Product Description

3M™ Diamond Grade™ Fluorescent Work Zone Digital Sheeting Series 3924SUDS (the “Sheeting”) is a retroreflective prismatic digital sheeting designed to optimize digital imaging of traffic control signs that are exposed vertically in service, when imaged with UV, UVgel, or latex inkjet inks.

Table A. Color

Color	Product Code
Orange	3924S

Specifications

The Sheeting conforms to all current performance requirements of ASTM D4956 for Type VIII retroreflective sheeting. See the “Imaging” section on page 2 for information regarding imaging the sheeting.

System of Matched Components

The Sheeting is compatible with all 3M qualified printer and ink systems. However, this imaging system is not covered as part of the 3M™ MCS™ Warranty or the 3M™ MCS™ Warranty for Traffic.

Physical Properties

Adhesive

The Sheeting has a pressure-sensitive adhesive intended for application at temperatures of 65°F (18°C) and higher. This adhesive meets the ASTM D4956 Class I adhesive requirement.

Entrance Angularity Performance with Respect to Orientation

The Sheeting is designed to be an effective wide angle reflective sheeting, regardless of its orientation on the substrate or the ultimate orientation of the sign after installation. However, because the efficiency of light return from cube corner reflectors is not equal at all application orientations, especially at higher entrance angles, the widest entrance angle light return is achieved when the Sheeting is oriented in a particular manner. Sheeting orientation can be used to easily optimize high entrance angle (>50°) performance when required for a given sign (e.g. "keep right" symbols). In such situations, the completed sign should have the Sheeting positioned at the 0° orientation (downweb direction perpendicular to the road). When the "primary groove line" (which is oriented parallel to the flat sides of the diamond chain links) is vertical on a completed sign, the Sheeting is said to be in a 0° orientation. When the "primary groove line" is horizontal on the completed sign, the Sheeting is said to be in a 90° orientation. See Figure 1.

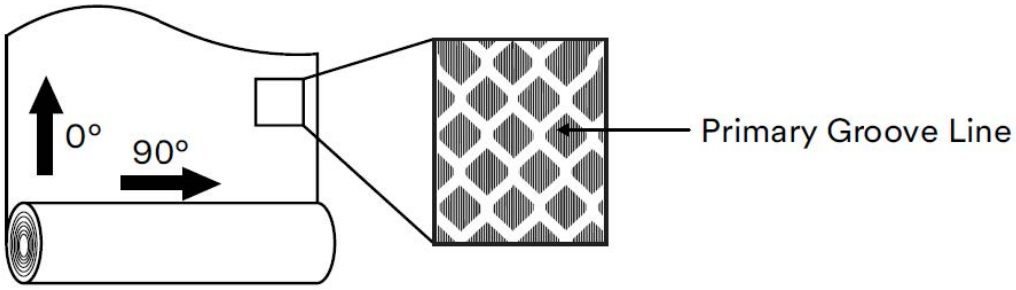


Figure 1. Primary Groove Lines Used to Define Sheeting Orientation

Unless a sign's location and/or position calls for extra-wide entrance angularity performance or a specific installation direction is required in a customer specification, signs and applied copy (letters, arrows, borders, and shields) can be fabricated and installed using the application orientation that most efficiently utilizes the Sheeting.

NOTE

For multi-panel signs, 3M recommends applying all background panels with the Sheeting oriented in the same direction.

Sheeting may be processed into traffic signs using any of the imaging methods described below. 3M assumes no responsibility for the failures of sign face legends or backgrounds processed with non-3M process colors or with any imaging materials other than those listed below.

Substrates

See 3M Information Folder 1.7 for surface preparation recommendations.

The Sheeting has been designed primarily for application to flat substrates. Any application to a substrate with a radius of curvature of less than 5 in. (12.7 cm) should also be supported by rivets or bolts. 3M does not recommend using the Sheeting on plastic substrates where cold shock performance is required.

3M is not responsible for sign failures caused by substrate failures or improper surface preparations.

Sign Fabrication Methods

Squeeze Roll Application

The Sheeting should be applied to sign substrates at temperatures of 65°F (18°C) and higher using either of the following methods:

Mechanical Squeeze Roll Applicator

Applications to edge wrapped extrusions require sufficient softening of the Sheeting prior to edge wrapping. Softening can be accomplished by directing additional heat to the “next to last” edge roller. This practice may increase productivity and minimize cracking. See 3M Information Folder 1.4 for details.

Hand Squeeze Roll Applicator

Background and complete sign applications of Sheeting must be performed using a roll laminator, either mechanical or hand driven.

Splices

The Sheeting must be butt spliced when more than one piece of Sheeting is used on a single piece of substrate. Sheeting pieces should not touch one another. Avoiding overlaps prevents the buckling that can occur as Sheeting expands under extreme temperature and humidity conditions.

Double Faced Signs

Sheeting on the bottom side of a double faced sign can be damaged if rolled through a squeeze roll applicator using an unprotected steel bottom roller. The use of a semi-soft flat sheet between the steel roller and the applied sign face will protect the sign face from damage. 3M recommends using a rubber mat, tag board, or cardboard for this purpose.

Imaging

The Sheeting may be processed into traffic signs by any of the imaging methods described below. 3M assumes no responsibility for failure of sign face legends or backgrounds processed with non-3M process colors or imaging materials other than those listed below.

Screen Processing

The sheeting may be screen processed into traffic signs, before or after mounting on a sign substrate, using 3M™ Process Colors Series 880I or 3M™ Process Colors Series 880N. See 3M Information Folder 1.8 for details.

3M™ ElectroCut™ Film

3M™ ElectroCut™ Film 1178 Black may be used on the Sheeting to provide copy for traffic control signs. See 3M Product Bulletin 1170 for fabrication procedures.

Vinyl Graphic Films

3M™ Scotchcal™ Graphic Film Series 3650 and 3M™ Scotchcal™ ElectroCut™ Graphic Film Series 7725 may be used to provide copy for traffic control signs on the Sheeting. Refer to the appropriate product literature for more information.

Digital Imaging

The Sheeting is compatible with 3M qualified HP Latex Digital printer systems. See 3M Information Folder 1.17 for details.

Cutting

The Sheeting may be cut. Sealing the cut edges of the Sheeting is not required.

Plotter Cutting

Flat bed plotters can be used to cut the Sheeting and offer the most consistent and reliable performance.

Other Cutting Methods

The Sheeting may be hand cut or die cut one sheet at a time. See 3M Information Folder 1.10 for details.

Shelf Life, Processing, Storage, Packaging, and Cleaning

See 3M Information Folder 1.11 for details.

Installation

3M recommends installing nylon washers between the heads of all twist fasteners (such as screw heads, bolts, or nuts) and the Sheeting to protect the Sheeting from the twisting action of the faster heads.

3M Related Literature

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

- 3M Information Folder 1.10 Cutting, Premasking, and Prespacing of 3M™ Reflective Sheetings
- 3M Information Folder 1.11 Sign Maintenance Management
- 3M Information Folder 1.17 User Guide 3M™ Reflective Sheeting and HP Latex 360/365 Printers
- 3M Information Folder 1.19 Digital Imaging with Durst 163TS Printers on 3M™ Reflective Sheeting
- 3M Information Folder 1.20 Digital Imaging with EFI H1625 RS Printer on 3M™ Reflective Sheeting
- 3M Information Folder 1.4 Instructions for Interstate Squeeze Roll Applicator
- 3M Information Folder 1.5 Hand Application Instructions
- 3M Information Folder 1.7 Sign Base Surface Preparation
- 3M Information Folder 1.8 3M™ Process Colors Series 880I, 88N, and 990 Instructions for Use
- 3M Product Bulletin 880 3M™ Process Color Series 880I, 3M™ Process Color Series 880N
- 3M Product Bulletin 1160i.2 3M™ Premium Protective Overlay Film 1160i.2
- 3M Product Bulletin 1170 3M™ ElectroCut™ Film Series 1170
- 3M Product Bulletin 3650 3M™ Scotchcal™ Graphic Film Series 3650
- 3M Product Bulletin 7725 3M™ Scotchcal™ ElectroCut™ Graphic Film Series 7725
- 3M Product Bulletin Slipsheeting 3M™ Slipsheeting
- 3M Sign Warranty Bulletin
- 3M™ MCS™ Warranty and 3M™ MCS™ Warranty for Traffic Matrices Selector

ASTM Test Methods are available from ASTM International, West Conshohocken, PA.

Health and Safety

Chemicals

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety, and environmental information.

Follow this link to obtain SDS sheets for 3M products.

Follow this link to obtain information about substances of very high concern (SVHC) for EU products.

Tools and Equipment Usage

When using any equipment, always follow the manufacturer's instructions for safe operation.

Warranty Information

3M Standard Product Warranty

The Sheeting is warranted ("3M Standard Warranty") to meet the specifications stated in this product bulletin at the time of shipment. If the Sheeting is proven not to have met the 3M Standard Warranty on the shipment date, then a buyer's exclusive remedy, and 3M's sole obligation, at 3M's option, will be refund or replacement of the Sheeting.

3M™ MCS™ Warranty and 3M™ MCS™ Warranty for Traffic

The Sheeting is not qualified for 3M™ MCS™ Warranty nor 3M™ MCS™ Warranty for Traffic.

Technical Information

Technical information, guidance, and other statements provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license to any intellectual property rights is granted or implied with respect to this technical information.

Product Selection and Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment, reviewing all applicable regulations and standards, and reviewing the product label and use instructions. Failure to properly evaluate, select, and use a 3M product in accordance with instructions or to meet all applicable safety regulations may result in injury, sickness, death, and/or harm to property.

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Limitation of Liability

Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

Additional Limitations

See the 3M Sign Warranty Bulletin for terms, additional limitations of your warranty, if any, and limitations of liability.

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