the Diamond Grade work zone sheeting and not of outside causes such as: improper fabrication, handling, maintenance or installation; use of application equipment not recommended by 3M; failure of substrate; exposure to chemicals, abrasion and other mechanical damage from fasteners used to mount the barricade panel; collisions, vandalism or malicious mischief. 3M reserves the right to determine the method of replacement.

Replacement sheeting will carry the unexpired warranty of the sheeting it replaces.

Claims made under this warranty will be honored only if the panels have been dated at the time of sheeting application, which constitutes the start of the warranty period.

Claims made under this warranty will be honored only if 3M is notified of a failure within a reasonable time, reasonable information requested by 3M is provided, and 3M is permitted to verify the cause of failure.

Limitation of Liability

3M's liability under this warranty is limited to replacement as stated herein, and 3M assumes no liability for any incidental or consequential damages, such as lost profits, business or revenues in any way related to the product regardless of the legal theory on which the claim is based. THIS WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, OF FITNESS FOR A PARTICULAR PURPOSE, AND ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE.

Literature

Sign Base Surface Preparation IF 1.7

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3M assumes no responsibility for any injury, loss or damage arising out of the use of a product that is not of our manufacture. Where reference is made in literature to a commercially available product, made by another manufacturer, it shall be the user's responsibility to ascertain the precautionary measures for its use outlined by the manufacturer.

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All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, special or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith.

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