

Commercial Branding & Transportation Division

# 3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430

Product Bulletin Series 3430

April 2023

For U.S.A.

Replaces Product Bulletin Series 3430 Dated October 2013

## 1 Description

3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430 (“**Sheeting**”) is a retroreflective sheeting designed for use in the production of reflective commercial signs and noncritical traffic control signs (“**Sign**”) that are exposed vertically in service. The Sheeting can easily be identified by its visible integral “EGP” marking.

For detailed features and benefits of the Sheeting, please refer to the 3M Transportation Safety Division website (<http://www.3M.com/roadsafety>).

3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430 is available in the following colors.

**Table 1.** Product Codes by Color

Color	Product Code
White	3430
Yellow	3431
Green	3437

## 2 Specifications

The Sheeting conforms to all current performance requirements of ASTM D4956 for Type I retroreflective sheeting. Refer to section 7 for information regarding imaging of Sheeting.

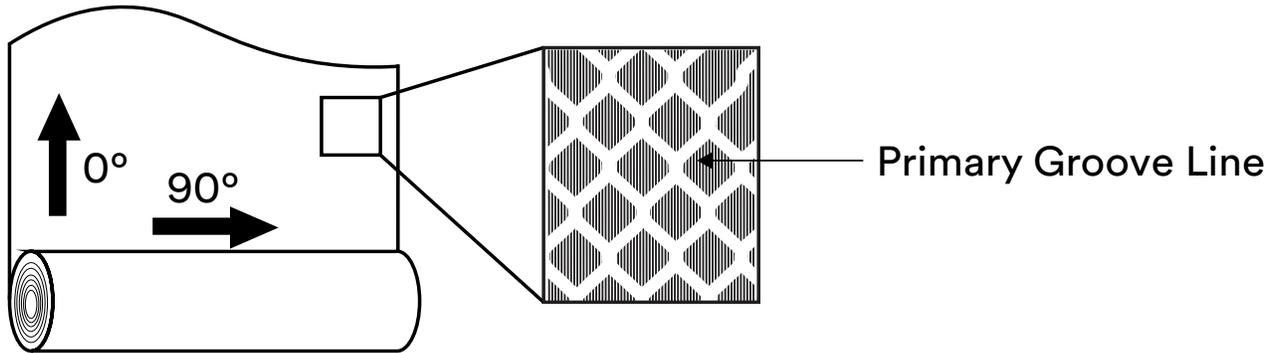
## 3 Physical Properties

### 3.1 Adhesive

Sheeting comes with a pressure-sensitive adhesive that is recommended for application at temperatures of 65 °F (18 °C) and higher.

### 3.2 Entrance Angularity Performance with Respect to Orientation

Sheeting has been 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, it is possible to get the widest entrance angle light return when the Sheeting is oriented in a particular manner. Sheeting orientation can be used to easily optimize high entrance angle (>50°) performance when it is 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 the completed Sign, 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 for details.



**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 reflective Sheeting.

**Note:** For multi-panel Signs, it is recommended that all background panels be applied 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 that have been processed with non-3M process colors or with matched component imaging materials other than those listed below.

## 4 Substrates

Refer to [3M Information Folder 1.7](#) for surface preparation recommendations.

Sheeting has been designed primarily for application to flat substrates. Any application to a substrate with a radius of curvature of less than five inches should also be supported by rivets or bolts. Plastic substrates are not recommended where cold shock performance is required. **Sign failures caused by substrate failures or improper surface preparations are not the responsibility of 3M.**

## 5 Sign Fabrication

### 5.1 Squeeze Roll Application

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** – refer to [3M Information Folder 1.4](#). Applications to extrusions that are edge wrapped 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.

**Hand squeeze roll applicator** – refer to [3M Information Folder 1.6](#) for details.

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

### 5.2 Hand Application

Hand application is recommended for legend and copy only. Refer to [3M Information Folder 1.5](#) for more details.

Hand applications will show some visual irregularities which may be objectionable to aesthetically critical customers. These irregularities are more noticeable on darker colors. To obtain a uniform close-up appearance, a roll laminator must be used.

All direct-applied copy and border **MUST** be cut and squeegeed at all metal joints.

### 5.3 Splices

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 overlap prevents the buckling that can occur as Sheeting expands under extreme temperature and humidity conditions.

### 5.4 Double Faced Signs

The 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. Use of a rubber mat, tag board, or cardboard is recommended.

## 6 Imaging

Sheeting may be processed into traffic Signs using the imaging methods described below.

### 6.1 Digital Imaging

Digitally imaged areas of white Sheeting that have been processed according to 3M instructions shall provide coefficients of retroreflection of not less than 70% of the values of the corresponding ASTM D4956 Type I sheeting colors. The daytime luminance and chromaticity shall conform to ASTM D4956 tables 2 and 11, respectively.

Conformance to the ASTM D4956 performance requirements for Type I sheeting has been established when 3M printing requirements and procedures are followed. Most consistent results are achieved when 3M's system of matched component materials (Tables 5 and 6) are used.

Use of Sheeting is not restricted to the inks/printers listed below. Sheeting may perform adequately with select latex, solvent and UV ink jet inks and printers. Please contact your 3M representative for more information on ink and print system compatibilities.

**Table 2.** Matched components and traffic color availability for permanent regulated or non-regulated traffic control signs and stickers.

3M Digital Printing Solutions <sup>a</sup>	Traffic Colors	Ink	Overlay Film
HP Latex 360/365	Red, green, and black	HP Series 831 Inkjet Ink	3M™ ElectroCut™ Film Series 1170C or 3M™ Premium Protective Overlay Film Series 1160i

a. Must be printed according to all requirements described in printer specific 3M Information Folders, including printer settings and profiles.

## 6.2 Screen Processing

The Sheeting may be screen processed into traffic Signs, using 3M Process Colors Series 880I (see [3M Product Bulletin 880I](#)) or Series 880N (see [3M Product Bulletin 880N](#)), before or after being mounted onto a Sign substrate. Series 880I and 880N process colors can be screened at temperatures of 60-100°F (16-38°C) and relative humidities of 20-50%. A P.E. 157 screen mesh with a fill pass is recommended. See [3M Information Folder 1.8](#) for details regarding screen processing. The use of process colors other than Series 880I or 880N is not recommended. 3M assumes no responsibility for failures of Sign face legends or backgrounds that have been processed with process colors other than those listed above.

The  $R_A$  values of areas of white Sheeting screen printed with 3M transparent inks or covered with 3M™ ElectroCut™ Film Series 1170 should be no less than 70% of the minimum  $R_A$  values of the corresponding Sheeting colors.

3M process colors and colored film, when used according to 3M recommendations, will meet the applicable ASTM D4956 specifications of the equivalent integrally colored sheeting. However, dilution of color and atmospheric conditions may result in reduced durabilities. 3M ElectroCut Film Series 1170 can be expected to perform satisfactorily for the life of the Sign when direct applied to the Sheeting.

Care should be taken to avoid flexing Sheeting before, and especially after, screening to minimize the possibility of cracking from improper handling.

## 6.3 3M™ ElectroCut™ Film

3M™ ElectroCut™ Film Series 1170 may be used on Sheeting to provide transparent colored background copy for traffic control Signs. Refer to [3M Product Bulletin 1170](#) for fabrication procedures.

## 6.4 Applying Cut-Out Copy

3M™ Engineer Grade Prismatic Reflective Sheeting may be applied to sheeting backgrounds to create Sign legends. Refer to [3M Information Folder 1.10](#) for more information.

# 7 Cutting

Sheeting may be cut into letters and shapes with heights of at least 3 inches and stroke widths of at least ½ inch. Smaller sizes are not recommended. Sealing the cut edges of Sheeting is not required.

## 7.1 Plotter Cutting

- 1 Flat bed plotters can be used to cut Sheeting and offer the most consistent and reliable performance.
- 2 Friction fed plotters can be used to kiss cut only. This is achieved using 600 grams of down force and a 60° cutting blade. Additional drive wheels may be needed to improve tracking. Alternatively, Sheeting can be cut from the liner side. To do so, the blade force and knife depth must be set to score, but not cut through, the top film. After scoring, break apart individual copy or apply premask to retain spacing.

## 7.2 Other Cutting Methods

Sheeting may be hand cut or die cut one sheet at a time. Cutting procedures can be found in [3M Information Folder 1.10](#).

## 8 Installation

Nylon washers are required when twist style fasteners are used to mount Signs

## 9 Shelf-Life, Processing, Storage, Packaging, and Cleaning

Please refer to [3M Information Folder 1.11](#).

## 10 Durability

Please refer to [3M Information Folder 1.7](#). Periodic Sign inspection and regular Sign replacement are strongly recommended in order to help Sign owners establish their own effective service life expectations, beyond the warranty period.

## 11 Health and Safety Information

Read all health hazard, precautionary, and first aid statements found in the Safety Data Sheets (SDS), Article Information Sheets, and products labels of any materials for important health, safety, and environmental information prior to handling or use. To obtain SDSs and Article Information Sheets for 3M products, go to [3M.com/SDS](http://3M.com/SDS), contact 3M by mail, or for urgent requests call 1-800-364-3577.

## 12 Warranty Information

### 12.1 3M Standard Warranty

The Sheeting is warranted (“3M Standard Warranty”) to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this product bulletin. If the Sheeting is proven not to have met the 3M Standard Warranty on their 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.

### 12.2 Disclaimer

THE 3M WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM, OR USAGE OF TRADE.

### 12.3 Limitation of Liability

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

## 13 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>.

## 14 Literature References

<a href="#">3M IF 1.4</a>	Instructions for Interstate Squeeze Roll Applicator
<a href="#">3M IF 1.5</a>	Hand Application Instructions
<a href="#">3M IF 1.6</a>	Hand Squeeze Roll Applicator
<a href="#">3M IF 1.7</a>	Sign Base Surface Preparation
<a href="#">3M IF 1.8</a>	Process Colors Series 880 and 900 Instructions for Use
<a href="#">3M IF 1.10</a>	Cutting, Premasking, and Prespacing
<a href="#">3M IF 1.11</a>	Sign Maintenance Management
<a href="#">3M PB 880I</a>	3M™ Process Color Series 880I
<a href="#">3M PB 880N</a>	3M™ Process Color Series 880N
<a href="#">3M PB 1170</a>	3M™ ElectroCut™ Film Series 1170

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

## For Information or Assistance

Call: 1-800-553-1380

In Canada Call:

1-800-3M HELPS (1-800-364-3577)

## Internet:

<http://www.3M.com/roadsafety>

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