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**5000130715 TWO YEAR CONTRACT FOR REFLECTIVE SHEETING FOR
THE JEFFERSON PARISH TRAFFIC ENGINEERING DIVISION.**
Jefferson Parish Government

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Bid Number 50 - 130715

**TWO (2) YEAR CONTRACT FOR REFLECTIVE SHEETING FOR THE
JEFFERSON PARISH TRAFFIC ENGINEERING DIVISION.**

JUNE 4, 2020 AT 2:00 PM

ATTENTION VENDORS!!!

**Please review all pages and respond accordingly, complying with all provisions
in the technical specifications and Jefferson Parish Instructions for Bidders and
General Terms and Conditions. All bids must be received in the Purchasing
Department by the bid due date and time.**

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Gretna, LA 70053
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Diamond Grade Reflective Sheeting Series 4000

1 Description

Diamond Grade Reflective Sheeting Series 4000 ("Sheeting") features the most efficient retroreflective prism design currently available for use on vertical traffic control signs and delineators to return light to drivers under a diverse set of nighttime viewing geometries encountered by the driving public. Sheeting must meet the stringent retroreflective requirements described in the ASTM D4956 standard for Type XI retroreflective Sheeting.

The Sheeting is available in the following colors.

Table 1. Product Codes by Color

Color	Product Code
White	4090
Yellow	4091
Red	4092
Blue	4095
Green	4097
Brown	4099
Fluorescent Yellow - FY	4081
Fluorescent Yellow-Green - FYG	4083
Fluorescent Orange - FO	4084

2 Specifications

The Sheeting conforms to all current performance requirements of ASTM D4956 for Type XI retroreflective sheeting. Additionally, the Sheeting meets the following specifications.

2.1 Legibility

A traffic control and guidance sign ("Sign") made with the Sheeting used for both Sign background and cutout copy will remain legible when viewed from a moving vehicle under normal day and night driving conditions by not excessively fading, discoloring, cracking, crazing, peeling, and blistering during the legibility periods in the locations as given in Table 2. Legibility Period is measured from the initial Sign fabrication date ("Fabrication Date"), and varies by Sign location as shown in Table 2.

Table 2. Sheeting Legibility Periods by Sheeting and Geographical Sign Location

Sheeting	Geographic Location of Sign	Legibility Period [from Fabrication Date]
4090, 4091, 4092, 4095, 4097, 4099	US & Canada	Up to 12 Years
4081, 4083	Alabama, Arizona, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, South Carolina, and Texas	Up to 7 Years
	Canada and US other than the above States	Up to 10 Years
4084	US & Canada	Up to 3 Years

2.2 Gloss

The Sheeting has a rating of 50 or higher when tested in accordance with ASTM D523 using a 60° glossmeter.

2.3 Optical Stability

The Sheeting, applied to a 3-inch x 6-inch test panel, shall retain a minimum of 85% and a maximum of 115% of its initial coefficient of retroreflection when measured at a 0.2° observation and -4° entrance angle, after being placed in an oven at 71 ± 3 °C (160 ± 5 °F) for 24 hours followed by conditioning at standard room temperature for two hours.

2.4 Coefficient of Retroreflection (RA)

Table 3 describes the durations and coefficients of retained retroreflection¹ for Signs fabricated with the Sheeting for use in the US and Canada. The values presented in Table 3 apply only to Sheeting that has been applied, processed, installed, maintained, and cleaned.

Table 3. Minimum Retained coefficient of retroreflection (RA, [cd/lx/m²]) for Sheeting over time

Sheeting	Years from Fabrication Date	Minimum Retained Coefficient of Retroreflection [cd/lx/m ²]
4090, 4091, 4092, 4095, 4097, 4099	On Fabrication Date	ASTM D4956 Type XI
	Up to 7 Years	80% of ASTM D4956 Type XI
	8-12 Years	70% ASTM D4956 Type XI
4081, 4083	On Fabrication Date	ASTM D4956 Type XI
	Up to 7 Years/10 Years ^a	70% of ASTM D4956 Type XI
4084	On Fabrication Date	ASTM D4956 Type XI
	Up to 3 Years	70% of ASTM D4956 Type XI

The retained coefficient of retroreflection applies for 7 years after Fabrication Date for the following states: Alabama, Arizona, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, South Carolina, and Texas. For all other locations the retained coefficient of retroreflection is for 10 years.

Conformance to coefficient of retroreflection requirements shall be determined instrumentally in accordance with ASTM E810 "Test Method for Coefficient of Retroreflection of Retroreflective Sheeting," and per E810, values obtained at 0° and 90° rotations shall be averaged to determine the RA values referenced in Table 3.

2.5 Entrance Angularity Performance and 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, which is especially apparent at larger entrance angles, it is possible to get the widest entrance angle light return from a particular orientation. When high entrance angle (>50°) performance is required for a given Sign (e.g. "keep right" symbols), it can be obtained easily by properly orientating the Sheeting on the completed Sign. In such situations, the completed Sign should have the Sheeting positioned at the 0° orientation (downweb direction perpendicular to the road). When the flat side of the diamond (direction of diamond chain links) is vertical in the completed Sign, Sheeting is said to be at a 0° orientation. When the "primary groove line" (or, flat side of the diamond shape) is horizontal on the completed Sign, the Sheeting is said to be at a 90° orientation. See Figure 1 for details.

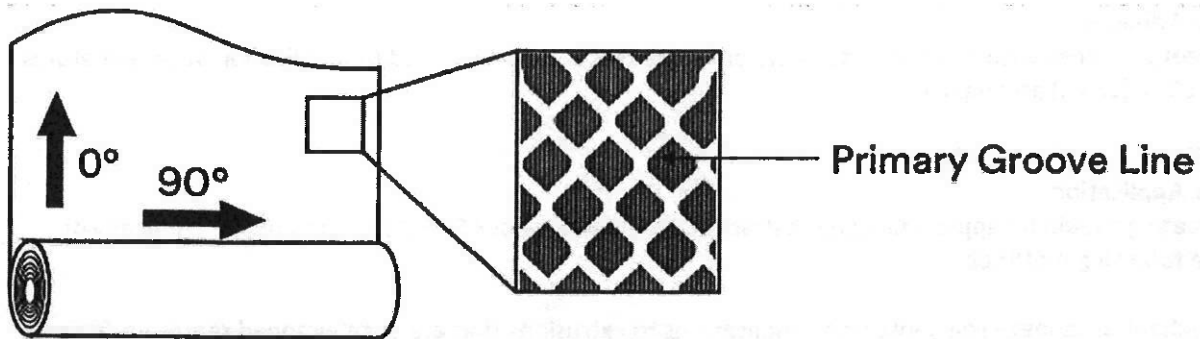


Figure 1. Primary groove line.

Unless Sign 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 sheeted such that the Sheeting direction is the same for all panels.

3 System of Matched Components

The Sheeting is compatible with a wide range of screen print and digital inks, translucent films, overlay films and other processing components.

4 Physical Properties

4.1 Fabrication Lines

The Sheeting manufacturing process results in periodic fabrication lines in the product, as illustrated in Figure 2. Fabrication lines may be noticeable in shop light but do not impact Sign functionality on the road, either in daylight or at night, under typical use conditions.

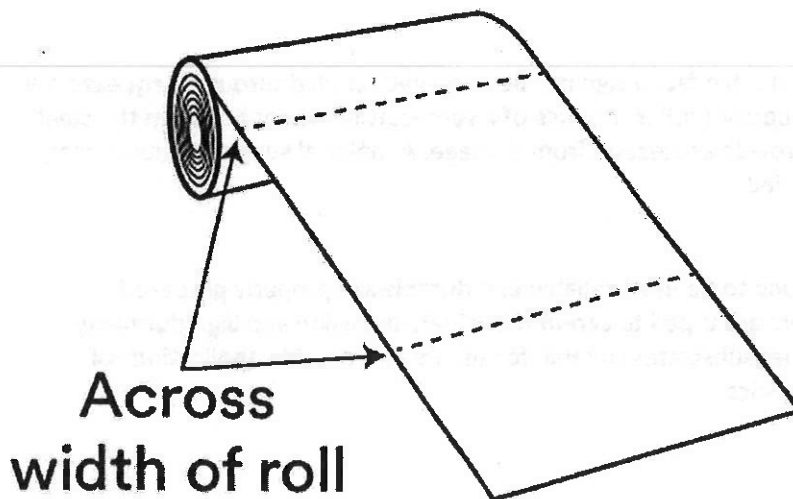


Figure 2. Fabrication lines

4.2 Adhesive

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

5 Sign Fabrication Methods

5.1 Application

Sheeting should be applied to Sign substrates at temperature of 65 °F (18 °C) and higher using any of the following methods:

Mechanical squeeze roll applicator - Applications to extrusions that are edge wrapped require sufficient softening of Sheeting. This can be accomplished by directing additional heat to the "next to last" edge roller. This practice may increase productivity and minimize cracking.

Application of Sheeting for complete Signs or backgrounds must be done using a roll laminator, either mechanical or hand driven.

5.2 Hand Application

Hand application is recommended for legend and copy only.

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. This is to prevent 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 with an unprotected steel bottom roller. The use of a semi-soft flat sheet between the steel roller and the applied Sign face will provide protection from damage. A material such as a rubber mat, tag board, or cardboard is recommended.

6 Substrates

For traffic Sign use, the substrates found to be most reliable and durable are properly prepared aluminum sheets and extrusions. Users are urged to carefully evaluate adhesion and Sign durability properties of all other substrates. Other substrates suitable for secure and durable applications of Sheeting have the following characteristics:

- Clean
- Smooth
- Flat
- Rigid
- Dimensionally stable

- Weather resistant
- Non-porous
- High surface energy (pass water break test)

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. Guide Sign extrusions may be edge wrapped. Flat panels and unwrapped extrusions must be carefully trimmed so that Sheeting sections on adjacent panels do not touch on assembled Signs.

Sheeting is 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.

7 Imaging

Diamond Grade prismatic Sheeting may be processed into traffic Signs using any of the imaging methods described below.

7.1 Digital Imaging

Sheeting is compatible with the HP Latex 360/365 printers in combination with HP 831/HP 871 Latex inks. This compatibility is backed with a warranty when printing guidelines are followed and ElectroCut Film 1170C Clear is applied over the finished graphics.

7.2 Screen Processing

Sheeting may be screen processed into traffic Signs using Process Colors Series 880I or Series 880N before or after mounting onto Sign substrates. Series 880I and 880N process colors can be screened at temperatures of 60-100 °F (16-38 °C) and at relative humidities of 20-50%. A P.E. 157 screen mesh with a fill pass is recommended. Clear coating is neither required nor recommended. Use of process colors series other than 880I or 880N is not recommended.

7.3 ElectroCut Film

ElectroCut Film Series 1170 may be used on Sheeting to provide transparent colored background copy for traffic control Signs.

7.4 Applying Cut-Out Copy

Diamond Grade Prismatic Sheeting cut-out copy may be applied to sheeting backgrounds to create Sign legends. Such cut-out copy may be applied directly to the background sheeting or in a demountable form. Direct applied copy must be cut at all panel seams and carefully trimmed back so that the Sheeting sections of adjacent panels do not touch one another on assembled Signs.

8 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.

8.1 Plotter Cutting

Programmable knife cut (electronic cutting):

1. Flat bed plotters can be used to either die cut or kiss 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 topfilm. After scoring, break apart individual copy or apply premask to retain spacing.

8.2 Other Cutting Methods

Sheeting may be hand cut or die cut one sheet at a time, and band sawed or guillotined in stacks. Cutting equipment such as guillotines and metal shears, which place pressure plates on the Sheeting when cutting, may damage the optics. Padding the pressure plate and easing it down onto the sheets being cut will significantly reduce damage. Maximum stack height for cutting Sheeting is 1 ½ inches, or 50 sheets.

9 Processing, Storage, and Packaging

Sheeting should be stored in a cool, dry area, preferably at 65-75 °F (18-24 °C) and 30-50% relative humidity, and applied within two years of date of manufacture. 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. Finished Signs and applied blanks should be stored on edge.

Avoid banding, crating, or stacking Signs. Package for shipment in accordance with commercially accepted standards to prevent movement and chafing. Store Sign packages indoors on edges.

Panels and finished Signs must remain dry during shipment and storage. If packaged Signs become wet, unpack immediately and allow Signs to dry.

10 Installation

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

11 Cleaning

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 Sign faces. Flush with water following washing. Do not use solvents to clean Signs.

12 Durability

The durability of the Sheeting will depend upon substrate selection and preparation, compliance with recommended application procedures, geographic area, exposure conditions, and maintenance. Maximum durability can be expected in applications subject to vertical exposure on stationary objects, when processed and applied to aluminum substrates prepared according to the manufacturer recommendations. The user must determine the suitability of any nonmetallic Sign backing for its intended use. Sign failures caused by substrate failures or improper surface preparations are not the responsibility of product provider. Application to unprimed, excessively rough or non-weather resistant surfaces, or exposure to severe or unusual conditions can shorten the performance lifetime of Sheeting. Signs that are in mountainous areas and covered by snow for prolonged periods may also have reduced durabilities. Atmospheric conditions in certain geographic areas may result in reduced durability.

Periodic Sign inspection and regular Sign replacement are strongly recommended in order to help Sign owners establish their own effective service life expectations.

13 Health and Safety Information

All health hazard, precautionary, and first aid statements found in the Safety Data Sheets (SDS), Article Information Sheets, and product labels of any materials for important health, safety, and environmental information shall be available upon request.

14 Warranty Information

14.1 Warranty

Contractor warrants to the manufacturer of the Sign ("Sign Manufacturer") that the Sheeting will meet the specifications described herein.

14.2 Warranty Terms and Conditions

- The Sheeting must be stored, processed, applied, and maintained as described in these specifications.
- A failure to meet the Warranty must be solely the result of design or manufacturing defect in the Sheeting, and not a result of (a) outside causes, including improper fabrication, handling, packing, storing, shipping, maintenance, or installation; (b) non-vertical applications where the Sign is more than +/- 10° from vertical; (c) use of any material or product not recommended by the manufacturer; (d) use of application equipment not recommended by the manufacturer; (e) failure of Sign substrate; (f) loss of adhesion due to incompatible or improperly prepared substrate; (g) exposure to chemicals, abrasion, or other mechanical damage; (h) snow burial or any other Sign burial; (i) collisions, vandalism, or malicious mischief; or (j) an act of God.
- Claims made under this warranty will be honored only if (a) the Sign is dated with the Fabrication Date using a permanent method (sticker, marker, metal stamp, etc.), (b) Contractor is notified in writing of the claim within thirty days of discovery, (c) Contractor is provided with the information reasonably required to validate the claim, and (d) Contractor is permitted to verify the cause of the failure.

14.4 Exclusive Limited Remedy

Valid claims under the Warranty will receive either the Sign Restoration or Materials Replacement as detailed in Table 4.

Table 4. Sheeting type, location, and type of limited remedy as a function of the age of Sign

Sheeting Type	Geographic Location of Sign	Limited Remedy Period [years from Fabrication Date]	
		Sign Restoration	Materials Replacement
4090, 4091, 4092, 4095, 4097, 4099	US & Canada	Up to 7 Years	Years 8-12
4081, 4083	Alabama, Arizona, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, South Carolina, and Texas	Up to 5 Years	Years 6-7
	Canada and US other than the above States	Up to 7 Years	Years 8-10
4084	US & Canada	---	Years 0-3

Sign Restoration

During the Sign Restoration period as provided in Table 4, if Sheeting is proven to not meet the Warranty, then the Sign Manufacturer's exclusive remedy, and the Contractor's sole obligation, at the Contractor's option, shall be that the Contractor, at its expense, will either refund the Sign Manufacturer's total original cost of the Sign, or refabricate the Sign, including (i) Sheeting and (ii) the

aluminum Sign substrate (as needed). However, the Contractor will not provide other hardware or labor to install the replacement Sign. The Fabrication Date of the replacement Sign will be considered to be the original Fabrication Date of the Sign it replaces under this Warranty.

Materials Replacement

During the Materials Replacement period as provided in Table 4, if Sheeting is proven to not meet the Warranty, then the Sign Manufacturer's exclusive remedy, and the Contractor's sole obligation, at the Contractor's option, shall be that the Contractor, at its expense, will either refund the Sign Manufacturer's total original cost of the Sheeting, or provide the necessary Sheeting quantity to restore the Sign's surface. The Contractor will not provide the substrate or any labor to refabricate or reinstall the Sign.

ElectroCut Film Series 1170

Description

ElectroCut Film Series 1170 is a durable, transparent, acrylic film coated with a transparent, pressure sensitive adhesive that is protected by a removable liner, available in the colors in Table 1.

Table 1. Product Codes by Color

Color	Product Code
Clear	1170C
Yellow	1171
Red	1172
Orange	1174
Blue	1175
Worboy Green*	1176
Green	1177
Black (Opaque)	1178
Brown	1179

*Standard green color for U.K., Australia, and New Zealand

Series 1170 is intended for use on Reflective Sheeting as part of a system of matched components for signing. Series 1170 has a clear pressure-sensitive adhesive compatible with all the following reflective sheetings used in permanent signing:

Advanced Engineer Grade Prismatic Series 7930

Engineer Grade Prismatic Series 3430

Engineer Grade Series 3290

High Intensity Prismatic Series 3930 and 3930TT

Diamond Grade Series 3990 and 3990TT

Diamond Grade DG3 Series 4000 and 4000TT

Diamond Grade Translucent Reflective Sheeting 4090T

ElectroCut Film 1170C Clear must be used with the following reflective sheetings:

Diamond Grade Prismatic Digital Sheeting 4090DS (White)

High Intensity Prismatic Digital Sheeting 3930DS (White)

Series 1170 is designed with a special film liner for kiss-cutting on electronic cutting machines. Rolls are available prepunched for sprocket fed cutters or unpunched for flatbed or friction fed cutters. The colored films in the Series 1170 are often used instead of silk screened inks to provide transparent colored background copy for retroreflective street name signs and other traffic control signs. Various film widths are available to fabricate single sign panels up to 48 inches wide. For single panel signs requiring more than a single piece of sheeting or for multipanel signs such as guide signs. For best color uniformity on a colored multipanel sign, all panels must be made from the same lot of Series 1170.

Properties

Transparent clear, yellow, red, orange, blue, worboy green, green, black (opaque), and brown versions of the Series 1170 applied to compatible retroreflective sheetings listed in the above section can be expected to provide performance comparable to the integrally colored version of the same reflective sheeting. The coefficient of retroreflection of a white sheeting overlaid with the Series 1170 depends primarily on the overlay film transparency and the coefficient of retroreflection of the white base sheeting. Series 1170 applied on the compatible microprismatic retroreflective sheetings listed in the above section according to these specification recommendations will yield chromaticity values within the chromaticity limits given in ASTM D4956-16.

Table 1 gives the resultant minimum and maximum coefficient of retroreflection (RA) values for each transparent Series 1170 film as a percentage of the RA of the white reflective base sheeting on which it is applied.

Table 2. Coefficient of retroreflection* (RA) after application of colored film Series 1170 versus the RA of the white base sheeting (expressed as %)

Film	Minimum (% of base sheeting)	Maximum (% of base sheeting)
1171 (Yellow)	60	80
1172 (Red)	14	24
1174 (Orange)	30	--
1175 (Blue)	6.5	20
1176 (Worboy Green)	8	14
1177 (Green)	13	20
1179 (Brown)	5	--

*RA measurements shall be made at 0.2° observation angle, -4° entrance angle, and 0° rotation, per ASTM E810.

Film Liner

Series 1170 films have a transparent film release liner designed to aid the cutting process and the removal of the film weed after cutting.

Storage

Store in a cool, dry area 65-75° F (18-24° C), 30-50% relative humidity, and use within one year from date of receipt.

Fabrication – Cutting and Application Procedures

Important Note: Read and follow the manufacturer's operating manual carefully for proper use of cutting equipment.

1. Adjust knife pressure to cut cleanly through the film and slightly score the liner. A 30° blade works best.
2. A clean cutting blade is required. To remove adhesive build-up use a soft cloth dampened with mineral spirits, isopropyl alcohol or Citrus Base Cleaner.
3. Avoid excessive flexing when handling film as this may cause film to release from the liner.
4. After cutting is complete, lay sheets flat, face to face, back to back. Always store sheets in this manner until the sheeting has been weeded and transfer tape has been applied to sheeting.

5. Use a stripping tool designed for weeding films that has a blunt (not a sharp) edge.
6. After weeding is completed, also store sheets flat, face to face and back to back, until transfer tape is applied.
7. **TPM-5 Clear Transfer Tape** is recommended for best results. SCPM-3 Application Tape is also satisfactory for use on small signs. Other transfer tapes are not recommended.
8. Transfer tape can be applied either by hand using a plastic squeegee or through a hand squeeze roll applicator (HSRA). If applying the transfer tape by hand, care must be taken to always squeegee from the center to the outside in both directions. If applying the transfer tape through the HSRA the air pressure must be at 30 psi to avoid stretching the premask during application, and the "lead" edge must be cut square and fed into the nip very carefully to avoid wrinkles in the Series 1170.
9. Film Series 1170 may be applied to the sheeting either before or after the sheeting has been applied to the substrate. Use of an HSRA is recommended to ensure satisfactory results. Use the "split liner method" – start in the middle of the sheet and remove half the liner to ensure proper alignment.
10. After film Series 1170 and sheeting have been applied, remove the transfer tape by carefully removing the tape at as low an angle as possible.
11. **IMPORTANT!** When the transfer tape has been removed, reroll the sign through the laminator to ensure good adhesion.
12. Excess or overhanging film Series 1170 should be trimmed using a sharp utility knife held at a 30° angle with the substrate.

Health and Safety Information

All health hazard, precautionary, and first aid statements found in the Safety Data Sheets (SDS), Article Information Sheets, and product labels of any materials for important health, safety, and environmental information shall be available upon request.

Warranty

Electronic Film Manufacturer's Replacement Obligation

Where it can be shown that retroreflective traffic signs with electronic cuttable film supplied and used according to the film manufacturer's recommendations have not met the performance requirements of these specifications, the film manufacturer shall cover restoration costs as provided in these specifications for the retroreflective sheeting when screen processed.

Clear Transfer Tape TPM524

Scope

This section covers Clear Transfer Tape, (3M TPM-5 or approved equal) designed to apply pre-spaced legends onto High Intensity Prismatic Sheeting.

Description

The Transfer Tape shall be clear, colorless film. The Transfer Tape shall resist stretching, wrinkling and air entrapment during hand application. The tape shall have adequate stiffness for handling of marking (4 sq. ft. or larger), intricate sign markings and for applications performed at high temperatures.

Adhesive

The overlay film shall have a pressure sensitive, transparent adhesive.

Application

The overlay film shall be applied to smooth, clean reflective sign surfaces when air and surface temperatures are above 60° (16° C). The Transfer Tape shall be applied using hand squeegee application.

Packaging and Storage

When supplied as roll goods, the overlay film shall be of good appearance, free from ragged edges, cracks and extraneous materials. The film shall be packed snugly in corrugated fiberboard cartons, in accordance with commercially accepted standards. Stored under normal conditions, the overlay film as furnished shall be suitable for use for minimum period of one (1) year.

Performance Requirements and obligations

Certification

The film manufacturer shall submit with each lot or shipment, a certification which states that the material supplied will meet all of the requirements listed above

Engineer Grade Reflective Sheeting Series 3200

Description

Engineer Grade Series 3200

Engineer Grade Reflective Sheeting Series 3200 meets ASTM D4956 Type I and is an enclosed lens, pressure sensitive adhesive-coated sheeting with an easy release liner, intended for production of non-critical traffic signs and pressure sensitive stickers.

Sheeting Colors:

Color Product Code

White 3290

Yellow 3271

Red 3272

Blue 3275

Green 3277

Brown 3279

Adhesive: Pressure-sensitive

Adhesive Color: Clear

Application Temperature: 65°F (18°C) minimum (sheeting and substrate)

Fabrication

For Series 3200 sheeting, temperature should be at least 65°F (18°C) or higher. If the sheeting temperature is less than 65°F (18°C), allow it to condition to 65°F – 75°F (18°C – 24°C) for at least 24 hours.

Best application will be achieved by using a motorized or hand operated squeeze roll applicator.

A. Cutting:

The sheeting may be hand cut, band sawed, guillotined, cold or hot die cut, and electronically cut.

B. Electronic Cutting Machines:

Users are encouraged to evaluate cutting procedures for their own equipment and shop conditions.

However, these general recommendations should be followed to ensure easy handling. There should be enough down force on the knife blade to slightly score the liner. The knife blade should be sharp and clean. Letters and characters should be a minimum height of three inches with a minimum stroke width of three eighths (3/8) of an inch.

C. Premasking/Prespacing

1. Premasked Markings: Use Application Tape SCPM-3.

2. Prespacing Markings: Use Prespacing Tape SCPS-2 or Application Tape SCPM-3.

Table A – Minimum Coefficient of Retroreflection
Candelas/Foot Candle/Square Foot
Candelas/Lux/Square Meter

Obs.'Angle	Ent Angle ²	White	Yellow	Red	Green	Blue	Brown
0.2	-4	70	50	14.0	9.0	4.0	1.0
0.2	+30	30	22	6.0	3.5	1.7	0.3
0.5	-4	30	25	7.5	4.5	2.0	0.3
0.5	+30	15	13	3.0	2.2	0.8	0.2

Reflectivity conforms to ASTM D 4956.

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.

Table B – CIE Chromaticity Coordinate Limits

Color	<u>x</u>	<u>y</u>	<u>x</u>	<u>y</u>	<u>x</u>	<u>y</u>	<u>x</u>	<u>y</u>	Reflectance Limit (Y)	
									Min	Max
White	.303	.300	.368	.366	.340	.393	.274	.329	27.0	
Yellow	.498	.412	.557	.442	.479	.520	.438	.472	15.0	45.0
Red	.648	.351	.735	.265	.629	.281	.565	.346	2.5	15.0
Blue	.140	.035	.244	.210	.190	.255	.065	.216	1.0	10.0
Green	.026	.399	.166	.364	.286	.446	.207	.771	3.0	12.0
Brown	.430	.340	.610	.390	.550	.450	.430	.390	1.0	9.0

Cleaning

Cleaning 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 sign face. Flush with water following washing. Do not use solvents to clean signs.

Storage and Shelf Life

Sheeting should be stored in a cool, dry area, preferably at 65-75°F (18-24°C) and 30-50% relative humidity and should be applied within one year of purchase. Rolls should be stored horizontally in the shipping carton. Partially used rolls should be returned to the shipping carton or suspended horizontally from a rod or pipe through the core. Unprocessed sheets should be stored flat. Unprinted sheeting may be stored by the fabricator for a period of up to one year and after printing, sign faces may be stored for an additional period of up to six months. Sheeting and sign faces must be stored in a clean area, free from excessive moisture and direct sunlight, with ambient temperatures of 85°F (29°C) or less.

Health and Safety Information

All health hazard, precautionary, and first aid statements shall be found in the Material Safety Data Sheet (MSDS), and/or product label of chemicals prior to handling or use. Also refer to MSDS for information about the volatile organic compound (VOC) content of chemical products. Consult local regulations and authorities for possible restrictions on product VOC content and/or VOC emissions.

4 General Performance Considerations

The performance and durability of 3M reflective sheeting will depend upon a number of factors including (but not limited to) substrate selection and preparation, compliance with recommended application procedures, sign placement, geographic area, exposure conditions, atmospheric conditions (e.g. fog, snow, rain), surface deposits (e.g. dirt, dew, frost), maintenance and age. Engineer grade reflective sheeting can be expected to provide satisfactory performance for five to seven years when processed with 3M matched component inks and films, depending upon climatic conditions of the installation.

Maximum durability of engineer grade reflective sheeting can be expected in applications subject to vertical exposure on stationary objects when processed and applied to properly prepared aluminum according to 3M recommendations provided in Information Folder 1.7 on Sign Base Preparation.

The user must determine the suitability of any nonmetallic sign backing for its intended use. Applications to unprimed, excessively rough or non-weather-resistant surfaces, or exposure to severe or unusual conditions can shorten the performance of such applications. Signs or stickers that are covered by snow or ice for prolonged periods, such as those in mountainous areas, may also have reduced durability.

Premium Protective Overlay Film Series 1160

Description

Premium Protective Overlay Film Series 1160 is designed as a high performance protective transparent overlay for use on signs made from Traffic Safety and Security Division sheetings, films, and images. Series 1160 has been specifically developed for use over signs made from compatible Diamond Grade and High Intensity Prismatic Sheeting, and system of matched components, and is recommended for use with these materials. Many types of defacement from vandalism can be cleaned from this film to substantially restore performance and appearance of the overlaid sign. Two configurations are available:

1160: with premask

1160A: without premask

Properties

A. Color and Transparency

Series 1160 is a clear, colorless film. Application of Series 1160 to a sign fabricated using the matched component systems will preserve the initial and retained minimum retroreflectance specified for the sheeting used to fabricate the sign.

B. Film

Series 1160 is a high performance fluoropolymer film that provides a barrier and resists staining from common graffiti including paints, permanent marker ink, lipstick, eggs and stickers and allows for easier clean-up.

C. Adhesive and Liner

Series 1160 utilizes a clear, transparent, and pressure sensitive adhesive and has an easily removable white paper liner.

D. Premask

To aid film handling, Series 1160 is provided with a white paper premask which is easily peeled away from the film after application. After removing the premask, reroll the sign through the laminator to ensure good adhesion.

Application

A. Use Conditions Before Overlaying Film

1. Air and substrate temperatures should be above 60°F (16°C).
2. Signs must be clean and screen printed inks completely dry.

B. Equipment

1. Mechanical squeeze roll applicator
2. Hand squeeze roll applicator
3. A laminating roll with a hardness of 35 durometer (Shore A) is recommended to minimize tenting of Series 1160 over direct apply copy or ElectroCut Film Series 1170.

NOTE: Application of 1160A Film is best accomplished using a mechanical squeeze roll applicator. Use extra care when handling this film since it is not supported with a premask.

C. Premask Film (1160)

1. Remove the premask AFTER film application to sign by lifting edge of premask with fingernail or knife and pulling premask back over itself at a very sharp angle using a steady, even tension.

Note: Edge trim BEFORE removing premask.

WARNING: Do not allow premask to be exposed to moisture. Premask must be removed before storage or shipment.

D. Trimming

1. Use a sharp cutting blade to trim film along edges. It may be helpful to grasp the edge of the unsupported overhanging film to create tension on that portion of the film while trimming.
2. The overhanging portion of the film on the TOP EDGE of the sign may be folded over smoothly and adhered to the back edge of the sign to minimize any water or dirt intrusion along the top edge of the sign. The backside of the sign must be properly cleaned before film is applied.

E. Additional Processing

1. DO NOT apply any inks, films, or sheetings in the form of copy or images over 1160 film since this film is designed to repel adhesion of such markings.

F. Splices

1. Creating film splices to overlay a sign is not recommended.

Packaging and Storage

A. Store film in a cool, dry area, preferably 65- 75°F and 30-50 percent relative humidity.

- B. Faces and signs covered with overlay film do not require slipsheeting. Follow recommendations given in Information Folder 1.11 regarding proper storage, packaging, handling, shipping, and installation.
- C. Use within one year from date of receipt.

Cleaning

A. Materials

1. To remove normal dirt accumulation from signs, use a soft cloth and mild detergent and water solution followed by thorough water rinse.
2. To remove other contaminations such as graffiti defacement, use commercially available cleaning systems recommended for this purpose. Important: Before using any cleaning materials, read and carefully follow product label use and safety instructions. Test the cleaner on a small area of the sign to determine its suitability and to be sure it does not cause any unwanted results or damage to the performance of the sign. Avoid the use of formulations containing strong polar solvents such as ketones (acetone, methyl ethyl ketone) or methylene chloride (dichloro methane) and other chlorinated solvents.
A cleaner such as Citrus Cleaner can be effective for removal of common types of defacement such as from permanent marking pens, eggs, and stickers. A solvent such as isopropyl alcohol (IPA), or a 50/50 blend of IPA and xylene can be effective in removing paints and lacquers. Commercially available cleaners can also be highly effective. Although Series 1160 is resistant to strong solvents, prolonged exposure to solvents can result in permanent sign damage.
3. A pressure sensitive tape such as SCPM-3 also may be effective in removing certain paints and stickers. Simply roll or squeegee the tape firmly over the defaced area and carefully lift away the tape with the defacement from the overlay. Small amounts of residual defacement may require cleaning solutions as stated above to remove small areas that the tape method did not remove adequately. The sign needs to be completely dry for this method to be effective.
4. Always use soft cloths. Do NOT use abrasive brushes, scouring pads or implements to scrape defacement from sign as these will likely damage the sign permanently.

Basic Product Warranty and Limited Remedy

Premium Protective Overlay Film Series 1160 ("Product") 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. If the Product is proven not to have met the Basic Warranty on its shipment date, then a buyer's exclusive remedy, and the Contractor's sole obligation, will be refunded or replacement of the sheeting.

General Surface Testing

Premium Protective Overlay Film Series 1160, when used according to the recommendation of the manufacturer, can be expected to provide the same effective field performance as the sheeting on which it is applied. Series 1160 is designed to enable signs to be cleaned from many common types of defacement caused by vandalism. The film does not prevent defacement but allows the sign to be cleaned in many situations using recommended and conventional cleaners such that the performance and appearance of the original sign is substantially restored. This would include the occasional removal of such markings as common household spray paints, lipstick, permanent pen, eggs, and/ or promotional stickers. Use of sharp implements, abrasive devices or certain types of strong and or corrosive chemicals to either deface the sign or used against recommendations to attempt to clean the sign could result in permanent damage to the overlay film and underlying sign which could severely reduce the performance expectation of the original sign. This overlay film is not intended to provide sign protection from impact, cutting, gouging, or pulling of the overlay film from the sign or from the use of strong chemicals that may damage the film and/or the underlying sign. Use of a flame or other high heat

BID SPECIFICATION BID # 50-130715

source and other such extreme abuse of overlayed signs would very likely severely reduce or destroy the sign's effectiveness permanently.

Compliance

Failure to comply with the requirements of these specifications shall be cause for cancellation of annual contract if applicable. ***Jefferson Parish requires sign dating of all signs at the time of application. That date constitutes the start of field performance obligation period.***

Products will be accepted as product series number stated above or approved equal.

All products shall be warranted that they are manufactured in accordance with the applicable material specifications and are free from defects in workmanship and materials. Any defective items sold under this contract shall be replaced at no cost to the purchaser.

Material deliveries for bidding purposes, bid prices shall reflect no minimum delivery quantity.

The bidder is not to pre-ship any quantity until authorized by purchase order.

The quantities shown on the proposal guide are approximate quantities to be acquired by Jefferson Parish over a two (2) year period. Actual usage will be on an "as needed" basis.

All pertinent technical specifications and literature must be included in the bid.

Successful bidder will be allowed 30 days, from the date of contract execution, to stock and maintain sufficient quantities of material on hand to meet the needs of Jefferson Parish. Vendor will ship requested quantities (as indicated on purchase order) within seven (7) calendar days.

Bid shall include all freight and delivery costs to Jefferson Parish.

DATE: 5/19/2020
BID NO.: 50-00130715

INVITATION TO BID
THIS IS NOT AN ORDER

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JEFFERSON PARISH

PURCHASING DEPARTMENT
P.O. BOX 9
GRETN, LA. 70054-0009
504-364-2678

BUYER: DREAMEY@jeffparish.net

BIDS WILL BE RECEIVED IN THE WEST BANK PURCHASING DEPT, SUITE 4400, JEFFERSON PARISH GENERAL GOVERNMENT BUILDING, 200 DERBIGNY STREET, GRETN, LA 70053 UNTIL 2:00 PM, 6/04/2020 AND PUBLICLY OPENED THEREAFTER.

For convenience, bidders may also submit bids in the East Bank Purchasing Department, Suite 404, Jefferson Parish Joseph S. Yenni Building, 1221 Elmwood Park Blvd., Jefferson LA 70123. However, if submitting bids on the day of bid opening, bidders must submit at the West Bank location only. All bids will be publicly opened at the West Bank location.

At no charge, bidders may also submit via Jefferson Parish's electronic procurement page by visiting www.jeffparishbids.net to register for this free site. Additional instructions are included in the text box highlighting electronic procurement.

LATE BIDS WILL NOT BE ACCEPTED

Unless submitting via online (see Page 3), each bid must be submitted in a sealed envelope bearing on the outside; the name of the Bidder, his address, and the name of the project for which the bid is submitted and the bid number.

NOTE: ONLY BIDS WRITTEN IN INK OR TYPEWRITTEN, AND PROPERLY SIGNED BY A MEMBER OF THE FIRM OR AUTHORIZED REPRESENTATIVE, WILL BE ACCEPTED. PENCIL AND/OR PHOTOSTATIC FIGURES OR SIGNATURES SHALL RESULT IN BID REJECTION.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

THE FOLLOWING INSTRUCTIONS APPLY TO ALL BIDS

All bids submitted are subject to these instructions and general conditions and any special conditions and specifications contained herein, all of which are made part of this bid proposal reference. By submitting a bid, vendor agrees to comply with all provisions of Louisiana Law as well be in compliance with the Jefferson Parish Code of Ordinances, Louisiana Code of Ethics, applicable Jefferson Parish ethical standards and Jefferson Parish Resolution No. 113646 and/or Resolution No. 113647.

Jefferson Parish adheres to the Louisiana Code of Governmental Ethics, contained in Louisiana Revised Statutes Annotated, R.S. 42:1101, et seq. Vendor/Proposer by this submission, warrants that there are no "conflicts of interest" related to this procurement that would violate applicable Louisiana Law. Violation of the Louisiana Code of Governmental Ethics may result in rescission of contract, permit or licenses, and the imposition of fines and/or penalties, without contractual liability to the public in accordance with applicable law.

All vendors submitting bids should register as a Jefferson Parish vendor if not already yet registered. Registration forms may be downloaded from <http://purchasing.jeffparish.net> and by clicking on Vendor Information. Current W-9 forms with respective Tax Identification numbers and vendor applications may be submitted at any time; however, if your company is not registered and/or a current W-9 form is not on file, vendor registration is mandatory. Vendors may experience a delay in payment if your company is not a registered vendor with Jefferson Parish.

All quotations shall be based on F.O.B. Agency warehouse or job site, anywhere within the Parish as designated by the Purchasing Department. This provision does not apply to public works projects

JEFFERSON PARISH requires all products to be new (current) and all work must be performed according to standard practices for the project. Unless otherwise specified, no aftermarket parts will be accepted. Unless otherwise specified, all workmanship and materials must have at least one (1) year guaranty, in writing, from the date of delivery and/or acceptance of the project. Any deviations or alterations from the specifications must be indicated and/or supporting documentation supplied with bid submission.

Bidders should submit all questions in writing via email to the buyer's email address as indicated above, no later than Five (5) working days prior to the bid opening. Bid numbers should be mentioned in all requests. If submitting online, vendors may send questions via the E-Procurement site no later than Five (5) working days prior to the bid opening.

If this bid requires a pre-bid conference (see Additional Requirements section), bidders are advised that such conference will be held to allow bidders the opportunity to identify any discrepancies in the bid specifications and seek further clarification regarding instructions. The Purchasing Department will issue a written response to bidders' questions in the form of an Addendum. Please note that all official communication will be expressed in the form of an addendum.

Visit our website at [HTTP://PURCHASING.JEFFPARISH.NET](http://PURCHASING.JEFFPARISH.NET)

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All formal Addenda require written acknowledgement on the bid form by the bidder. Failure to acknowledge an Addendum on the bid form shall cause the bid to be rejected. JEFFERSON PARISH reserves the right to award bid to next lowest responsive and responsible bidder in this event.

JEFFERSON PARISH will accept one price for each item unless otherwise indicated. Two or more prices for one item will result in bid rejection. Bidders are required to complete, sign and return the bid form and/or complete and return the associated line item pricing forms as indicated. Vendors must not alter the bid forms. Doing so will cause the bid to be rejected.

A corporate resolution or written evidence of the individual signing the bid having such authority must be submitted with the bid. Failure to comply will cause bid to be rejected. For corporate entities, such written evidence may be a printout of the Louisiana Secretary of State's website listing the signatory as an officer. Such printout shall be included with the bid submission. Bids submitted by Owners or Sole Proprietorships must include certification that he or she owns the entity for which the bid is signed. This documentation must be submitted with the bid. Failure to do so will result in bid rejection.

NOTE: A sample corporate resolution can be downloaded from our website <http://purchasing.jeffparish.net> or you may provide your own document. A sample certification of sole proprietorship can also be downloaded from our website <http://purchasing.jeffparish.net> or you may provide your own document.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

A. AWARD OF CONTRACT: JEFFERSON PARISH reserves the right to award contracts or place orders on a lump sum or individual item basis, or such combination, as shall in its judgment be in the best interest of JEFFERSON PARISH. Every contract or order shall be awarded to the LOWEST RESPONSIVE and RESPONSIBLE BIDDER, taking into consideration the CONFORMITY WITH THE SPECIFICATIONS and the DELIVERY AND/OR COMPLETION DATE. SPLIT AWARDS MADE TO SEVERAL VENDORS WILL ONLY BE GRANTED TO THOSE DEEMED RESPONSIVE AND RESPONSIBLE.

All bid prices shall remain valid for 45 days. Jefferson Parish and the lowest responsive and responsible bidder(s) by mutual written consent may mutually agree to extend the deadline for award by one (1) or more extensions of thirty (30) calendar days.

PROTESTS: Only those vendors that submit bids in response to this solicitation may protest any element of the procurement, in writing to the Director of the Purchasing Department. Written protest must be received within 48 hours of the release of the bid tabulation by the Purchasing Department. After consultation, the Parish Attorney's Office will then respond to protests in writing. (For more information, please see Chapter 2, Article VII, Division 2, Sec. 2-914.1 of the Jefferson Parish Code of Ordinances.)

PREFERENCE: Unless federal funding is directly spent by Jefferson Parish for this purchase, preference is hereby given to materials, supplies, and provisions produced, manufactured or grown in Louisiana, quality being equal to articles offered by competitors outside the state. "LSA - R.S. 38:2251-2261"

B. USE OF BRAND NAMES AND STOCK NUMBERS: Where brand names and stock numbers are specified, it is for the purpose of establishing certain minimum standards of quality. Bids may be submitted for products of equal quality, provided brand names and stock numbers are specified. Complete product data may be required prior to award.

C. CANCELLATION OF CONTRACT: JEFFERSON PARISH reserves the right to cancel all or any part if not shipped promptly. No charges will be allowed for parking or cartage unless specified in quotation. The order must not be filled at a higher price than quoted. JEFFERSON PARISH reserves the right to cancel any contract at anytime and for any reason by issuing a THIRTY (30) day written notice to the contractor.

For good cause and as consideration for executing a contract with Jefferson Parish, vendor conveys, sells, assigns and transfers to Jefferson Parish or its assigns all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of Louisiana, relating to the particular good or services purchased or acquired by Jefferson Parish.

D. PRICES: Jefferson Parish is exempt from paying sales tax under LSA-R.S. 47:301 (8)(c). All prices for purchases by Jefferson Parish of supplies and materials shall be quoted in the unit of measure specified and unless otherwise specified, shall be exclusive of state and Parish taxes. The price quoted for work shall be stated in figures. In the event there is a difference in unit prices and totals, the unit price shall prevail.

Quantities listed are for bidding purposes only. Actual requirements may be more or less than quantities listed.

Bidders are not to exclude from participation in, deny the benefits of, or subject to discrimination under any program or activity, any person in the United States on the grounds of race, color, national origin, or sex; nor discriminate on the basis of age under the Age Discrimination Act of 1975, or with respect to an otherwise qualified handicapped individual as provided in Section 504 of the Rehabilitation Act of 1973, or on the basis of religion, except that any exemption from such prohibition against discrimination on the basis of religion as provided in the Civil Rights Act of 1964, or Title VI and VII of the Act of April 11, 1968, shall also apply. This assurance includes compliance with the administrative requirements of the Revenue Sharing final handicapped discrimination provisions contained in Section 51.55 (c), (d), (e), and (k)(5) of the Regulations. New construction or renovation projects must comply with Section 504 of the 1973 Rehabilitation Act, as amended, in accordance with the American National Standard Institute's specifications (ANSI A17.1-1961).

Jefferson Parish and its partners as the recipients of federal funds are fully committed to awarding a contract(s) to firm(s) that will provide high quality services and that are dedicated to diversity and to containing costs. Thus, Jefferson Parish strongly encourages the involvement of minority and/or woman-owned business enterprises (DBE's, including MBE's, WBE's and SBE's) to stimulate participation in procurement and assistance programs.

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INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

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The purpose and intention of this invitation to bid is to afford all suppliers an equal opportunity to bid on all construction, maintenance, repair, operating supplies and/or equipment listed in this bid proposal. JEFFERSON PARISH WILL ACCEPT ONE BID ONLY FROM EACH VENDOR. Items bid must meet specifications.

Advertised bids will be tabulated and a copy of the tabulation will be forwarded to each responding bidder.

IN ACCORDANCE WITH STATE REGULATIONS JEFFERSON PARISH OFFERS ELECTRONIC PROCUREMENT TO ALL VENDORS

This electronic procurement system allows vendors the convenience of reviewing and submitting bids online.

This is a secure site and authorized personnel have limited read access only. Bidders are encouraged to submit electronically using this free service; while the website accepts various file types, one single PDF file containing all appropriate and required bid documents is preferred. Bidders submitting uploaded images of bid responses are solely responsible for clarity. If uploaded images/documents are not legible, then bidder's submission will be rejected. Please note all requirements contained in this bid package for electronic bid submission.

Please visit our E-Procurement Page at www.jeffparishbids.net to register and view Jefferson Parish solicitations. For more information, please visit the Purchasing Department page at <http://purchasing.jeffparish.net>.

The general specifications for construction projects and the purchase of materials, services and/or supplies are those adopted by the JEFFERSON PARISH Council by Resolution No. 113646 or 113647 dated 12/09/09. The general conditions adopted by this resolution shall be considered as much a part of this document as if they were written wholly herein. A copy may be obtained from the Office of the Parish Clerk, Suite 6700, Jefferson Parish General Government Building, 200 Derbigny Street, Gretna, LA 70053. You may also obtain a copy by visiting the Purchasing Department webpage at <http://purchasing.jeffparish.net> and clicking on Online Forms.

ADDITIONAL REQUIREMENTS FOR THIS BID

PLEASE MATCH THE NUMBERS PRINTED IN THIS BOX WITH THE CORRESPONDING INSTRUCTIONS BELOW.

10,12,13,15

1. All bidders must attend the MANDATORY pre-bid conference and will be required to sign in and out as evidence of attendance. In accordance with LSA R.S. 38:2212(I), all prospective bidders shall be present at the beginning of the MANDATORY pre-bid conference and shall remain in attendance for the duration of the conference. Any prospective bidder who fails to attend the conference or remain for the duration shall be prohibited from submitting a bid for the project.
2. Attendance to this pre-bid conference is optional. However, failure to attend the pre-bid conference shall not relieve the bidder of responsibility for information discussed at the conference. Furthermore, failure to attend the pre-bid conference and inspection does not relieve the successful bidder from the necessity of furnishing materials or performing any work that may be required to complete the work in accordance with the specification with no additional cost to the owner.
3. Contractor must hold current applicable JEFFERSON PARISH licenses with the Department of Inspection and Code Enforcement. Contractor shall obtain any and all permits required by the JEFFERSON PARISH Department of Inspection and Code Enforcement. The contractor shall be responsible for the payment of these permits. All permits must be obtained prior to the start of the project. Contractor must also hold any and all applicable Federal and State licenses. Contractor shall be responsible for the payment of these permits and shall obtain them prior to the start of the project.
4. A LA State Contractor's License will be required in accordance with LSA R.S. 37-2150 et. seq. and such license number will be shown on the outside of the bid envelope. Failure to comply will cause the bid to be rejected. Additionally if submitting the bid electronically, then the license number must be entered in the appropriate field in the Electronic Procurement system. Failure to comply will cause the bid to be rejected.
5. It is the bidder's responsibility to visit the job site and evaluate the job before submitting a bid.
6. Job site must be clean and free of all litter and debris daily and upon completion of the contract. Passageways must be kept clean and free of material, equipment, and debris at all times. Flammable material must be removed from the job site daily because storage will not be permitted on the premises. Precautions must be exercised at all times to safeguard the welfare of JEFFERSON PARISH and the general public.

INSTRUCTIONS FOR BIDDERS AND GENERAL CONDITIONS

7. **PUBLIC WORKS BIDS:** All awards for public works in excess of \$5,000.00 will be reduced to a formal contract which shall be recorded at the contractor's expense with the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish of Jefferson. A price list of recordation costs may be obtained from the Clerk of Court and Ex-Officio Recorder of Mortgages for the Parish of Jefferson. All awards in excess of \$25,000.00 will require both a performance and a payment bond. Unless otherwise stated in the bid specifications, the performance bond requirements shall be 100% of the contract price. Unless otherwise state in the bid specifications, the payment bond requirements shall be 100% of the contract price. Both bonds shall be supplied at the signing of the contract.
8. **NON-PUBLIC WORKS BIDS:** A performance bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. The performance bond shall be supplied at the signing of the contract.
9. **NON-PUBLIC WORKS BIDS:** A payment bond will be required for this bid. The amount of the bond will be 100% of the contract price unless otherwise indicated in the specifications. The payment bond shall be supplied at the signing of the contract.
10. All bidders must comply with the requirements stated in the attached "Standard Insurance Requirements" sheet attached to this bid solicitation. Failure to comply with this instruction will result in bid rejection.
11. A bid bond will be required with bid submission in the amount of 5% of the total bid, unless otherwise stated in the bid specifications. Acceptable forms shall be limited to cashier's check, certified check, or surety bid bond. All sureties must be in original format (no copies) If submitting a bid online, vendors must submit an electronic bid bond through the respective online clearinghouse bond management system(s) as indicated in the electronic bid solicitation on Central Auction House. No scanned paper copies of any bid bond will be accepted as part of the electronic bid submission.
12. This is a requirements contract to be provided on an as needed basis. JEFFERSON PARISH makes no representations on warranties with regard to minimum guaranteed quantities unless otherwise stated in the bid specifications.
13. Freight charges should be included in total cost when quoting. If not quoted FOB DELIVERED, freight must be quoted as a separate item. Bid may be rejected if not quoted FOB DELIVERED or if freight charges are not indicated on bid form.
14. **PUBLIC WORKS BIDS - Completed, Signed and Properly Notarized Affidavits Required;** This applies to all solicitations for construction, alteration or demolition of public buildings or projects, in conformity with the provisions contained in LSA-RS 38:2212.9, LSA-RS 38:2212.10, LSA-RS 38:2224, and Sec 2-923.1 of the Jefferson Parish Code of Ordinances. For bidding purposes, all bidders must submit with bid submission COMPLETED, SIGNED and PROPERLY NOTARIZED Affidavits, including: Non-Collusion Affidavit, Non-Collusion Affidavit, Campaign Contribution Affidavit, Debt Disclosures Affidavit and E-Verify Affidavit. For the convenience of vendors, all affidavits have been combined into one form entitled PUBLIC WORKS BID AFFIDAVIT. This affidavit must be submitted in its original format, and without material alteration, in order to be compliant and for the bid to be considered responsive. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid, however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.
15. **NON PUBLIC WORK BIDS - Completed, Signed and Properly Notarized Affidavits Required** in conformity with the provisions contained in LSA - RS 38:2224 and Sec 2-923.1 of the Jefferson Parish Code of Ordinances. For bidding purposes, all bidders must submit with bid submission COMPLETED, SIGNED and PROPERLY NOTARIZED Affidavits, including: Non-Collusion Affidavit, Debt Disclosures Affidavit and Campaign Contribution Affidavit. For the convenience of vendors, all affidavits have been combined into one form entitled NON PUBLIC WORKS BID AFFIDAVIT. This affidavit must be submitted in its original format, and without material alteration, in order to be compliant and for the bid to be considered responsive. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid, however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.
16. The ensuing contract for this bid solicitation may be eligible for FEMA reimbursement and/or Federal funding/reimbursement. As such, the referenced appendix will be applicable accordingly and shall be considered a part of the bid documents. All applicable certifications must be duly completed, signed and submitted with bid submission. Failure to submit applicable certifications with bid submission will result in bid rejection.
17. For this project, the Contractor shall not pay any state or local sales or use taxes on materials and equipment which are affixed and made part of the immovable property of the project or which permanently incorporated in the project (hereinafter referred to as "applicable materials and equipment"). All purchases of applicable materials or equipment shall be made by the contractor on behalf of and as the agent of Jefferson Parish (Owner), a political subdivision of the State of Louisiana. No state and local sales and use taxes are owned on applicable materials and equipment under the provisions of Act 1029 of the 1991 Regular Session - Louisiana Revised Statute 47:301(8)(c). Owner will furnish contractor a certificate form which certifies that Owner is not required to pay such state or local sales and use taxes, and contractor shall furnish a copy of such certificate to all vendors or suppliers of the applicable materials and equipment

It shall be the duty of every parish officer, employee, department, agency, special district, board, and commission: and the duty of every contractor, subcontractor, and licensee of the parish, and the duty of every applicant for certification of eligibility for a parish contract or program, to cooperate with the Inspector General in any investigation, audit, inspection, performance review, or hearing pursuant to JPCO 2-155.10(19). By signing this document, every corporation, partnership, or person contracting with PARISH, whether by cooperative endeavor, intergovernmental agreement, bid, proposal, application or solicitation for a parish contract, and every application for certification of eligibility for a parish contract or program, attests that it understands and will abide by all provisions of JPCO 2-155.10.

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BID NO.: 50-00130715

BID FORM
Non Public Works

All Public Work Projects are required to use the Louisiana Uniform Public Work Bid Form

All prices must be held firm unless an escalation provision is requested in this bid. Jefferson Parish will allow one escalation during the term of the contract, which may not exceed the U.S. Bureau of Labor Statistics National Index for all Urban Consumers, unadjusted 12 month figure. The most recently published figure issued at the time an adjustment is requested will be used. A request must be made in writing by the vendor, and the escalation will only be applied to purchases made after the request is made.

Are you requesting an escalation provision?

YES X NO _____

MAXIMUM ESCALATION PERCENTAGE REQUESTED 3 or less %

INITIAL BID PRICES WILL REMAIN FIRM THROUGH THE DATE OF expiration of the first year of the contract.

For the purposes of comparison of bids when an escalation provision is requested, Jefferson Parish will apply the maximum escalation percentage quoted by the bidder to the period to which it is applied in the bid. The initial price and the escalation will be used to calculate the total bid price. It will be assumed, for comparison of prices only, that an equal amount of material or labor is purchased each month throughout the entire contract.

DELIVERY: FOB JEFFERSON PARISH

INDICATE DELIVERY DATE ON EQUIPMENT AND SUPPLIES

20-30 days** see Qualifications document

LOUISIANA CONTRACTOR'S LICENSE NO.: (if applicable) _____

THIS SECTION MUST BE COMPLETED BY BIDDER:

FIRM NAME: 3M Company

ADDRESS: 3M Center, Bldg. 225-4N-14

CITY, STATE: St. Paul, MN ZIP: 55144

TELEPHONE: (800) 553-1380 FAX: (800) 591-9293

EMAIL ADDRESS: tbidgroup@mmm.com

In the event that addenda are issued with this bid, bidders MUST acknowledge all addenda on the bid form. Bidder must acknowledge receipt of an addendum on the bid form as indicated. Failure to acknowledge any addendum on the bid form will result in bid rejection.

Acknowledge Receipt of Addenda: NUMBER: 1- received

NUMBER: 2- received

NUMBER: _____

NUMBER: _____

TOTAL PRICE OF ALL BID ITEMS: \$ 117,662.50 with 3M 3200 product, \$117,162.50 with 3M 3430 product

AUTHORIZED
SIGNATURE: *Susan Broin*

Susan Broin

Printed Name

TITLE: Proposal and Contracts Manager

SIGNING INDICATES YOU HAVE READ AND COMPLY WITH THE INSTRUCTIONS AND CONDITIONS.

NOTE: All bids should be returned with the BID NUMBER and BID OPENING DATE indicated on the outside of the envelope submitted to the Purchasing Department.

DATE: 5/19/2020

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INVITATION TO BID FROM JEFFERSON PARISH - continued

BID NO.: 50-00130715

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
1	40,000.00	SQFT	<p>TWO YEAR CONTRACT FOR REFLECTIVE SHEETING FOR THE JEFFERSON PARISH TRAFFIC ENGINEERING DIVISION.</p> <p>0010 DIAMOND GRADE REFLECTIVE SHEETING WITH PRESSURE SENSITIVE ADHESIVE 3M 4000 series SERIES 4000 OR APPROVED EQUAL</p> <p>COLOR SERIES: WHITE 4090 YELLOW 4091 RED 4092 BLUE 4095 GREEN 4097 BROWN 4099</p>	\$1.72/sq ft	\$68,800.00
2	10,000.00	SQFT	<p>0020 DIAMOND GRADE REFLECTIVE SHEETING WITH PRESSURE SENSITIVE ADHESIVE 3M 4000 series SERIES 4000 OR APPROVED EQUAL</p> <p>COLOR SERIES FLOURESCENT: FLOURESCENT YELLOW - FY 4081 FLOURESCENT YELLOW GREEN - FYG 4083 FLOURESCENT ORANGE - FO 4084</p>	\$1.72/sq ft	\$17,200.00
3	30,000.00	SQFT	<p>0030 ELECTOCUT FILM WITH PRESSURE SENSITIVE ADHESIVE 3M 1170 series SERIES 1170 OR APPROVED EQUAL</p> <p>COLOR SERIES: CLEAR 1170C YELLOW 1171 RED 1172 ORANGE 1174 BLUE 1175 GREEN 1177 BLACK 1178 BROWN 1179</p> <p>ALL OF THE ABOVE ELECTRONIC CUTTABLE FILM IS TO BE NON-PERFORATED FOR USE IN FRICTION FEED ELECTRONIC CUTTING DEVICES</p>	\$0.67/sq ft	\$20,100.00
4	30,000.00	SQFT	<p>0040 CLEAR TRANSFER TAPE SERIES TPM5 OR APPROVED EQUAL 3M TPM5 FOR USE WITH ELECTROCUT FILM SERIES 1170</p> <p>THE ABOVE TRANSFER TAPE IS USED FOR PURPOSES OF PRESPACING AND TRANSFERRING ELECTRONIC CUTTABLE FILM.</p>	\$0.25/sq ft	\$7,500.00
5	5,000.00	SQFT	0050 ENCLOSED LENS PRESSURE SENSITIVE ADHESIVE COATED REFLECTIVE SHEETING		

DATE: 5/19/2020

Page 7

INVITATION TO BID FROM JEFFERSON PARISH - continued

BID NO.: 50-00130715

SEALED BID

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
6	250.00	SQFT	3M SERIES 3200 OR APPROVED EQUAL 3M 3200, 3M 3430 ADVANCED SIZES: 24", 30", 36", 48" WIDTH	3200- \$0.75/sq ft	\$3,750.00
			COLOR SERIES: WHITE 3290 YELLOW 3271 RED 3272 BLUE 3275 GREEN 3277 BROWN 3279	3430- \$0.65/sq ft	\$3,250.00
			0060 CLEAR PROTECTIVE OVERLAY FILM SERIES 1160 OR APPROVED EQUAL 3M 1600 **QUANTITIES WILL BE PURCHASED BY SQUARE FOOTAGE AND INVOICED AS SUCH**	\$1.25/sq ft	\$312.50

CORPORATE RESOLUTION

PLEASE SEE POWER OF ATTORNEY DOCUMENT and QUALIFICATIONS DOCUMENTS 

EXCERPT FROM MINUTES OF MEETING OF THE BOARD OF DIRECTORS OF

INCORPORATED.

AT THE MEETING OF DIRECTORS OF _____
INCORPORATED, DULY NOTICED AND HELD ON _____,
A QUORUM BEING THERE PRESENT, ON MOTION DULY MADE AND SECONDED. IT
WAS:

RESOLVED THAT _____, BE AND IS HEREBY
APPOINTED, CONSTITUTED AND DESIGNATED AS AGENT AND ATTORNEY-IN-
FACT OF THE CORPORATION WITH FULL POWER AND AUTHORITY TO ACT ON
BEHALF OF THIS CORPORATION IN ALL NEGOTIATIONS, BIDDING, CONCERNS
AND TRANSACTIONS WITH THE PARISH OF JEFFERSON OR ANY OF ITS AGENCIES,
DEPARTMENTS, EMPLOYEES OR AGENTS, INCLUDING BUT NOT LIMITED TO, THE
EXECUTION OF ALL BIDS, PAPERS, DOCUMENTS, AFFIDAVITS, BONDS, SURETIES,
CONTRACTS AND ACTS AND TO RECEIVE ALL PURCHASE ORDERS AND NOTICES
ISSUED PURSUANT TO THE PROVISIONS OF ANY SUCH BID OR CONTRACT, THIS
CORPORATION HEREBY RATIFYING, APPROVING, CONFIRMING, AND ACCEPTING
EACH AND EVERY SUCH ACT PERFORMED BY SAID AGENT AND ATTORNEY-IN-
FACT.

I HEREBY CERTIFY THE FOREGOING TO BE
A TRUE AND CORRECT COPY OF AN
EXCERPT OF THE MINUTES OF THE ABOVE
DATED MEETING OF THE BOARD OF
DIRECTORS OF SAID CORPORATION, AND
THE SAME HAS NOT BEEN REVOKED OR
RESCINDED.

SECRETARY-TREASURER

DATE

Non-Public Works Bid Affidavit Instructions

- Affidavit is supplied as a courtesy to Affiants, but it is the responsibility of the affiant to insure the affidavit they submit to Jefferson Parish complies, in both form and content, with federal, state and parish laws.
- Affidavit must be signed by an authorized representative of the entity or the affidavit will not be accepted.
- Affidavit must be notarized or the affidavit will not be accepted.
- Notary must sign name, print name, and include bar/notary number, or the affidavit will not be accepted.
- Affiant **MUST** select either A or B when required or the affidavit will not be accepted.
- Affiants who select choice A must include an attachment or the affidavit will not be accepted.
- If both choice A and B are selected, the affidavit will not be accepted.
- Affidavit marked N/A will not be accepted.
- It is the responsibility of the Affiant to submit a new affidavit if any additional campaign contributions are made after the affidavit is executed but prior to the time the council acts on the matter.

Instruction sheet may be omitted when submitting the affidavit

Non-Public Works Bid

AFFIDAVIT

STATE OF MINNESOTA

PARISH/COUNTY OF RAMSEY

BEFORE ME, the undersigned authority, personally came and appeared: Steven
Frampton, (Affiant) who after being by me duly sworn, deposed and said that
he/she is the fully authorized representative of 3M Company (Entity),
the party who submitted a bid in response to Bid Number 50-13715, to the Parish of
Jefferson.

Affiant further said:

Campaign Contribution Disclosures

(Choose A or B, if option A is indicated please include the required
attachment):

Choice A _____ Attached hereto is a list of all campaign contributions, including
the date and amount of each contribution, made to current or
former elected officials of the Parish of Jefferson by Entity,
Affiant, and/or officers, directors and owners, including
employees, owning 25% or more of the Entity during the two-year
period immediately preceding the date of this affidavit or the
current term of the elected official, whichever is greater. Further,
Entity, Affiant, and/or Entity Owners have not made any
contributions to or in support of current or former members of the
Jefferson Parish Council or the Jefferson Parish President through
or in the name of another person or legal entity, either directly or
indirectly.

Choice B X there are NO campaign contributions made which would require
disclosure under Choice A of this section.

Debt Disclosures

(Choose A or B, if option A is indicated please include the required attachment):

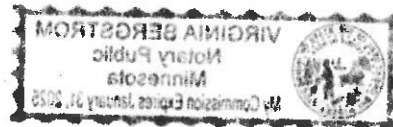
Choice A _____ Attached hereto is a list of all debts owed by the affiant to any elected or appointed official of the Parish of Jefferson, and any and all debts owed by any elected or appointed official of the Parish to the Affiant.

Choice B X There are NO debts which would require disclosure under Choice A of this section.

Affiant further said:

That Affiant has employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public contract were in the regular course of their duties for Affiant; and

[The remainder of this page is intentionally left blank.]



That no part of the contract price received by Affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for Affiant.



Signature of Affiant

Susan Broin

Printed Name of Affiant

SWORN AND SUBSCRIBED TO BEFORE ME
ON THE 24 DAY OF June, 2020.



Notary Public

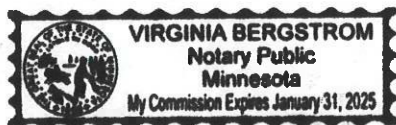
Virginia Bergstrom

Printed Name of Notary

20004793

Notary/Bar Roll Number

My commission expires 1/31/2025.



STANDARD INSURANCE REQUIREMENTS FOR BIDDING PURPOSES

All required insurance under this bid shall conform to Jefferson Parish Resolution No. 113646 or No. 113647, as applicable. Contractors may not commence any work under any ensuing contract unless and until all required insurance and associated evidentiary requirements thereto have been met, along with any additional specifications contained in the **Invitation to Bid**. Except as where otherwise precluded by law, the Parish Attorney or his designee, with the concurrence of the Director of Risk Management or his designee, may agree on a case-by-case basis, to deviate from Jefferson Parish's standard insurance requirements, as provided in this Section. Vendors requesting deviation therefrom shall submit such requests in writing, along with compelling substantiation, to the Purchasing Department prior to the bid's due date. Any changes to the insurance requirements will be reflected in the bid specifications and addenda. Prior to contract execution and at all times thereafter during the term of such contract, contractors must provide and continuously maintain all coverages as required by the foregoing Resolutions, and the contract documents. Failure to do so shall be grounds for suspension, discontinuation or termination of the contract.

For bidding purposes, bidders must submit with bid submission a current (valid) insurance certificate evidencing the required coverages. Failure to comply will cause bid to be rejected. The current insurance certificate will be used for proof of insurance at time of evaluation. Thereafter, and prior to contract execution, the low bidder will be required to provide final insurance certificates to the Parish which shall name the **Jefferson Parish, its Districts Departments and Agencies under the direction of the Parish President and the Parish Council** as additional insureds regarding negligence by the contractor for the Commercial General Liability and the Comprehensive Automobile Liability policies. Additionally, said certificates should reflect the name of the Parish Department receiving goods and services and reference the respective Jefferson Parish bid number.

JEFFERSON PARISH REQUIRED STANDARD INSURANCE

☐ WORKER'S COMPENSATION INSURANCE

As required by Louisiana State Statute, exception; Employer's Liability, Section B shall be \$1,000,000 per occurrence when Work is to be over water and involves maritime exposures to cover all employees not covered under the State Worker's Compensation Act, otherwise this limit shall be no less than \$500,000 per occurrence.

Note: If your company is not required by law to carry workmen's compensation insurance, i.e. not a Louisiana company, sole employee of the company, then bidders must request a workmen's compensation insurance declaration affidavit prior to the bid opening date. This insurance declaration affidavit must be fully completed, signed, properly notarized and submitted with the bid. A scanned copy may be submitted with the bid; however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being

rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

☐ **COMMERCIAL GENERAL LIABILITY**

Shall provide limits not less than the following: \$1,000,000.00 Combined Single Limit per Occurrence for bodily injury and property damage.

☐ **COMPREHENSIVE AUTOMOBILE LIABILITY**

Bodily injury liability \$1,000,000.00 each person; \$1,000,000.00 each occurrence.
Property Damage Liability \$1,000,000.00 each occurrence.

Note: This category may be omitted if bidders do not/will not utilize company vehicles for the project or do not possess company vehicles. Bidder must request an automobile insurance declaration affidavit prior to the bid opening date. This insurance declaration affidavit must be fully completed, signed, properly notarized and submitted with the bid. A scanned copy of the completed, signed and properly notarized affidavit may be submitted with the bid; however, the successful bidder must submit the original affidavit in its original format and without material alteration upon contract execution. Failure to comply will result in the bid submission being rejected as non-responsive. The Parish reserves the right to award bid to the next lowest responsive and responsible bidder in this event.

DEDUCTIBLES - The Parish Attorney with concurrence of the Director of Risk Management have waived the deductible section of the Terms and Conditions for all Invitations to Bid, until further notice.

UMBRELLA LIABILITY COVERAGE

An umbrella policy or excess may be used to meet minimum requirements.

FOR CONSTRUCTION AND RENOVATION PROJECTS:

The following are required unless otherwise specified in the bid. Such insurance is due upon contract execution.

1) **OWNER'S PROTECTIVE LIABILITY**

To be for the same limits of liability for bodily injury and property damage liability established for commercial general liability.

2) **BUILDER'S RISK INSURANCE**

The contractor shall maintain Builder's Risk Insurance at his own expense to insure both the owner (Parish of Jefferson) and contractor as their interest may appear.



JEFFERSON PARISH

DEPARTMENT OF PURCHASING

CYNTHIA LEE SHENG
PARISH PRESIDENT

RENNY SIMNO
DIRECTOR

May 2020

PURCHASING DEPARTMENT ANNOUNCEMENT

Public Access to the General Government Building and Joseph S. Yenni Building:

Effective **Monday, May 18, 2020**, Jefferson Parish Government buildings will be open to the public. All visitors will be required to wear a mask or face covering and undergo a temperature screening prior to entry.

Bid Openings:

Due to COVID-19 safety precautions, all public bid openings have been suspended. Bid openings will continue and be made available via phone conference by calling the following:

Dial-in Number: (504) 323-1800

Meeting ID: 181357

Bids will be accepted through Central Bidding or manual submission. Manually-submitted bids can be delivered to either Purchasing office location; however, if submitting bids on the day of the bid opening, bidders must submit at the West Bank location. Advertised bids will be received until 2 p.m. The bid opening teleconference will begin at 2:30 p.m. on each bid opening date.

If you have any questions, please contact the Purchasing Department at (504) 364-2678 or e-mail purchasing@jeffparish.net for assistance.

GENERAL GOVERNMENT BLDG. — 200 DERBIGNY ST., SUITE 4400, GRETN, LA 70053
OFFICE 504.364.2678

JOSEPH S. YENNI BLDG. — 1221 ELMWOOD PARK BLVD., SUITE 404, JEFFERSON, LA 70123
OFFICE 504.364.2678

EMAIL: PURCHASING@JEFFPARISH.NET WEBSITE: WWW.JEFFPARISH.NET

Jefferson Parish Purchasing Department
 Reflective Sheeting for Traffic Engineering Division
 Bid No. 5000130715
3M's QUALIFICATIONS AND EXPLANATIONS

QUALIFICATION OR EXPLANATION #	SECTION NUMBER AND/OR HEADING	PAGE/ ITEM NUMBER	QUALIFICATION
1.	Bid Specification for ElectroCut Film Series 1170	Page 9	In this product series Worboy Green, #1176, is no longer available. Green, #1177, is available.
2.	Invitation to Bid, Instructions for Bidders and General Conditions	Page 1	3M will comply with all applicable Louisiana law, Jefferson Parish ordinances, ethics codes and resolutions.
3.	Invitation to Bid, Instructions for Bidders and General Conditions	Page 2, Paragraph 3	3M Company is a global, publicly traded company with annual sales in 2019 of approximately \$32B and over 90,000 employees worldwide. Because of 3M's size, it is impossible for 3M's Board to issue a corporate resolution for the thousands of transactions 3M participates in. 3M authorizes certain individuals to sign bid submissions on behalf of 3M Company and documents this authority with a Power of Attorney. The Power of Attorney authorizing the signature of Steven Frampton is attached to 3M's bid submission, documenting his authority to sign bids and proposals on behalf of 3M Company. Please see the attached 3M Power of Attorney document.
4.	Invitation to Bid, Instructions for Bidders and General Conditions	Page 2, Paragraph C	3M will agree to assign all material causes of action it may acquire under US or Louisiana antitrust laws.

QUALIFICATION OR EXPLANATION #	SECTION NUMBER AND/OR HEADING	PAGE/ ITEM NUMBER	QUALIFICATION
5.	Standard Insurance Requirements for Bidding Purposes Owner's Protective Liability and Builders Risk Insurance	Page 2	The scope of this procurement is the provision of reflective sheeting. No services are required. Accordingly, as this is the sale of goods, 3M will not provide Owner's Protective Liability insurance nor Builder's risk insurance as these are unnecessary in the scope of this procurement.
6.	Compliance	18	3M will do its best to meet the Parish's required shipment date of 7 days ARO. That said, 3M's standard delivery for materials in this ITB is 20-30 days ARO.

3M Company Government Contracts Power of Attorney

By the authority granted the undersigned by the Corporate Secretary, the individuals listed below are hereby appointed as 3M's or its designated subsidiaries, true and lawful attorneys-in-fact for it, and its name, for commercially available products and services and government unique products and services for which 3M or its designated subsidiaries will be a prime contractor, subcontractor or higher tier subcontractor to any federal, state or municipal governmental agency in the United States ("Government Contracts"), to perform acts specified on behalf of this Corporation.

Except as provided below, authority is granted to submit or execute proposals, bids, binding purchase orders, contracts and subcontracts, certifications, representations and warranties, and documents related thereto for Government Contracts; however, this authority does not include (a) research and development services;* (b) executing country of origin certifications**; or (c) any other authority that is not expressly granted in this document. 3M executives (Vice President, General Manager, etc.)****, have authority to sign on behalf of their respective Business Unit/staff function, through 3M's Director of Government Contract Compliance subdelegation authority. Authority for the individuals below is limited to the specific Business Unit or staff function indicated and such authority may not be subdelegated.

<p><u>3M Unitek Corporation</u> Gregg, Shawn McCloskey, Molly</p> <p><u>Advanced Materials Division</u> Davis, Scott Hanson, Scott Lockhart, Bruce Moeller, Kent Morin, Eric Race, Robert Utley, Elizabeth Ward, Charles</p> <p><u>Aearo Technologies LLC</u> Hinko, David</p> <p><u>Automotive and Aerospace Solutions Division</u> <i>see Government Marketing-Sales</i></p> <p><u>Display Materials & Systems Division</u> Summers, Micki</p> <p><u>Electrical Markets Division</u> Disanayaka, Bimsara Irwin, Mike James, Brent</p>	<p><u>Electronics Materials Solutions Division</u> Anderson, Kevin</p> <p><u>Food Safety Department</u> <i>see Government Marketing-Sales</i> (Federal Only)</p> <p><u>Government R&D Contracts Department*</u> Kays, Steven Martinez, Rita</p> <p><u>3M Health Information Systems</u> Black, Lisa Garrison, Garri Graves, Terri Jennings, Gerald Kim, Myung Mason, Deborah Mathison, John McDonough, James Mitchell, Brian Pedicord, Kyle Stadther, Joseph</p> <p><u>Industrial Adhesives & Tapes Division</u> <i>see Government Marketing-Sales</i> (FSS Contracts Only)</p>	<p><u>Industrial Mineral Products Division</u> Erickson, Scott</p> <p><u>Medical Solutions Division</u> Haataja, Brian (Service Support only) McDonald, Michael</p> <p><u>Oral Care Solutions Division</u> Gregg, Shawn McCloskey, Molly McDonald, Michael</p> <p><u>Personal Safety Division</u> Tabatha Williams (Scott Safety only)</p> <p><u>Separation & Purification</u> Towne, Richard</p> <p><u>Stationery & Office Supplies Division</u> Rihm, Diana</p> <p><u>Transportation Safety Division</u> Broin, Susan Do, Thanh-Huong*** Frampton, Steven Lorence, Craig Seputis, Julie*** Trac, Phu***</p>
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Authority Applies to any Business Unit or Staff Function		
<u>Global Channel Services</u> Constantine, Lauri <u>U.S. Pacific Branches</u> Mathers, Stephanie Kawasaki, Heidi	<u>Government Marketing-Sales</u> Weller, Greg Keeler Ramacier, Kelly Audette-Williams, Michelle	<u>Government Contract Compliance</u> Bordas, Rich Carr, Terrance Horwitz, Charles Paraschiou, Maria Robinette, Thomas

**Authority to Make Country of Origin Certifications		
<u>Trade Compliance Department</u> Goebel, Kathleen LaMere, Pierre Mulinix, Jonathan		

For all appointments, authority may be withdrawn or modified at any time, including upon an individual's change in responsibility.

This Power of Attorney revokes all prior Powers of Attorney with respect to the same matters and shall remain in effect until terminated by the undersigned or any other person authorized to grant powers of attorney on behalf of 3M.

By: Charles Horwitz

3-4-20

Charles Horwitz
Director, Government Contract Compliance
3M Company

Date

* Authority is delegated by 3M's Senior Vice President, Research and Development, and Chief Technology Officer, to the Vice President, Research and Development, for their respective 3M Business Groups, and to certain specified employees in Government Research & Development Contracts, to execute proposals, contracts, subcontracts (including certifications, representations and warranties to comply with certain laws and regulations) for government R&D services.

*** Authority expressly limited to executing Certificates of Conformance.

**** 3M executives may assign attorney-in-fact authority to their respective business personnel, upon successful completion of Government Contract Compliance Power of Attorney training.

Request for Taxpayer Identification Number and Certification

Give Form to the
requester. Do not
send to the IRS.

► Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type.
See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. 3M Company		
2 Business name/disregarded entity name, if different from above		
3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes. <input type="checkbox"/> Individual/sole proprietor or single-member LLC <input checked="" type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner. <input type="checkbox"/> Other (see instructions) ►	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3): Exempt payee code (if any) 5 Exemption from FATCA reporting code (if any) D <small>(Applies to accounts maintained outside the U.S.)</small>	
5 Address (number, street, and apt. or suite no.) See instructions. P.O. Box 844127	Requester's name and address (optional)	
6 City, state, and ZIP code Dallas, TX 75284-4127		
7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

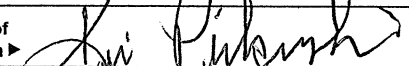
Social security number								
			-					
or								
Employer identification number								
4	1	-	0	4	1	7	7	5

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ► 	Date ► January 3, 2020
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General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.



CERTIFICATE OF LIABILITY INSURANCE

Page 1 of 1

DATE (MM/DD/YYYY)

02/13/2020

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must have **ADDITIONAL INSURED** provisions or be endorsed. If **SUBROGATION** IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Willis Towers Watson Midwest, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 372305191 USA	CONTACT NAME: Willis Towers Watson Certificate Center PHONE (A/C, No, Ext): 1-877-945-7378 FAX (A/C, No): 1-888-467-2378 E-MAIL ADDRESS: certificates@willis.com
INSURED 3M Company 3M Insurance Department Bldg 224-5S-29 St. Paul, MN 55144 USA	INSURER(S) AFFORDING COVERAGE INSURER A: Old Republic Insurance Company INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:
	NAIC # 24147

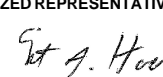
COVERAGES**CERTIFICATE NUMBER:** W15446997**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			MWZY 315305	03/01/2020	03/01/2023	EACH OCCURRENCE \$ 10,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ 10,000,000 GENERAL AGGREGATE \$ 10,000,000 PRODUCTS - COMP/OP AGG \$ 10,000,000
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			MWTB 315303	03/01/2020	03/01/2023	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
	UMBRELLA LIAB <input type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N <input checked="" type="checkbox"/> No	N/A	MWC309963-20	03/01/2020	03/01/2021	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 2,000,000 E.L. DISEASE - EA EMPLOYEE \$ 2,000,000 E.L. DISEASE - POLICY LIMIT \$ 2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER**CANCELLATION**

Evidence of Coverage	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE 

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SR ID: 19247185

BATCH: 1575549

Traffic Safety and Security Division

3M™ Diamond Grade™ DG³ Reflective Sheeting Series 4000

Product Bulletin Series 4000
May 2017

1 Description

3M Diamond Grade DG³ Reflective Sheeting Series 4000 features the most efficient retroreflective prism design currently available from 3M for use on vertical traffic control signs and delineators to return light to drivers under a diverse set of nighttime viewing geometries encountered by the driving public. Series 4000, as manufactured by 3M (“Sheeting”), meets the stringent retroreflective requirements given in the ASTM D4956-16 standard for Type XI retroreflective sheeting.

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

The Sheeting is available in the following colors.

Table 1. Product Codes by Color

Color	Product Code
White	4090
Yellow	4091
Red	4092
Blue	4095
Green	4097
Brown	4099
Fluorescent Yellow – FY	4081
Fluorescent Yellow-Green – FYG	4083
Fluorescent Orange – FO	4084
White – Thermal transfer printable	4090TT
Yellow – Thermal transfer printable	4091TT
Fluorescent Yellow – Thermal transfer printable	4081TT
Fluorescent Yellow-Green – Thermal transfer printable	4083TT

2 Specifications

The sheeting conforms to all current performance requirements of ASTM D4956-16 for the Type XI retroreflective sheeting.

Additionally, the Sheeting meets the following specifications.

2.1 Legibility

A traffic control and guidance sign (“**Sign**”) made with the Sheeting used for both Sign background and cut-out copy will remain legible when viewed from a moving vehicle under normal day and night driving conditions by not excessively fading, discoloring, cracking, crazing, peeling, and blistering during the legibility periods in the locations as given in Table 2. Sign must be manufactured, installed, and maintained as recommended in the applicable 3M Information Folders listed in Section 9, and legibility must be assessed after the Sign is cleaned as described in [3M Information Folder 1.11](#). Legibility Period is measured from the initial Sign fabrication date (“Fabrication Date”), and varies by the location of the Sign as shown in Table 2.

Table 2. Sheeting legibility periods by sheeting and geographic Sign location

Sheeting	Geographic Location	Legibility Period [from Fabrication Date]
4090, 4091, 4092, 4095, 4097, 4099, 4090TT, 4091TT (Non-fluorescent Colors)	US & Canada	Up to 12 Years
4081, 4081TT, 4083, 4083TT (Fl. Yellow and Fl. Yellow-Green)	Alabama, Arizona, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, South Carolina, and Texas	Up to 7 Years
	Canada and US except for the above States	Up to 10 Years
4084 (Fluorescent Orange)	US & Canada	Up to 3 Years

2.2 Gloss

The Sheeting has a rating of 50 or higher when tested in accordance with ASTM D523 using a 60° glossmeter.

2.3 Optical Stability

The Sheeting applied to a 3-inch x 6-inch sample to a test panel retains a minimum of 85% to a maximum of 115% of its initial coefficient of retroreflection at 0.2 degree observation and (-4) degree entrance angle, after being placed in an oven at 71° C ± 3° C (160° F ± 5° F) for 24 hours followed by conditioning at standard room temperature for two hours.

2.4 Coefficient of Retroreflection (R_A)

The Sheeting applied, processed, installed, maintained, and cleaned as recommended in the applicable 3M Information Folders listed in Section 9 of this product bulletin will retain the coefficients of retroreflection¹ at or above the values given in Table 3 and on a traffic control and guidance Sign in the US and Canada, for the period given in Table 3 and measured from the Fabrication Date.

¹ Conformance to coefficient of retroreflection requirements shall be determined by instrumental method in accordance with ASTM E810 “Test Method for Coefficient of Retroreflection of Retroreflective Sheeting”, and per E810, the values of 0° and 90° rotation are averaged to determine the R_A in Table 3 and Table 4.

Table 3. Minimum Retained coefficient of retroreflection (R_A , [cd/lx/m²]) for Sheeting over time**

Sheeting	Years (from Fabrication Date)	Minimum Retained Coefficient of Retroreflection [cd/lx/m ²]
4090, 4091, 4092, 4095, 4097, 4090 (Non-fluorescent colors)	On Fabrication Date	ASTM D4956-16 Type XI
	Up to 7 Years	80% of ASTM D4956-16 Type XI
	8-12 Years	70% ASTM D4956-16 Type XI
4081, 4081TT, 4083, 4083TT (Fluorescent Yellow, Fluorescent Yellow-Green)	On Fabrication Date	ASTM D4956-16 Type XI
	Up to 7 Years/10 Years**	70% of ASTM D4956-16 Type XI
4084 (Fluorescent Orange)	On Fabrication Date	ASTM D4956-16 Type XI
	Up to 3 Years	70% of ASTM D4956-16 Type XI

**The retained coefficient of retroreflection applies only for 7 years after Fabrication Date for the following states: Alabama, Arizona, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, South Carolina, and Texas. For all other locations the retained coefficient of retroreflection is for 10 years.

3 System of Matched Components

The Sheeting is compatible with a wide range of 3M screen print and digital inks, translucent films, overlay films and other processing components. For a complete list of matched components for the Sheeting, please see the [3M MCS Warranty Bulletin](#).

4 Physical Properties

4.1 Fabrication Lines

The manufacturing process of the Sheeting results in periodic lines in the product (Figure 1). Fabrication lines may be noticeable in shop light but do not impact Sign functionality on the road either in daylight or at night under typical use conditions.

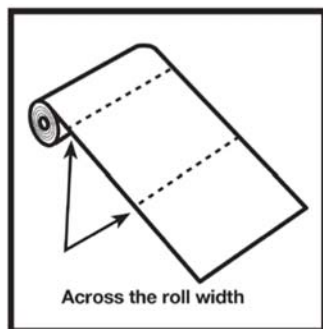


Figure 1. Fabrication Lines

4.2 Adhesive

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

5 Processing, Storage, Packaging, and Cleaning

For processing, storage, packaging, and cleaning information, please refer to [3M Information Folder 1.11](#).

6 Health and Safety Information

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

7 Warranty Information

7.1 3M Warranty

3M warrants to the manufacturer of the Sign (“Sign Manufacturer”) that the Sheeting will meet the specifications described in section 2 of this Product Bulletin (“3M Warranty”).

7.2 3M MCS™ Warranty, MCS Warranty for Traffic

For warranty on screen-printed or digitally printed Sheeting, or Sheeting imaged using translucent films, please refer to the [3M MCS Warranty Bulletin](#).

7.3 3M Warranty Terms and Conditions

- The Sheeting must be stored, processed, applied, and maintained as described in this product bulletin and in accordance with all applicable, written 3M procedures provided in the applicable 3M Information Folders listed in Section 9.
- A failure to meet the 3M Warranty must be solely the result of design or manufacturing defect in the 3M Sheeting, and not a result of (a) outside causes including improper fabrication, handling, packing, storing, shipping, maintenance or installation; (b) non-vertical applications where the Sign is more than +/- 10° from vertical; (c) use of any material or product not recommended by 3M in this product bulletin, in the 3M Information Folders listed in Section 9, or in applicable 3M Technical Memorandums; (d) use of application equipment not recommended by 3M; (e) failure of Sign substrate; (f) loss of adhesion due to incompatible or improperly prepared substrate; (g) exposure to chemicals, abrasion and other mechanical damage; (h) snow burial or any other Sign burial; (i) collisions, vandalism or malicious mischief; or (j) an act of God.
- Claims made under this warranty will be honored only if (a) the Sign was dated with the Fabrication Date using a permanent method (sticker, marker, metal stamp, etc.), (b) 3M is notified in writing of the claim within thirty days of discovery, (c) 3M is provided with the information reasonably required to validate the claim, and (d) 3M is permitted to verify the cause of the failure.
- 3M is not responsible for any additional warranties that the Sign Manufacturer offers to its customers that is beyond the 3M Warranty.

7.4 Exclusive Limited Remedy

Valid claims under the 3M Warranty will receive either the Sign Restoration or Materials Replacement as detailed in Table 4.

Sign Restoration

During the Sign Restoration period as provided in Table 4, if a Sheeting is proven to not meet the 3M Warranty, then the Sign Manufacturer’s exclusive remedy, and 3M’s sole obligation, at 3M’s option, shall be that 3M, at its expense, will either refund the Sign Manufacturer’s total original cost of the Sign, or refabricate the Sign, including (i) Sheeting and (ii) the aluminum Sign substrate (as needed). However, 3M will not provide other hardware or labor to install the replacement Sign. The Fabrication Date of the replacement Sign will be considered to be the original Fabrication Date of the Sign it replaces under the 3M Warranty.

Materials Replacement

During the Materials Replacement period as provided in Table 4, if a Sheeting is proven to not meet the 3M Warranty, then the Sign Manufacturer’s exclusive remedy, and 3M’s sole obligation, at 3M’s option, shall be that 3M, at its expense, will either refund the Sign Manufacturer’s total original cost of the Sheeting, or provide the necessary Sheeting quantity to restore the Sign’s surface. However, 3M will not provide the substrate or any labor to refabricate or reinstall the Sign.

Table 4. Sheeting type, geographic location, and type of limited remedy as a function of the age of Sign

Sheeting	Geographic Location of Sign	Limited Remedy Period [years from Fabrication Date]	
		Sign Restoration	Materials Replacement
4090, 4091, 4092, 4095, 4097, 4099, 4090TT, 4091TT (Non-fluorescent colors)	US & Canada	Up to 7 Years	Years 8-12
4081/4083, 4081TT/4083TT (Fl. Yellow and Fl. Yellow-Green)	Alabama, Arizona, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, South Carolina, and Texas	Up to 5 Years	Years 6-7
	Canada and US other than the above States	Up to 7 Years	Years 8-10
4084 (Fluorescent Orange)	US & Canada	---	Years 0-3

7.5 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.

7.6 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.

8 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/tss>.

9 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 1.10](#) Cutting, Premasking, and Prespacing
- [3M IF 1.11](#) Sign Maintenance Management
- [3M PB 1170](#) 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:

1-800-265-1840

Internet:

<http://www.3m.com/roadwaysafety>

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Phone 1-800-553-1380
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Traffic Safety and Security Division

3M™ ElectroCut™ Film Series 1170

Product Bulletin 1170
October 2016

Replaces PB 1170 dated July 2007

Description

3M™ ElectroCut™ Film Series 1170 is a durable, transparent, acrylic film coated with a transparent, pressure-sensitive adhesive that is protected by a removable liner, available in the colors in Table 1.

Table 1. Product Codes by Color

Color	Product Code
Clear	1170C
Yellow	1171
Red	1172
Orange	1174
Blue	1175
Worboy Green*	1176
Green	1177
Black (Opaque)	1178
Brown	1179

*Standard green color for U.K., Australia, and New Zealand

Series 1170 is intended for use on 3M Reflective Sheeting as part of 3M's system of matched components for signing. Series 1170 has a clear pressure-sensitive adhesive compatible with all the following 3M reflective sheetings used in permanent signing:

3M Advanced Engineer Grade Prismatic Series 7930
3M Engineer Grade Prismatic Series 3430
3M Engineer Grade Series 3290
3M High Intensity Prismatic Series 3930 and 3930TT
3M Diamond Grade™ Series 3990 and 3990TT
3M Diamond Grade™ DG³ Series 4000 and 4000TT
3M Diamond Grade™ Translucent DG³ Reflective Sheeting 4090T

Additionally, 3M™ ElectroCut Film 1170C Clear must be used with the following 3M reflective sheetings:
 3M Diamond Grade DG³ Prismatic Digital Sheeting 4090DS (White)
 3M High Intensity Prismatic Digital Sheeting 3930DS (White)

Series 1170 is designed with a special film liner for kiss-cutting on electronic cutting machines. Rolls are available prepunched for sprocket fed cutters or unpunched for flatbed or friction fed cutters. The colored films in the Series 1170 are often used instead of silk screened inks to provide transparent colored background copy for retroreflective street name signs and other traffic control signs. Various film widths are available to fabricate single sign panels up to 48 inches wide. For single panel signs requiring more than a single piece of sheeting or for multipanel signs such as guide signs, be sure to follow 3M color matching procedures in [Information Folder 1.10](#) to achieve satisfactory results. For best color uniformity on a colored multipanel sign, all panels must be made from the same lot of Series 1170.

Properties

Transparent clear, yellow, red, orange, blue, worboy green, green, black (opaque), and brown versions of the Series 1170 applied to compatible 3M retroreflective sheetings listed in the above section can be expected to provide performance comparable to the integrally colored version of the same reflective sheeting. The coefficient of retroreflection of a white sheeting overlaid with the Series 1170 depends primarily on the overlay film transparency and the coefficient of retroreflection of the white base sheeting. Series 1170 applied on the compatible microprismatic 3M retroreflective sheetings listed in the above section according to 3M recommendations will yield chromaticity values within the chromaticity limits given in ASTM D4956-16.

Table 1 gives the resultant minimum and maximum coefficient of retroreflection (R_A) values for each transparent Series 1170 film as a percentage of the R_A of the white reflective base sheeting on which it is applied.

Table 2. Coefficient of retroreflection* (R_A) after application of colored film Series 1170 versus the R_A of the white base sheeting (expressed as %)

Film	Minimum (% of base sheeting)	Maximum (% of base sheeting)
1171 (Yellow)	60	80
1172 (Red)	14	24
1174 (Orange)	30	--
1175 (Blue)	6.5	20
1176 (Worboy Green)	8	14
1177 (Green)	13	20
1179 (Brown)	5	--

* R_A measurements shall be made at 0.2° observation angle, -4° entrance angle, and 0° rotation, per ASTM E810.

Film Liner

Series 1170 films have a transparent film release liner designed to aid the cutting process and the removal of the film weed after cutting.

Storage

Store in a cool, dry area 65-75° F (18-24° C), 30-50% relative humidity, and use within one year from date of receipt.

Fabrication – Cutting and Application Procedures

Important Note: Read and follow the manufacturer's operating manual carefully for proper use of cutting equipment.

1. Adjust knife pressure to cut cleanly through the film and slightly score the liner. A 30° blade works best.
2. A clean cutting blade is required. To remove adhesive build-up use a soft cloth dampened with mineral spirits, isopropyl alcohol or 3M™ Citrus Base Cleaner.
3. Avoid excessive flexing when handling film as this may cause film to release from the liner.
4. After cutting is complete, lay sheets flat, face to face, back to back. Always store sheets in this manner until the sheeting has been weeded and transfer tape has been applied to sheeting.
5. Use a stripping tool designed for weeding films that has a blunt (not a sharp) edge.
6. After weeding is completed, also store sheets flat, face to face and back to back, until transfer tape is applied.
7. TPM-5 Clear Transfer Tape is recommended for best results. SCPM-3 Application Tape is also satisfactory for use on small signs. Other transfer tapes are not recommended.
8. Transfer tape can be applied either by hand using a plastic squeegee or through a hand squeeze roll applicator (HSRA). If applying the transfer tape by hand, care must be taken to always squeegee from the center to the outside in both directions. If applying the transfer tape through the HSRA the air pressure must be at 30 psi to avoid stretching the premask during application, and the “lead” edge must be cut square and fed into the nip very carefully to avoid wrinkles in the Series 1170.
9. Film Series 1170 may be applied to the sheeting either before or after the sheeting has been applied to the substrate. Use of an HSRA is recommended to ensure satisfactory results. Use the “split liner method” – start in the middle of the sheet and remove half the liner to ensure proper alignment.
10. After film Series 1170 and sheeting have been applied, remove the transfer tape by carefully removing the tape at as low an angle as possible.
11. **IMPORTANT!** When the transfer tape has been removed, reroll the sign through the laminator to ensure good adhesion.
12. Excess or overhanging film Series 1170 should be trimmed using a sharp utility knife held at a 30° angle with the substrate.

Health and Safety Information

Read all health hazard, precautionary, and first aid statements found in the Safety Data Sheets (SDS) and Article Information Sheets for important health, safety and environmental information. To obtain SDSs and Article Information Sheets for 3M products, go to 3M.com/SDS, or by mail, or in case of an emergency, call 1-800-364-3577.

Warranty

For detailed warranty information, please refer to the sheeting product bulletins and the [3M™ MCS™ Warranty for Traffic](#) and [MCS Warranty Bulletins](#).

For Information or Assistance

Call: 1-800-553-1380

In Canada Call:

1-800-265-1840

Internet:

www.3M.com/roadwaysafety

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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Cutting, Premasking and Prespacing of 3M™ Reflective Sheetings

Information Folder 1.10

September 2010

Replaces IF 1.10 dated July 2007

Follow the Instructions

3M recommends only the standard practice outlined in this information folder. Procedures and materials which do not literally conform to these instructions are excluded. See warranty information in sheeting product bulletins.

Cutting Sheets

Reflective sheetings can be cut using a variety of techniques. Single sheets can be hand cut, die cut or electronically cut. Volume cutting can be accomplished by methods such as band sawing, roll cutting or guillotine cutting.

All cutting tools must be kept sharp and clean to minimize the possibility of damage to sheeting or film or adhesive transfer.

In order to reduce the possibility of stress cracking, the inside corners of cut out letters and symbols should be rounded using the largest radius consistent with acceptable appearance, but in no case less than 1/8-inch.

A. Electronic Cutting

All 3M reflective sheeting for permanent signing is electronic cuttable. Cutting can be accomplished on a flat bed plotter or friction fed plotter. Please contact 3M Traffic Safety Systems Division technical service for recommendations.

B. Hand Cutting

Single sheets may be hand-cut using a scissors, razor blade, or other cutting tool. The cutting edges must be kept sharp.

When cutting with a razor blade or other tool, lay the sheeting or film, liner side down, on a flat surface and cut from the face side.

C. Band Sawing General

A band saw can be used for general cutting of large sheets or for precision cutting of specific shapes.

1. Blade Selection

A “skip tooth” blade with few teeth per inch is used for cutting sheeting. It should have sufficient set for good clearance to prevent the teeth from filling. Blade specifications for two blades which have been used successfully are given below:

	Milford “Profile” Blade <u>No. S-3104</u>	Do-All “Buttress” <u>Blade</u>
Width	3/16"	3/16"
Pitch	4	4
Set	.042"	—
Gauge	.025"	.025"

The blade must be sharp in order to maintain a good edge when cutting curves and angles. When it dulls, the blade will begin to tear the sheeting, and must be changed.

2. Saw Speed/Stack Height

Corrected saw speeds are necessary for proper cutting. Do not use heavy pressure to accelerate cutting speed as it will overheat the blade. Recommended speeds and the maximum number of sheets to be cut in one stack are listed on page 2.

D. Bandsawing Unprocessed Symbols and Legends

To cut symbols and legends from unprocessed sheeting, stack the material on a sheet of 1/4 inch plywood, and butt the sheetings tightly against guide boards set along the sides of the stack (Figure 1). When the stack is complete, cover with 1/8-inch wallboard upon which the pattern to be cut has been drawn or silk screened.

Drive nails through the stack and into the plywood to hold it in place, then remove the stack from the assembly fixture and saw as one piece. Note: If material is to be cut liner side up, layout must be drawn in reverse.

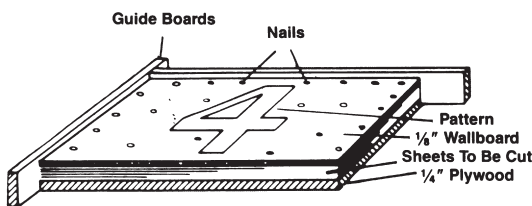


Figure 1

E. Bandsawing Printed Emblems and Copy

When printed markings or copy are to be sawed, make sure that each sheet in the stack is in register. This may be done by registering the sheets, during screen printing, against the guide boards when stacking the sheets for sawing (See Figure 1). For best results sheets should be squared at three points or more.

Another method to assure accurate stacking is to include register marks in the screen printing stencil so that the marks appear on each sheet (Figure 2). Screen the register marks on the plywood base, and drive a nail perpendicular from the bottom up through the plywood in the center of each register mark. Build the stack by pushing the nail through the center of each register mark on each sheet. When complete, the stack will be perfectly aligned and all sheets will be cut the same way.

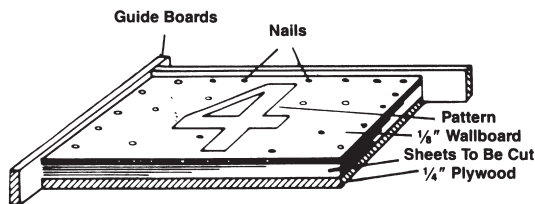


Figure 2

Not more than six sheets of 0.080 inch (2mm) or thicker aluminum may be cut in one stack; 10 sheets is the maximum stack height for aluminum which is less than 0.080: (2mm) thick.

F. Unmounted Bandsawing

Unmounted 3M reflective sheeting can be processed using a saw speed of 1000-1500 feet per minute and a maximum of 25 sheets.

G. Roll Cutting

Wide rolls can be cut to narrower widths using a roll cutting machine. The user must determine the accuracy and quality of cut for various sheetings.

H. Guillotine Cutter

Large volume cutting of straight edge sheets and markings can be easily and accurately accomplished using a guillotine-type cutter. The type and condition of the cutter and the technique employed will determine accuracy, tolerances, and quality of the cut. Evaluation of the process for the intended use is recommended prior to volume cutting.

The table under "Cutting Recommendations" gives maximum stack height for sheets 24 inches x 24 inches (61cm x 61cm) or larger. For smaller sheets reduce stack height accordingly.

Cardboard inserts can be used as counters in the larger stacks. If the bottom sheet(s) have a rough finish or small tabs after cutting, a piece of cardboard placed at the bottom of the stack will ensure a cleaner cut. Cardboard inserts are to be figured as a part of the total stack height.

To clean the blade of residual adhesive material, paper and film dust, wipe periodically with a cloth soaked in mineral spirits, then dry the blades thoroughly.* Sharp cutting blades are essential for good, clean cuts. If a blade is being used on an average of 8 hours per day, it should be resharpened every ten days.

*When using solvents for clean-up, it is essential that proper precautionary measures for handling such materials be observed.

Certain sheetings should be double cut as specified in the "Cutting Recommendations" table since the bevel edge of the blade tends to crack these materials. Therefore, when trimming, waste portion of any stack to be cut should rest against bevel edge of blade (Figure 3). If a stack is to be cut in half, allow sufficient area for additional trim cut of that edge which rests against bevel edge of blade.

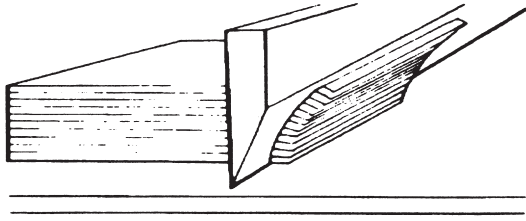


Figure 3

Some sheetings which have softer adhesives may tend to form tacky edges (adhesive ooze). To minimize ooze, the following procedures should be observed:

1. Ooze forms primarily on the flat side of the blade and not on the bevel side. Therefore, double cutting is not recommended.
2. Keep blade clean and sharp.
3. Cut in short stacks.
4. If adhesive ooze is encountered, it should be removed at the guillotine before the sheets are jobbed. Ooze can be removed easily by applying Scotch™ Masking Tape to the cut edge of the sheets. When the tape is removed, the adhesive ooze will adhere to the tape and be removed with the masking tape.
5. If adjustable, guillotine clamp bar pressure should be set at minimum.

I. Steel Rule Die Cutting

Large volume cutting can be effectively accomplished using the die cutting technique. Die cutting is usually done in a platen press so the work may be hand-fed. The material is fed into the press, using the same edges of the material, side guide and gripper edge that the printer uses for this register. With careful make-ready, the platen is raised until the entire die design is cutting cleanly. Single bevel and double bevel steel rule dies typically provide the best performance.

Radius corners are recommended on cut-out letters to avoid stress cracking. Minimum radius should be 1/8-inch on 3-inch letters. Care must be taken to insure prismatic sheeting is not damaged by the punching action of the die press.

Prespacing, Premasking and Transfer Tapes

Premasking and prespacing of sheeting simplifies the handling and application of markings and legends. 3M tapes fill these functions as follows:

Uses of Tapes

Application Aid

Application tapes when applied properly to mark sheeting, reduce stretching, wrinkling and air entrapment during hand application. The increased stiffness provided by the tape aids with the handling of marking (4 sq. ft. or larger), striping, intricate sign markings and for applications performed at high temperatures.

Imprinted Application Instructions

Application instructions and registry marks which aid in positioning and application can be imprinted on the surface of the tape.

Prespace Legends & Markings

Prespacing cut out letter legends eliminates the time-consuming layout of individual letters on the application surface.

Important: Color or clear processed sheeting must be dried thoroughly before application of tape. Follow drying procedure recommended for color and sheeting used.

Table 1

<u>Tape</u>	<u>Recommended Use</u>
SCPS-2 Prespacing Tape (White)	For prespacing legends which may or may not be premasked and for electronic cut letters and emblems.
SCPM-3 Application Tape (White)	Application Aid: Provides rigidity when liner is removed, reduces film stretching, wrinkling, and air entrapment during hand application, particularly helpful during hot weather or when applying large or intricately shaped emblems and letters.
TPM-5 Transfer Tape (Clear)	For premasking or applying prespaced legends wherever a clear transfer tape is desirable. Recommended for Series 1170 film.

Hand Application of Tapes

Sheets from which emblems are to be cut should be left unmasked 1/8-inch to 1/4-inch (3-6mm) along one of the edges that form the registry corner. This corner will normally be used for registry during cutting and its edge must be free of tape. The untaped edge will be removed in final die-cutting or trimming.

A. Strip application tape from roll and lay adhesive side up on table (Figure 5).

B. Drop material to be premasked into position face down on tape (Figure 6).

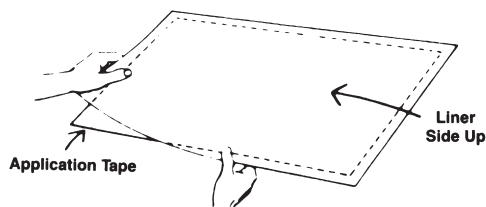


Figure 5

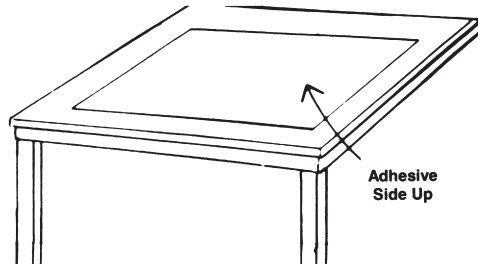


Figure 6

C. Squeegee to tape from center out (Figure 7).

D. Trim to size or cut to shape (Figure 8). Prespacing of letters smaller than 3/4-inch (1.9cm) on filigree and other intricate designs with narrow stroke widths must be on a test and approval basis.

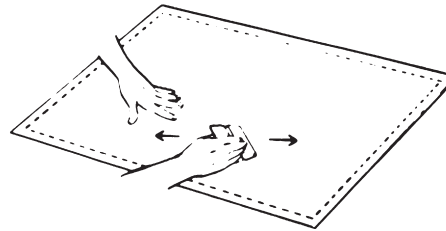


Figure 7

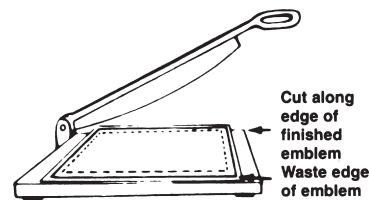


Figure 8

E. The 3M Hand Squeeze Roll Applicator may be used to apply premask, prespacing and transfer tapes. Reference IF 1.6.

F. Squeeze Roller Application

The Interstate Squeeze Roller Applicator may be used for premasking, prespacing and transfer tapes. Reference IF 1.4.

G. Storage

Store all tapes in a cool, dry area indoors and use tape within one year after date of purchase. Store rolls of tape horizontally from the roll core. Do not expose tape to sunlight.

Taped sheeting should be applied within one year after assembly. Exposure to sunlight may cause the tape to permanently bond to the sheeting or film. Avoid stacking; if temporary stacking is necessary, follow stacking recommendations for sheeting or film being stacked.

H. Application of Premask or Prespaced

Sheeting

The product combination of the taped sheeting may be applied by hand (IF 1.5), HSRA (IF 1.6) or powered squeeze roll (IF 1.4).

Important: To remove premask pull back on itself at 180° angle. After removal of the transfer tape, always resqueegee or reroll the sheeting.

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.

Literature Reference

- IF 1.4 Instructions for the Interstate Squeeze Roll Applicator
- IF 1.5 Hand Application Instructions for Reflective Sheeting and Scotchal™ Films with PSA
- IF 1.6 Hand Squeeze Roll Applicators

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Engineer Grade and Utility Grade Reflective Sheeting

Series 3200, 3260 and 5200
Meets ASTM Type I

Product Bulletin

September 2013

Replaces Information Folder 1.7 dated November 2005

Description

Engineer Grade Series 3200

3M™ Engineer Grade Reflective Sheeting Series 3200 meets ASTM D4956 Type I and is an enclosed lens, pressure sensitive adhesive-coated sheeting with an easy release liner, intended for production of non-critical traffic signs and pressure sensitive stickers.

Sheeting Colors:

Color	Product Code
-------	--------------

White	3290
-------	------

Yellow	3271
--------	------

Red	3272
-----	------

Blue	3275
------	------

Green	3277
-------	------

Brown	3279
-------	------

Adhesive: Pressure-sensitive

Adhesive Color: Clear

Application Temperature: 65°F (18°C) minimum (sheeting and substrate)

Engineer Grade Series 3260

3M™ Engineer Grade Reflective Sheeting Series 3260 is punched for use in sprocket fed electronic cutting machines. Series 3260 sheeting is available in the following colors:

Color	Product Code
-------	--------------

White	3260
-------	------

Yellow	3271
--------	------

Red	3272
-----	------

Blue	3275
------	------

Green	3277
-------	------

Series 3260 Roll Sizes

- 15 inch wide x 50 yard length (Useable sheeting width approximately 13-3/4")
- 30 inch wide x 50 yard length (Useable sheeting width approximately 28-3/4")

Description (continued)	<p>Utility Grade Series 5200</p> <p>3M™ Utility Grade Reflective Sheeting Series 5200 meets ASTM D4956 Type I, Class 4 sheeting with enhanced cold weather application properties. It can be applied at temperatures down to -10°F (-23°C) on moderately rough or porous metals and plastic surfaces. These sheetings are not intended for use as large emblems or signs.</p> <p>Series 5200 has a high tack pressure sensitive adhesive and is available in the following colors:</p> <table border="0"> <tr> <td>Color</td><td>Product Code</td></tr> <tr> <td>White</td><td>5290</td></tr> <tr> <td>Yellow</td><td>5271</td></tr> </table> <p>Series 5200 is designed for hand application. See Information Folder 1.5 for details.</p>	Color	Product Code	White	5290	Yellow	5271
Color	Product Code						
White	5290						
Yellow	5271						
Fabrication	<p>For Series 3200 and Series 3260 sheeting temperature should be at least 65°F (18°C) or higher. If the sheeting temperature is less than 65°F (18°C), allow it to condition to 65°F – 75°F (18°C – 24°C) for at least 24 hours. For Series 5200 sheeting temperature should be at least 20°F (-7°C) or higher.</p> <ol style="list-style-type: none"> Series 3200 and Series 3260: Best application will be achieved by using a motorized or hand operated squeeze roll applicator. Series 5200: Hand application. To obtain maximum initial adhesion use firm pressure with a two-inch (5 cm) rubber roller or plastic squeegee (PA1 or equivalent). Use multiple, heavy overlapping strokes. Resqueegee all edges. See Information Folder 1.5. <p>See Information Folder 1.7 for surface preparation and Information Folder 1.4, 1.5 and 1.6 for recommended application procedures.</p> <p>A. Cutting: The sheeting may be hand cut, band sawed, guillotined, cold or hot die cut, and electronically cut.</p> <p>B. Screen Printing: Use 3M™ Process Color 990. See appropriate product bulletin for more information. Dry according to recommendations in product bulletin 990 and Information Folder 1.8.</p> <p>C. Electronic Cutting Machines: Users are encouraged to evaluate cutting procedures for their own equipment and shop conditions. However, these general recommendations should be followed to ensure easy handling. There should be enough down force on the knife blade to slightly score the liner. The knife blade should be sharp and clean. Letters and characters should be a minimum height of three inches with a minimum stroke width of three eighths (3/8) of an inch.</p> <p>D. Premasking/Prespacing</p> <ol style="list-style-type: none"> Premasked Markings: Use Application Tape SCPM-3. Prespaced Markings: Use Prespacing Tape SCPS-2 or Application Tape SCPM-3. 						

**Fabrication
(continued)**

Table A – Minimum Coefficient of Retroreflection
Candelas/Foot Candle/Square Foot
Candelas/Lux/Square Meter

Obs. ¹ Angle	Ent Angle ²	White	Yellow	Red	Green	Blue	Brown
0.2	-4	70	50	14.0	9.0	4.0	1.0
0.2	+30	30	22	6.0	3.5	1.7	0.3
0.5	-4	30	25	7.5	4.5	2.0	0.3
0.5	+30	15	13	3.0	2.2	0.8	0.2

Reflectivity conforms to ASTM D 4956.

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.

Table B – CIE Chromaticity Coordinate Limits

Color	<u>x</u>	<u>y</u>	<u>x</u>	<u>y</u>	<u>x</u>	<u>y</u>	<u>x</u>	<u>y</u>	<u>Reflectance</u> <u>Limit (Y)</u>	
									Min	Max
White	.303	.300	.368	.366	.340	.393	.274	.329	27.0	
Yellow	.498	.412	.557	.442	.479	.520	.438	.472	15.0	45.0
Red	.648	.351	.735	.265	.629	.281	.565	.346	2.5	15.0
Blue	.140	.035	.244	.210	.190	.255	.065	.216	1.0	10.0
Green	.026	.399	.166	.364	.286	.446	.207	.771	3.0	12.0
Brown	.430	.340	.610	.390	.550	.450	.430	.390	1.0	9.0

Cleaning

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 sign face. Flush with water following washing. Do not use solvents to clean signs. See 3M Information Folder 1.10.

Storage and Shelf Life

Sheeting should be stored in a cool, dry area, preferably at 65-75°F (18-24°C) and 30-50% relative humidity and should be applied within one year of purchase. Rolls should be stored horizontally in the shipping carton. Partially used rolls should be returned to the shipping carton or suspended horizontally from a rod or pipe through the core. Unprocessed sheets should be stored flat. Refer to Information Folder 1.11 for more information. Unprinted sheeting may be stored by the fabricator for a period of up to one year and after printing, sign faces may be stored for an additional period of up to six months. Sheeting and sign faces must be stored in a clean area, free from excessive moisture and direct sunlight, with ambient temperatures of 85°F (29°C) or less.

**Health and Safety
Information**

Read all health hazard, precautionary, and first aid statements found in the Material Safety Data Sheet (MSDS), and/or product label of chemicals prior to handling or use. Also refer to MSDS for information about the volatile organic compound (VOC) content of chemical products. Consult local regulations and authorities for possible restrictions on product VOC content and/or VOC emissions.

General Performance Considerations	<p>The performance and durability of 3M reflective sheeting will depend upon a number of factors including (but not limited to) substrate selection and preparation, compliance with recommended application procedures, sign placement, geographic area, exposure conditions, atmospheric conditions (e.g. fog, snow, rain), surface deposits (e.g. dirt, dew, frost), maintenance and age. Engineer grade reflective sheeting can be expected to provide satisfactory performance for five to seven years when processed with 3M matched component inks and films, depending upon climatic conditions of the installation.</p> <p>Maximum durability of engineer grade reflective sheeting can be expected in applications subject to vertical exposure on stationary objects when processed and applied to properly prepared aluminum according to 3M recommendations provided in Information Folder 1.7 on Sign Base Preparation.</p> <p>The user must determine the suitability of any nonmetallic sign backing for its intended use. Applications to unprimed, excessively rough or non-weather-resistant surfaces, or exposure to severe or unusual conditions can shorten the performance of such applications. Signs or stickers that are covered by snow or ice for prolonged periods, such as those in mountainous areas, may also have reduced durability.</p>																
Limitation of Liability	<p>3M shall not be liable for any direct, indirect, special, incidental, or consequential losses or damage, including, but not limited to, lost profits, revenue, business opportunities, or goodwill, in any way related to the information contained in this document.</p>																
Literature References	<table> <tr> <td data-bbox="407 793 657 829">Product Bulletin 990</td><td data-bbox="695 793 1502 829">3M™ Process Color Series 990</td></tr> <tr> <td data-bbox="407 840 657 875">Information Folder 1.4</td><td data-bbox="695 840 1502 875">Instructions for Operation of the Interstate Squeeze Roll Applicator</td></tr> <tr> <td data-bbox="407 886 657 921">Information Folder 1.5</td><td data-bbox="695 886 1502 921">3M™ Reflective Sheeting Hand Application Instructions</td></tr> <tr> <td data-bbox="407 932 657 968">Information Folder 1.6</td><td data-bbox="695 932 1502 968">Hand Squeeze Roll Applicators</td></tr> <tr> <td data-bbox="407 978 657 1014">Information Folder 1.7</td><td data-bbox="695 978 1502 1014">Sign Base Surface Preparation for 3M™ Reflective Sheeting Application</td></tr> <tr> <td data-bbox="407 1024 657 1060">Information Folder 1.8</td><td data-bbox="695 1024 1502 1087">3M™ Series 700, 880, and 990 Process Color instructions for use on 3M™ Reflective Sheetings</td></tr> <tr> <td data-bbox="407 1098 657 1134">Information Folder 1.10</td><td data-bbox="695 1098 1502 1161">Cutting, Matching, Premasking and Prespacing of 3M™ Reflective Sheetings and Films</td></tr> <tr> <td data-bbox="407 1171 657 1207">Information Folder 1.11</td><td data-bbox="695 1171 1502 1207">Sign Maintenance Management, for 3M™ Reflective Sheeting</td></tr> </table>	Product Bulletin 990	3M™ Process Color Series 990	Information Folder 1.4	Instructions for Operation of the Interstate Squeeze Roll Applicator	Information Folder 1.5	3M™ Reflective Sheeting Hand Application Instructions	Information Folder 1.6	Hand Squeeze Roll Applicators	Information Folder 1.7	Sign Base Surface Preparation for 3M™ Reflective Sheeting Application	Information Folder 1.8	3M™ Series 700, 880, and 990 Process Color instructions for use on 3M™ Reflective Sheetings	Information Folder 1.10	Cutting, Matching, Premasking and Prespacing of 3M™ Reflective Sheetings and Films	Information Folder 1.11	Sign Maintenance Management, for 3M™ Reflective Sheeting
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3M™ Engineer Grade Prismatic Reflective Sheeting

Series 3430 with Pressure Sensitive Adhesive

Product Bulletin

May 2016

Replaces PB 3430 dated August 2013

Health and Safety Information

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

Description

3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430 is a non-metalized micro-prismatic lens reflective sheeting designed for the production of durable traffic control signs and devices, that are exposed vertically in service.

Series 3430 sheeting can easily be identified by the visible integral 'EGP' marking.

Applied to properly prepared sign substrates, Series 3430 provides long-term reflectivity and durability.

The initial photometric and colorimetric properties of Series 3430 are according to EN 12899-1:2007.

Sheeting	Color
3430	White
3431	Yellow
3432	Red
3435	Blue
3437	Green
3439	Brown



3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430 is approved for the manufacturing of

signfaces for traffic signs with a European Technical Approval (ETA).

All provisions concerning the attestation of conformity and the performances described in the ETA 10/0118 and 12/0550 were applied and the product fulfills all the prescribed requirements (see the Declaration of Performance at the end of this document for more details).

Properties

The initial minimum coefficient of retroreflection of Engineer Grade Prismatic, when measured according to CIE 54.2 using CIE standard illuminant A, conforms to Table 3 of EN 12899-1:2007 and ETA 10/0118 and 12/0550 for Class RA1 materials (Table A).

Geometry of measurements		Color					
α	β_1 ($\beta_2=0$)	White	Yellow	Red	Green	Blue	Brown
0,2°	+5°	70	50	14,5	9	4	1
	+30°	30	22	6	3,5	1,7	0,3
	+40°	10	7	2	1,5	0,5	#
0,33°	+5°	50	35	10	7	2	0,6
	+30°	24	16	4	3	1	0,2
	+40°	9	6	1,8	1,2	#	#
2°	+5°	5	3	1	0,5	#	#
	+30°	2,5	1,5	0,5	0,3	#	#
	+40°	1,5	1,0	0,5	0,2	#	#

*-# Indicates "Value greater than zero but not significant or applicable"

Table A: Minimum Coefficient of Retroreflection [cd/(lx · m²)]

The above angular definitions apply for the CIE Goniometer system (co-planar geometry). The sheeting shall be mounted in 0° or 90° orientation on the goniometer (as shown below in figure 1).

The initial chromaticity coordinates and luminance factors conform to Class CR2 of EN 12899-1:2007 for Class RA1 materials (Table B).

Color	1		2		3		4		Luminance factor
	x	y	x	y	x	y	x	y	β
White	0,305	0,315	0,335	0,345	0,325	0,355	0,295	0,325	$\geq 0,35$
Yellow	0,494	0,505	0,470	0,480	0,493	0,457	0,522	0,477	$\geq 0,27$
Red	0,735	0,265	0,700	0,250	0,610	0,340	0,660	0,340	$\geq 0,05$
Blue	0,130	0,086	0,160	0,086	0,160	0,120	0,130	0,120	$\geq 0,01$
Green	0,110	0,415	0,150	0,415	0,150	0,455	0,110	0,455	$\geq 0,04$
Brown	0,455	0,397	0,523	0,429	0,479	0,373	0,558	0,394	$0,09 \geq \beta \geq 0,03$

Table B: Chromaticity and luminance factors

Printed Colors

For printed color areas on white sheeting, when processed according to 3M™ recommendations, the coefficients of retroreflection shall not be less than 70% of the value for the corresponding color in table A. The chromaticity coordinates and luminance factors shall conform to table B.

This complies with requirements in EN 12899-1 and ETA 10/0118 and ETA 12/0550.

Surface Pattern

The Engineer Grade Prismatic sheeting is differentiated from other prismatic or encapsulated lens sheeting by the distinctive surface pattern and the visible integral 'EGP' marking.

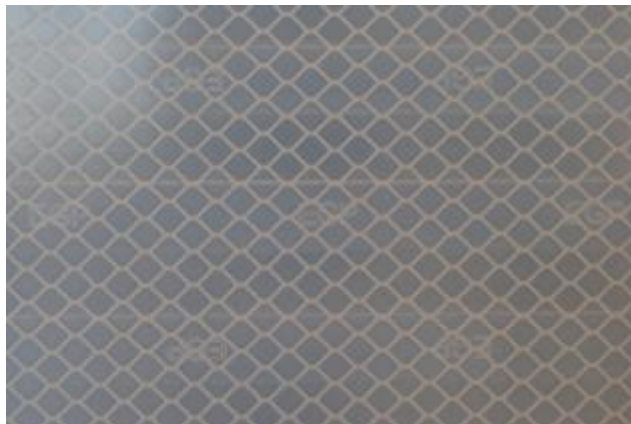


Figure 1 – Sheeting is positioned at 90° orientation

Orientation

Engineer Grade Prismatic is designed to be an effective sheeting regardless of its orientation on the substrate or ultimate orientation after installation.

However, because the efficiency of light return from cube corner reflectors is not equal at all rotation angles, the sheeting should be positioned in 0° or 90° application orientation on the completed sign when wide entrance angle performance is important for a given sign type or situation.

Application

Engineer Grade Prismatic sheeting should be conditioned prior to application to provide a minimum sheeting temperature of 18°C throughout the roll or sheeting stack.

The sheeting should be applied with mechanical squeeze roll applicators to properly prepared substrates.

If the application is done by hand, use firm pressure with a rubber roller or equivalent to obtain maximum initial adhesion. Use multiple, heavy overlapping strokes. Re-roll all edges. For further information refer to Information Folder IF 1.4, 1.5 and 1.6.

Splices

Engineer Grade Prismatic sheeting should be butt spliced when more than one piece of sheeting is used on one piece of substrate. The sheeting pieces should not touch each other. A splice gap of up to 1.5 mm is acceptable. This is to prevent buckling as the sheeting expands in extreme temperature and humidity exposure.

Substrates

For traffic sign use, product application is limited to properly prepared aluminum (see Information Folder 1.7). The substrate should be conditioned prior to application to provide a minimum surface temperature of 15°C.

Extrusions are to be wrapped and flat panel signs are to be carefully trimmed, so that sheeting from adjacent panels do not touch on assembled signs.

Users are urged to carefully evaluate all other substrates for adhesion and sign durability. Engineer Grade Prismatic sheeting is designed primarily for applications to flat substrates. Rivets or bolts should also support any use that requires a radius of curvature of less 130 mm.

Sign failures caused by the substrate or improper surface preparation are not the responsibility of 3M.

Compatible Products

Screenprint Applications

- 3M™ Process Colors 880I
- 3M™ Process Colors 880N

Digital Printing Applications

- 3M™ Piezo Inkjet Ink Series 8800UV
(for Durst Rho 161TS and 162TS printer)
- 3M™ Protective Overlay Film 1140

Copy Part Applications

- 3M™ Scotchcal™ Opaque Graphic Film 100-12
- 3M™ ElectroCut™ Film Series 1170
- 3M™ TFEC 260 D

All Applications

- Selected 3M application tapes

Important: Screen-printed sign faces must be sufficiently ventilated during the filling of the drying rack or immediately run through a conveyor. If the print is not ventilated properly, the solvents may damage the top film of the sheeting. Refer to Product Bulletin 880 and Information Folder 1.8 for more details. Care should be taken to avoid flexing Series 3430 sheeting before and especially after screening. Convert from series 880I to series 880N when ink triggered cracking first appears in your shop.

General Performance Considerations

The performance and durability of 3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430 will depend upon a number of factors including (but not limited to):

- Selection, preparation and temperature of the substrate
- Application procedures
- Geographic area
- Exposure and atmospheric conditions (e.g. snow, frost)
- Correct combination of sheeting, ink and overlay film
- Ink formulation
- Ink drying/curing methods
- Cleaning and maintenance methods

Warranty

3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430 sold by 3M to be used for permanent traffic control signs and devices is warranted for a period up to 7 years from date of application (concrete definition of the period is subject to the terms of sale) to be free of

defects in material and workmanship, subject to the following provisions:

If Sheeting Series 3430 is processed and applied to a vertical $\pm 10^\circ$ surface in accordance with all 3M application and fabrication procedures provided in 3M's product and information folders, technical memos (which will be furnished to the agency upon request), including the exclusive use of 3M matched component systems, process colors, overlay films and recommended application equipment.

Important Notice to Purchaser

All statements, technical information and recommendations herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. All questions of warranty and liability relating to this product are governed by the terms of the sale subject where applicable to the prevailing law.

No statement or recommendation not contained herein shall have any force or effect unless in an agreement signed by authorized personnel of seller and manufacturer.

Literature Reference

Instructions for Squeeze Roll Applicator	IF 1.4
Hand Application Instructions	IF 1.5
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3M Process Color 880N	PB880N

For Further Assistance

For help on specific questions relating to 3M™ reflective products, please contact your local 3M Technical Service person or contact:

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Amendment to the Declaration of Performance
'3M Engineer Grade Prismatic 3430'

This declaration covers the product 'Microprismatic retroreflective sheeting'. Sign plates or complete assemblies of fixed vertical road traffic signs according to EN 12899-1:2007 can be manufactured with the following products and product combinations, according to ETA 10/0118 and ETA 12/0550.

Components	Trade name	Colours/code
Micro-prismatic retro-reflective sheeting	3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430	White 3430 Red 3432 Yellow 3431 Green 3437 Blue 3435
Coloured overlay film	Electrocut Film series 1170	Yellow 1171 Red 1172 Blue 1175 Green 1177 Brown 1179 Dark Green 1176
Process colour	3M™ Process Colour Series 880 I or N	Yellow 884 I or N Red 882 I or N Blue 883 I or N Green 888 I or N French Red 889 I or N
Process colour for digital printing	Piezo Inkjet Ink Series 8800 UV	Yellow Red Blue Green Brown Orange
Protective Overlay films	3M™ Protective Overlay Film 1140	Clear

Colours	Chromaticity Coordinates					Luminance Factor β
	1	2	3	4		
White	x	0.305	0.335	0.325	0.295	Level: ≥ 0.40
Tolerance sphere	y	0.315	0.345	0.355	0.325	
Results White 3430	x*	0.3027				0.58
	y*	0.3210				
Yellow	x	0.494	0.470	0.513	0.545	Level: ≥ 0.24
Tolerance sphere	y	0.505	0.480	0.437	0.454	
Results Yellow 3431	x*	0.5056				0.34
	y*	0.4731				
Red	x	0.735	0.700	0.610	0.660	Level: ≥ 0.03
Tolerance sphere	y	0.265	0.250	0.340	0.340	
Results Red 3432	x*	0.6316				0.07
	y*	0.3194				
Green	x	0.110	0.170	0.170	0.110	Level: ≥ 0.03
Tolerance sphere	y	0.415	0.415	0.500	0.500	
Results Green 3437	x*	0.1353				0.06
	y*	0.4463				
Blue	x	0.130	0.160	0.160	0.130	Level: ≥ 0.01
Tolerance sphere	y	0.090	0.090	0.140	0.140	
Results Blue 3435	x*	0.1407				0.05
	y*	0.1099				
The samples also meet the requirements of classes CR1 and CR2, as defined in EN 12899-1:2007 (Clause 4.1)						
* Average of three test results (historical data)						

Table A1.1: Daylight Chromaticity and Luminance Factor, initial

Colours	Chromaticity Coordinates						Luminance Factor β
		1	2	3	4		
White	x	0.355	0.305	0.285	0.335	Level: ≥ 0.40	
Tolerance sphere	y	0.355	0.305	0.325	0.375		
Results White 3430	x*	0.3029				0.6064	
	y*	0.3221					
Yellow	x	0.545	0.487	0.427	0.465	Level: ≥ 0.24	
Tolerance sphere	y	0.454	0.423	0.483	0.534		
Results Yellow 3431	x*	0.4876				0.4175	
	y*	0.4803					
Red	x	0.735	0.674	0.569	0.655	Level: ≥ 0.03	
Tolerance sphere	y	0.265	0.236	0.341	0.345		
Results Red 3432	x*	0.6013				0.0654	
	y*	0.3150					
Green	x	0.007	0.248	0.177	0.026	Level: ≥ 0.03	
Tolerance sphere	y	0.703	0.409	0.362	0.399		
Results Green 3437	x*	0.1548				0.0659	
	y*	0.4348					
Blue	x	0.078	0.150	0.210	0.137	Level: ≥ 0.01	
Tolerance sphere	y	0.171	0.220	0.160	0.038		
Results Blue 3435	x*	0.1487				0.0527	
	y*	0.1208					

The samples also meet the requirements of class CR1, as defined in EN 12899-1:2007 (Clause 4.1)

* Average of three test results (historical data)

Table A1.2: Daylight Chromaticity and Luminance Factor, after weathering



Premium Protective Overlay Film

Series 1160

Product Bulletin 1160

December 2013

Replaces PB 1160 November 2011

Description

3M™ Premium Protective Overlay Film Series 1160 is designed as a high performance protective transparent overlay for use on signs made from 3M Traffic Safety and Security Division sheetings, films, and images. Series 1160 has been specifically developed for use over signs made from 3M™ Diamond Grade™ and High Intensity Prismatic Sheeting, and 3M's system of matched components, and is recommended for use with these materials. Many types of defacement from vandalism can be cleaned from this film to substantially restore performance and appearance of the overlaid sign. Two configurations are available:

1160: with premask

1160A: without premask

Important: *A complete understanding of these instructions is recommended before sheeting application.*

Properties

A. Color and Transparency

Series 1160 is a clear, colorless film. Application of Series 1160 to a sign fabricated using 3M's matched component systems will preserve the initial and retained minimum retroreflectance specified for the sheeting used to fabricate the sign.

B. Film

Series 1160 is a high performance fluoropolymer film that provides a barrier and resists staining from common graffiti including paints, permanent marker ink, lipstick, eggs and stickers and allows for easier clean-up.

C. Adhesive and Liner

Series 1160 utilizes a clear, transparent, and pressure sensitive adhesive and has an easily removable white paper liner.

D. Premask

To aid film handling, Series 1160 is provided with a white paper premask which is easily peeled away from the film after application. After removing the premask, reroll the sign through the laminator to ensure good adhesion.

Application**A. Use Conditions Before Overlaying Film**

1. Air and substrate temperatures should be above 60°F (16°C).
2. Signs must be clean and screen printed inks completely dry.

B. Equipment

1. Mechanical squeeze roll applicator – See Information Folder 1.4.
2. Hand squeeze roll applicator – See Information Folder 1.6.
3. A laminating roll with a hardness of 35 durometer (Shore A) is recommended to minimize tenting of Series 1160 over direct apply copy or 3M™ ElectroCut™ Film Series 1170.

NOTE: Application of 1160A Film is best accomplished using a mechanical squeeze roll applicator. Use extra care when handling this film since it is not supported with a premask.

C. Premasked Film (1160)

1. Remove the premask AFTER film application to sign by lifting edge of premask with fingernail or knife and pulling premask back over itself at a vary sharp angle using a steady, even tension.

Note: Edge trim BEFORE removing premask.

WARNING: Do not allow premask to be exposed to moisture. Premask must be removed before storage or shipment.

D. Trimming

1. Use a sharp cutting blade to trim film along edges. It may be helpful to grasp the edge of the unsupported overhanging film to create tension on that portion of the film while trimming.
2. The overhanging portion of the film on the TOP EDGE of the sign may be folded over smoothly and adhered to the back edge of the sign to minimize any water or dirt intrusion along the top edge of the sign. The backside of the sign must be properly cleaned before film is applied.

E. Additional Processing

1. DO NOT apply any inks, films, or sheetings in the form of copy or images over 1160 film since this film is designed to repel adhesion of such markings.

F. Splices

1. Creating film splices to overlay a sign is not recommended.

Packaging and Storage	<ul style="list-style-type: none"> A. Store film in a cool, dry area, preferably 65- 75°F and 30-50 percent relative humidity. B. Faces and signs covered with overlay film do not require slipsheeting. Follow recommendations given in Information Folder 1.11 regarding proper storage, packaging, handling, shipping, and installation. C. Use within one year from date of receipt.
Cleaning	<p>A. Materials</p> <ul style="list-style-type: none"> 1. To remove normal dirt accumulation from signs, use a soft cloth and mild detergent and water solution followed by thorough water rinse. 2. To remove other contaminations such as graffiti defacement, use commercially available cleaning systems recommended for this purpose. Important: Before using any cleaning materials, read and carefully follow product label use and safety instructions. Test the cleaner on a small area of the sign to determine its suitability and to be sure it does not cause any unwanted results or damage to the performance of the sign. Avoid the use of formulations containing strong polar solvents such as ketones (acetone, methyl ethyl ketone) or methylene chloride (dichloro methane) and other chlorinated solvents. A cleaner such as 3M™ Citrus Cleaner can be effective for removal of common types of defacement such as from permanent marking pens, eggs, and stickers. A solvent such as isopropyl alcohol (IPA), or a 50/50 blend of IPA and xylene can be effective in removing paints and lacquers. Commercially available cleaners can also be highly effective. Although Series 1160 is resistant to strong solvents, prolonged exposure to solvents can result in permanent sign damage. 3. A pressure sensitive tape such as SCPM-3 from 3M also may be effective in removing certain paints and stickers. Simply roll or squeegee the tape firmly over the defaced area and carefully lift away the tape with the defacement from the overlay. Small amounts of residual defacement may require cleaning solutions as stated above to remove small areas that the tape method did not remove adequately. The sign needs to be completely dry for this method to be effective. 4. Always use soft cloths. Do NOT use abrasive brushes, scouring pads or implements to scrape defacement from sign as these will likely damage the sign permanently.
3M Basic Product Warranty and Limited Remedy	<p>3M™ Premium Protective Overlay Film Series 1160 (“Product”) 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. If the Product is proven not to have met the Basic Warranty on its shipment date, then a buyer’s exclusive remedy, and 3M’s sole obligation, at 3M’s option, will be refunded or replacement of the sheeting.</p> <p>EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAWY, THE 3M WARRANTY IS MADE IN LIEU OF ALL OTEHR WARRANTIES, RIGHTS OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND THOSE ARISING FROM A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. A BUYER IS RESPONSIBLE FOR DETERMINING IF A PRODUCT IS SUITABLE FOR ITS PARTICULAR PURPOSE AND APPLICATION METHODS</p>

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.
General Surface Testing	3M™ Premium Protective Overlay Film Series 1160, when used according to the recommendation of 3M, can be expected to provide the same effective field performance as the sheeting on which it is applied. Series 1160 is designed to enable signs to be cleaned from many common types of defacement caused by vandalism. The film does not prevent defacement but allows the sign to be cleaned in many situations using recommended and conventional cleaners such that the performance and appearance of the original sign is substantially restored. This would include the occasional removal of such markings as common household spray paints, lipstick, permanent pen, eggs, and/or promotional stickers. Use of sharp implements, abrasive devices or certain types of strong and or corrosive chemicals to either deface the sign or used against recommendations to attempt to clean the sign could result in permanent damage to the overlay film and underlying sign which could severely reduce the performance expectation of the original sign. This overlay film is not intended to provide sign protection from impact, cutting, gouging, or pulling of the overlay film from the sign or from the use of strong chemicals that may damage the film and/or the underlying sign. Use of a flame or other high heat source and other such extreme abuse of overlaid signs would very likely severely reduce or destroy the sign's effectiveness permanently.
Literature References	Information Folder 1.4 Instructions for Operation of Squeeze Roll Applicator Information Folder 1.5 Hand Applications Instructions Information Folder 1.6 Instructions for Hand Squeeze Roll Application Information Folder 1.11 Storage, Maintenance & Removal Instructions

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www.3M.com/roadwaysafety**

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