



Transportation Safety Division

3M™ Advanced Flexible Engineer Grade Reflective Sheeting Series 7300

Product Bulletin Series 7300
June 2019

Product Bulletin

1 Description

3M Advanced Flexible Engineer Grade Reflective Sheeting Series 7300 meets the initial requirements of EN12899-1:2007 Class RA1. This sheeting is a non-metallized, corrosion free, microprismatic reflective sheeting. It is specially designed to have high scratch resistance and is flexible and durable. The adhesive for 7300 Series is optimized for application to a variety of traffic control devices including metal, and both flat and curved reboundable plastic substrates. Microseal technology gives the sheeting a more uniform appearance, compared to conventional prismatic sheetings, and a whiter base color, compared to beaded sheetings. Microseal technology also results in a product that is plotter and die-cuttable with no need for edge sealing. Series 7300 sheeting features microprismatic optics that return light to drivers under a diverse set of nighttime viewing geometries that are encountered by the driving public. When applied to properly prepared substrates, Series 7300 sheeting provides long-term reflectivity and durability.

Series 7300 sheeting is available in the following colors.

Table 1. Product Codes by Color

| Color | Product Code |
|--------|--------------|
| White | 7310 |
| Yellow | 7311 |
| Orange | 7314 |

2 Specifications

2.1 Coefficient of Retroreflection and Chromaticity

The initial minimum coefficient of retroreflection, when measured according to CIE 54.2 using CIE standard illuminant A, conforms to Table 3 of EN 12899-1:2007 for Class RA1 materials (see Table 2).

Table 2. Minimum Coefficient of Retroreflection, R_A (cd/lx/m²).

| Observation Angle α (°) | Entrance Angle β (°) | White | Yellow | Orange |
|--------------------------------|----------------------------|-------|--------|------------------|
| 0.2 | +5 | 70 | 50 | 25 |
| 0.2 | +30 | 30 | 22 | 10 |
| 0.2 | +40 | 10 | 7 | 2.2 |
| 0.33 | +5 | 50 | 35 | 20 |
| 0.33 | +30 | 24 | 16 | 8 |
| 0.33 | +40 | 9 | 6 | 2.2 |
| 2.0 | +5 | 5 | 3 | 1.2 |
| 2.0 | +30 | 2.5 | 1.5 | 0.5 |
| 2.0 | +40 | 1.5 | 1.0 | # not applicable |

The above angular definitions apply for the CIE Goniometer system (co-planar geometry). The sheeting shall be mounted in 0° orientation on the goniometer.

The initial chromaticity coordinates and luminance factors conform to Class CR2 of EN 12899-1:2007 (see Table 3).

Table 3. Color Specification Limits (Daytime)

| Color | x | y | x | y | x | y | x | y | β |
|--------|------|------|------|------|------|------|------|------|-------------|
| White | .305 | .315 | .335 | .345 | .325 | .355 | .295 | .325 | ≥ 0.35 |
| Yellow | .494 | .505 | .470 | .480 | .513 | .437 | .545 | .454 | ≥ 0.27 |
| Orange | .631 | .369 | .560 | .360 | .506 | .404 | .570 | .429 | ≥ 0.14 |

2.2 Durability

The durability of Series 7300 sheeting applications will depend upon substrate selection and preparation, compliance with recommended application procedures, geographic area, exposure conditions, and maintenance practices. Maximum durabilities can be expected in applications subject to vertical exposures on stationary objects when processed and applied to properly prepared substrates according to 3M recommendations available in [3M Information Folder 1.7](#). The user must determine the suitability of any substrate for its intended use. Exposure to severe or unusual conditions and applications to unprimed, excessively rough, or non-weather-resistant surfaces can reduce durabilities. Purchaser should perform appropriate tests to determine reflective sheeting performances on reboundable plastic substrates. Tests should include plastic manufacturer's recommendations for impacting reboundable plastic traffic control devices.

3 Application

3.1 Pressure Sensitive Adhesive

Series 7300 sheeting incorporates a pressure sensitive adhesive and should be applied to substrates at room temperature, 16°C, or higher using any of the methods described below. If sheeting temperature is below 16°C, allow it to remain at 16°-24°C for at least 24 hours before application.

3.2 Application Equipment

1. 48" Interstate Squeeze Roll Applicator (see [3M Information Folder 1.4](#))
2. Hand Squeeze Roll Applicator (HSRA) (See [3M Information Folder 1.6](#))

Note: When using a HSRA with an air cylinder kit, apply the minimum tension needed to properly position the sheeting on the substrate. A nip roller pressure of 80 psi (5.5 bars) is recommended.

3.3 Hand Application

To obtain maximum initial adhesion, use firm pressure with a 5 cm rubber roller or plastic squeegee. Multiple, heavy overlapping strokes should be used. Squeegee all edges. Do not stretch sheeting during application. Maintain minimum distance between liner removal and adhesive contact point. See [3M Information Folder 1.5](#) for detailed hand application instructions.

3.4 Other Application Methods

Customized application equipment exists for a wide range of flat and curved substrate surfaces. Series 7300 sheeting has been found to be compatible with a variety of customized application equipment. Please contact 3M Technical Service for more information.

4 Adhesive

Series 7300 sheeting incorporates a pressure sensitive adhesive that is specially designed for low energy surfaces, including moderately rough or porous wood, plastic, and a variety of metal surfaces. This high performance adhesive system is designed to retain its elasticity over a wide temperature range. This assures durable adhesion to a variety of substrates, even upon cold impact.

5 Substrates

The most reliable and durable traffic devices and signs are made from properly prepared substrates. It is up to the individual customer to determine if a substrate is appropriate for a specific purpose. Users are urged to carefully evaluate all other substrates for adhesion and device durability.

Refer to [3M Information Folder 1.7](#) for surface preparation recommendations. Substrates with low surface energies may require additional preparation steps, such as flame treatment, mechanical abrasion, or use of adhesion promoters, prior to sheeting application. Sheeting failures caused by substrate failures or improper surface preparations are not the responsibility of 3M. User is responsible for determining whether the 3M product is suitable for a particular purpose and application.

6 Imaging by Screen Processing

Series 7300 sheeting may be screen processed using 3M Process Colors Series 880 or 990. Process at a temperature of 60-100°F (16-38°C) and a relative humidity of 20-50%. If other series process colors are used, it is the user's responsibility to determine their suitability and durability. 3M assumes no responsibility for premature failure of sign face legends that have been processed with non-3M process colors. Since 3M has no control over colors made by other manufacturers the user should check with the manufacturer for processing recommendations and assurance of performance prior to any extensive use. Process colors of the same series may be thinned, toned, blended, and either air or oven dried. To screen process traffic signs, a P.E. 157 screen mesh screened with a fill pass is recommended. Clear coating is neither required nor recommended. Consult [3M Information Folder 1.8](#) for details.

7 Cutting Methods

Users are encouraged to evaluate cutting procedures for their own equipment and shop conditions. Series 7300 sheeting may be hand cut, die cut, plotter cut, or guillotined multiple sheets at a time. Compared to beaded sheeting, an extended blade life can be expected when cutting Series 7300 sheeting.

Series 7300 may be cut into any desired shape, including cone sleeves. Sealing of the cut edges of Series 7300 sheeting is not required. Details regarding cutting methods can be found in [3M Information Folder 1.10](#).

8 Cleaning

Devices and signs that require cleaning should be flushed with water then washed with a detergent solution and soft bristle brush or sponge. Avoid pressure that may damage the device or sign face. Flush with water following washing.

9 Storage and Packaging

Series 7300 sheeting should be stored in a cool, dry area, preferably at a temperature of 16°-24°C and a relative humidity of 30-50%, and be applied within two years of purchase. Rolls should be stored horizontally in their shipping cartons. Partially used rolls should be returned to their shipping cartons or suspended horizontally from rods or pipes through their cores. Unprocessed sheets should be stored flat. Refer to [3M Information Folder 1.11](#) for instructions on packing for storage and shipment.

10 Health and Safety Information

Read all health hazard, precautionary, and first aid statements found in the Safety Data Sheets, Article Information Sheets, and/or product labels of chemicals prior to handling or use. To obtain SDS sheets for 3M products, go to 3M.com/SDS, or by mail, or for urgent requests, call 1-800-364-3577.

11 Other Product Information

Always confirm that you have the most current version of the applicable product bulletin, information folder, or other product information from 3M's Website at <http://www.mmm.com/roadsafety>.

12 Literature References

| | |
|----------------------------|---|
| 3M IF 1.4 | Instructions for Interstate Squeeze Roll Applicator |
| 3M IF 1.5 | Hand Application Instructions |
| 3M IF 1.6 | Hand Squeeze Roll Applicator |
| 3M IF 1.7 | Sign Base Surface Preparation |
| 3M IF 1.8 | Process Color Instructions |
| 3M IF 1.10 | Cutting, Premasking, and Prespacing |
| 3M IF 1.11 | Reflective Sheeting Sign Maintenance Management |
| 3M IF 3.3 | Application Procedures for CW80, 3300, 3910 or 7300 Series Sheeting |
| 3M PB 880I | 3M™ Process Color Series 880I |
| 3M PB 990 | 3M™ Process Color Series 990 |

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.



Transportation Safety Division

3M Deutschland GmbH
Transportation Safety Laboratory
Carl-Schurz-Straße 1
41453 Neuss
Tel: 02131/14 3394
Fax: 02131/14 3694

©3M 2019, All rights reserved