



The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at *wvOASIS.gov*. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at *WVPurchasing.gov* with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

## Header @ 21

List View

**General Information** | [Contact](#) | [Default Values](#) | [Discount](#) | [Document Information](#) | [Clarification Request](#)

Procurement Folder: 879744

SO Doc Code: CRFQ

Procurement Type: Central Master Agreement

SO Dept: 0803

Vendor ID:

SO Doc ID: DOT2100000167

Legal Name: 3M TCM

Published Date: 7/1/21

Alias/DBA:

Close Date: 7/20/21

Total Bid: \$291,205.07

Close Time: 13:30

Response Date:

Status: Closed

Response Time:

Solicitation Description:

Responded By User ID:

Total of Header Attachments: 21

First Name:

Total of All Attachments: 21

Last Name:

Email:

Phone:



Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

**State of West Virginia  
 Solicitation Response**

**Proc Folder:** 879744  
**Solicitation Description:** REFLECTIVE SIGN SHEETING & ASSOCIATED MATERIALS  
**Proc Type:** Central Master Agreement

Solicitation Closes	Solicitation Response	Version
2021-07-20 13:30	SR 0803 ESR07142100000000237	1

**VENDOR**  
 000000184021  
 3M TCM

**Solicitation Number:** CRFQ 0803 DOT2100000167  
**Total Bid:** 291205.0700000000069849193096 **Response Date:** 2021-07-19 **Response Time:** 16:11:19  
**Comments:**

**FOR INFORMATION CONTACT THE BUYER**

John W Estep  
 304-558-2566  
 john.w.estep@wv.gov

**Vendor Signature X** **FEIN#** **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	REFLECTIVE SIGN SHEETING & ASSOCIATED MATERIALS	1.00000	EA	291205.070000	291205.07

Comm Code	Manufacturer	Specification	Model #
55121734			

**Commodity Line Comments:** Price pages details in Attachments Tab.

**Extended Description:**

REFLECTIVE SIGN SHEETING & ASSOCIATED MATERIALS

**EXHIBIT A - PRICING PAGES**

Quantities listed in this RFQ are approximations only. It is understood and agreed that the contract shall cover the quantities actually ordered for delivery during the term of the contract, whether more or less than the quantities shown. Award will be based on lowest total cost.

SECTION I: Type ASTM-I Retroreflective Sheeting								
Contract Item Number	Estimated Quantity	Item Description	Overage Preferences	Manufacturer Product Code	Unit Cost	Extended Total Amount (Qty x Unit Cost)	UNSPSC Commodity Code	DOH Inventory Subcode
1	1	Type ASTM-I Sheeting, 15 inch x 50 yds., White	1/16" min. overage preferred	3430	112.5000	\$ 112.50	55121734	111015
2	1	Type ASTM-I Sheeting, 15 inch x 50 yds., Yellow	1/16" min. overage preferred	3431	112.5000	\$ 112.50	55121734	112015
3	1	Type ASTM-I Sheeting, 18-1/2 inch x 50 yds., White	-	3430	138.7500	\$ 138.75	55121734	-
4	1	Type ASTM-I Sheeting, 18-1/2 inch x 50 yds., Yellow	-	3431	138.7500	\$ 138.75	55121734	112018
5	1	Type ASTM-I Sheeting, 21 inch x 50 yds., White	1/16" min. overage preferred	3430	157.5000	\$ 157.50	55121734	111021
6	1	Type ASTM-I Sheeting, 21 inch x 50 yds., Yellow	1/16" min. overage preferred	3431	157.5000	\$ 157.50	55121734	-
7	8	Type ASTM-I Sheeting, 24-1/2 inch x 50 yds., White	-	3430	183.7500	\$ 1,470.00	55121734	111024
8	1	Type ASTM-I Sheeting, 24-1/2 inch x 50 yds., Yellow	-	3431	183.7500	\$ 183.75	55121734	112024
9	46	Type ASTM-I Sheeting, 30-1/2 inch x 50 yds., White	-	3430	228.7500	\$ 10,522.50	55121734	111030
10	2	Type ASTM-I Sheeting, 30-1/2 inch x 50 yds., Yellow	-	3431	228.7500	\$ 457.50	55121734	112030
11	4	Type ASTM-I Sheeting, 36 inch x 50 yds., White	5/16" min. overage preferred	3430	270.0000	\$ 1,080.00	55121734	111036
12	1	Type ASTM-I Sheeting, 36 inch x 50 yds., Yellow	5/16" min. overage preferred	3431	270.0000	\$ 270.00	55121734	112036
13	1	Type ASTM-I Sheeting, 42 inch x 50 yds., White	5/16" min. overage preferred	3430	315.0000	\$ 315.00	55121734	-
14	1	Type ASTM-I Sheeting, 42 inch x 50 yds., Yellow	5/16" min. overage preferred	3431	315.0000	\$ 315.00	55121734	-
15	5	Type ASTM-I Sheeting, 48 inch x 50 yds., White	7/16" min. overage preferred	3430	360.0000	\$ 1,800.00	55121734	111048
16	1	Type ASTM-I Sheeting, 48 inch x 50 yds., Yellow	7/16" min. overage preferred	3431	360.0000	\$ 360.00	55121734	112048
17	1	Type ASTM-I Sheeting, 1/2 inch x 50 yds., White	-	3430	3.7500	\$ 3.75	55121734	111050

18	1	Type ASTM-I Sheeting, 1/2 inch x 50 yds., Yellow	-	3431	3.7500	\$ 3.75	55121734	112050
19	1	Type ASTM-I Sheeting, 1 inch x 50 yds., White	-	3430	7.5000	\$ 7.50	55121734	111100
20	1	Type ASTM-I Sheeting, 1 inch x 50 yds., Yellow	-	3431	7.5000	\$ 7.50	55121734	112100
21	1	Type ASTM-I Sheeting, 15 inch x 50 yds., Blue	1/16" min. overage preferred	3435	112.5000	\$ 112.50	55121734	115015
22	1	Type ASTM-I Sheeting, 18-1/2 inch x 50 yds., Blue	-	3435	138.7500	\$ 138.75	55121734	-
23	1	Type ASTM-I Sheeting, 21 inch x 50 yds., Blue	1/16" min. overage preferred	3435	157.5000	\$ 157.50	55121734	-
24	2	Type ASTM-I Sheeting, 24-1/2 inch x 50 yds., Blue	-	3435	183.7500	\$ 367.50	55121734	115024
25	1	Type ASTM-I Sheeting, 30-1/2 inch x 50 yds., Blue	-	3435	228.7500	\$ 228.75	55121734	115030
26	1	Type ASTM-I Sheeting, 36 inch x 50 yds., Blue	3/16" min. overage preferred	3435	270.0000	\$ 270.00	55121734	115036
27	1	Type ASTM-I Sheeting, 42 inch x 50 yds., Blue	5/16" min. overage preferred	3435	315.0000	\$ 315.00	55121734	-
28	1	Type ASTM-I Sheeting, 48 inch x 50 yds., Blue	7/16" min. overage preferred	3435	360.0000	\$ 360.00	55121734	115048

**SECTION II: Type ASTM-IV Retroreflective Sheeting**

Contract Item Number	Estimated Quantity	Item Description	Overage Preferences	Manufacturer Product Code	Unit Cost	Extended Total Amount (Qty x Unit Cost)	UNSPSC Commodity Code	DOH Inventory Subcode
29	1	Type ASTM-IV Sheeting, 1/2 inch x 50 yds., White	-	3930	4.3100	\$ 4.31	55121734	211050
30	1	Type ASTM-IV Sheeting, 1/2 inch x 50 yds., Yellow	-	3931	4.3100	\$ 4.31	55121734	-
31	1	Type ASTM-IV Sheeting, 1 inch x 50 yds., White	-	3930	8.6300	\$ 8.63	55121734	211100
32	1	Type ASTM-IV Sheeting, 1 inch x 50 yds., Yellow	-	3931	8.6300	\$ 8.63	55121734	-
33	1	Type ASTM-IV Sheeting, 12-3/4 inch x 100 yds., White	-	3930	219.9400	\$ 219.94	55121734	211012
34	1	Type ASTM-IV Sheeting, 12-3/4 inch x 100 yds., Yellow	-	3931	219.9400	\$ 219.94	55121734	212012
35	22	Type ASTM-IV Sheeting, 12-3/4 inch x 100 yds., Blue	-	3935	219.9400	\$ 4,838.68	55121734	215012
36	17	Type ASTM-IV Sheeting, 12-3/4 inch x 100 yds., Green	-	3937	219.9400	\$ 3,738.98	55121734	214012
37	1	Type ASTM-IV Sheeting, 12-3/4 inch x 100 yds., Brown	-	3939	219.9400	\$ 219.94	55121734	2016012
38	1	Type ASTM-IV Sheeting, 15 inch x 50 yds., White	1/16" min. overage preferred	3930	129.3800	\$ 129.38	55121734	211015

39	1	Type ASTM-IV Sheeting, 15 inch x 50 yds., Yellow	1/16" min. overage preferred	3931	129.3800	\$ 129.38	55121734	-
40	1	Type ASTM-IV Sheeting, 15 inch x 50 yds., Blue	1/16" min. overage preferred	3935	129.3800	\$ 129.38	55121734	215015
41	1	Type ASTM-IV Sheeting, 15 inch x 50 yds., Green	1/16" min. overage preferred	3937	129.3800	\$ 129.38	55121734	-
42	1	Type ASTM-IV Sheeting, 15 inch x 50 yds., Brown	1/16" min. overage preferred	3939	129.3800	\$ 129.38	55121734	-
43	13	Type ASTM-IV Sheeting, 18-1/2 inch x 50 yds., White	-	3930	159.5600	\$ 2,074.28	55121734	211018
44	1	Type ASTM-IV Sheeting, 18-1/2 inch x 50 yds., Yellow	-	3931	159.5600	\$ 159.56	55121734	212018
45	1	Type ASTM-IV Sheeting, 18-1/2 inch x 50 yds., Blue	-	3935	159.5600	\$ 159.56	55121734	-
46	1	Type ASTM-IV Sheeting, 18-1/2 inch x 50 yds., Green	-	3937	159.5600	\$ 159.56	55121734	-
47	1	Type ASTM-IV Sheeting, 18-1/2 inch x 50 yds., Brown	-	3939	159.5600	\$ 159.56	55121734	-
48	1	Type ASTM-IV Sheeting, 21 inch x 50 yds., White	1/16" min. overage preferred	3930	181.1300	\$ 181.13	55121734	211021
49	1	Type ASTM-IV Sheeting, 21 inch x 50 yds., Yellow	1/16" min. overage preferred	3931	181.1300	\$ 181.13	55121734	-
50	1	Type ASTM-IV Sheeting, 21 inch x 50 yds., Blue	1/16" min. overage preferred	3935	181.1300	\$ 181.13	55121734	-
51	1	Type ASTM-IV Sheeting, 21 inch x 50 yds., Green	1/16" min. overage preferred	3937	181.1300	\$ 181.13	55121734	-
52	1	Type ASTM-IV Sheeting, 21 inch x 50 yds., Brown	1/16" min. overage preferred	3939	181.1300	\$ 181.13	55121734	-
53	27	Type ASTM-IV Sheeting, 24-1/2 inch x 50 yds., White	-	3930	211.3100	\$ 5,705.37	55121734	211024
54	11	Type ASTM-IV Sheeting, 24-1/2 inch x 50 yds., Yellow	-	3931	211.3100	\$ 2,324.41	55121734	212024
55	1	Type ASTM-IV Sheeting, 24-1/2 inch x 50 yds., Blue	-	3935	211.3100	\$ 211.31	55121734	-
56	1	Type ASTM-IV Sheeting, 24-1/2 inch x 50 yds., Green	-	3937	211.3100	\$ 211.31	55121734	-
57	1	Type ASTM-IV Sheeting, 24-1/2 inch x 50 yds., Brown	-	3939	211.3100	\$ 211.31	55121734	216024
58	1	Type ASTM-IV Sheeting, 24-1/2 inch x 50 yds., Red	-	3932	211.3100	\$ 211.31	55121734	217024
59	73	Type ASTM-IV Sheeting, 30-1/2 inch x 50 yds., White	-	3930	263.0600	\$ 19,203.38	55121734	211030
60	49	Type ASTM-IV Sheeting, 30-1/2 inch x 50 yds., Yellow	-	3931	263.0600	\$ 12,889.94	55121734	212030
61	1	Type ASTM-IV Sheeting, 30-1/2 inch x 50 yds., Blue	-	3935	263.0600	\$ 263.06	55121734	215030

62	1	Type ASTM-IV Sheeting, 30-1/2 inch x 50 yds., Green	-	3937	263.0600	\$ 263.06	55121734	214030
63	1	Type ASTM-IV Sheeting, 30-1/2 inch x 50 yds., Brown	-	3939	263.0600	\$ 263.06	55121734	216030
64	16	Type ASTM-IV Sheeting, 36 inch x 50 yds., White	3/16" min. overage preferred	3930	310.5000	\$ 4,968.00	55121734	211036
65	20	Type ASTM-IV Sheeting, 36 inch x 50 yds., Yellow	3/16" min. overage preferred	3931	310.5000	\$ 6,210.00	55121734	212036
66	1	Type ASTM-IV Sheeting, 36 inch x 50 yds., Blue	3/16" min. overage preferred	3935	310.5000	\$ 310.50	55121734	215036
67	1	Type ASTM-IV Sheeting, 36 inch x 50 yds., Green	3/16" min. overage preferred	3937	310.5000	\$ 310.50	55121734	214036
68	1	Type ASTM-IV Sheeting, 36 inch x 50 yds., Brown	3/16" min. overage preferred	3939	310.5000	\$ 310.50	55121734	-
69	14	Type ASTM-IV Sheeting, 42 inch x 50 yds., White	5/16" min. overage preferred	3930	362.2500	\$ 5,071.50	55121734	211042
70	1	Type ASTM-IV Sheeting, 42 inch x 50 yds., Yellow	5/16" min. overage preferred	3931	362.2500	\$ 362.25	55121734	212042
71	1	Type ASTM-IV Sheeting, 42 inch x 50 yds., Blue	5/16" min. overage preferred	3935	362.2500	\$ 362.25	55121734	215042
72	1	Type ASTM-IV Sheeting, 42 inch x 50 yds., Green	5/16" min. overage preferred	3937	362.2500	\$ 362.25	55121734	214042
73	1	Type ASTM-IV Sheeting, 42 inch x 50 yds., Brown	5/16" min. overage preferred	3939	362.2500	\$ 362.25	55121734	-
74	15	Type ASTM-IV Sheeting, 48 inch x 50 yds., White	7/16" min. overage preferred	3930	414.0000	\$ 6,210.00	55121734	211048
75	6	Type ASTM-IV Sheeting, 48 inch x 50 yds., Yellow	7/16" min. overage preferred	3931	414.0000	\$ 2,484.00	55121734	212048
76	1	Type ASTM-IV Sheeting, 48 inch x 50 yds., Blue	7/16" min. overage preferred	3935	414.0000	\$ 414.00	55121734	215048
77	1	Type ASTM-IV Sheeting, 48 inch x 50 yds., Green	7/16" min. overage preferred	3937	414.0000	\$ 414.00	55121734	214048
78	1	Type ASTM-IV Sheeting, 48 inch x 50 yds., Brown	7/16" min. overage preferred	3939	414.0000	\$ 414.00	55121734	216048



SECTION III : Type ASTM-XI Retroreflective Sheeting								
Contract Item Number	Estimated Quantity	Item Description	Overage Preferences	Manufacturer Product Code	Unit Cost	Extended Total Amount (Qty x Unit Cost)	UNSPSC Commodity Code	DOH Inventory Subcode
79	1	Type ASTM-XI Sheeting, 9 inch x 100 yds., Fluorescent Yellow Green	-	4083	357.7500	\$ 357.75	55121734	612409
80	1	Type ASTM-XI Sheeting, 12 inch x 100 yds., White	-	4090	477.0000	\$ 477.00	55121734	611012
81	1	Type ASTM-XI Sheeting, 12 inch x 100 yds., Fluorescent Yellow	-	4081	477.0000	\$ 477.00	55121734	612012
82	10	Type ASTM-XI Sheeting, 12-3/4 inch x 100 yds., White	-	4090	506.8100	\$ 5,068.10	55121734	611012
83	20	Type ASTM-XI Sheeting, 12-3/4 inch x 100 yds., Blue	-	4095	506.8100	\$ 10,136.20	55121734	-
84	20	Type ASTM-XI Sheeting, 12-3/4 inch x 100 yds., Green	-	4097	506.8100	\$ 10,136.20	55121734	614012
85	1	Type ASTM-XI Sheeting, 12-3/4 inch x 100 yds., Fluorescent Orange	-	4084	506.8100	\$ 506.81	55121734	613012
86	1	Type ASTM-XI Sheeting, 12-3/4 inch x 100 yds., Fluorescent Yellow	-	4081	506.8100	\$ 506.81	55121734	612012
87	1	Type ASTM-XI Sheeting, 12-3/4 inch x 100 yds., Fluorescent Yellow Green	-	4083	506.8100	\$ 506.81	55121734	612412
88	1	Type ASTM-XI Sheeting, 15 inch x 50 yds., White	1/16" min. overage preferred	4090	298.1300	\$ 298.13	55121734	-
89	1	Type ASTM-XI Sheeting, 15 inch x 50 yds., Blue	1/16" min. overage preferred	4095	298.1300	\$ 298.13	55121734	-
90	1	Type ASTM-XI Sheeting, 15 inch x 50 yds., Green	1/16" min. overage preferred	4097	298.1300	\$ 298.13	55121734	-
91	1	Type ASTM-XI Sheeting, 15 inch x 50 yds., Fluorescent Orange	1/16" min. overage preferred	4084	298.1300	\$ 298.13	55121734	-
92	1	Type ASTM-XI Sheeting, 15 inch x 50 yds., Fluorescent Yellow	1/16" min. overage preferred	4081	298.1300	\$ 298.13	55121734	-
93	1	Type ASTM-XI Sheeting, 15 inch x 50 yds., Fluorescent Yellow Green	1/16" min. overage preferred	4083	298.1300	\$ 298.13	55121734	-
94	1	Type ASTM-XI Sheeting, 18-1/2 inch x 50 yds., White	-	4090	367.6900	\$ 367.69	55121734	611018

95	1	Type ASTM-XI Sheeting, 18-1/2 inch x 50 yds., Blue	-	4095	367.6900	\$ 367.69	55121734	-
96	1	Type ASTM-XI Sheeting, 18-1/2 inch x 50 yds., Green	-	4097	367.6900	\$ 367.69	55121734	-
97	4	Type ASTM-XI Sheeting, 18-1/2 inch x 50 yds., Fluorescent Orange	-	4084	367.6900	\$ 1,470.76	55121734	613018
98	1	Type ASTM-XI Sheeting, 18-1/2 inch x 50 yds., Fluorescent Yellow	-	4081	367.6900	\$ 367.69	55121734	612018
99	1	Type ASTM-XI Sheeting, 18-1/2 inch x 50 yds., Fluorescent Yellow Green	-	4083	367.6900	\$ 367.69	55121734	612418
100	1	Type ASTM-XI Sheeting, 21 inch x 50 yds., White	1/16" min. overage preferred	4090	417.3800	\$ 417.38	55121734	-
101	1	Type ASTM-XI Sheeting, 21 inch x 50 yds., Blue	1/16" min. overage preferred	4095	417.3800	\$ 417.38	55121734	-
102	1	Type ASTM-XI Sheeting, 21 inch x 50 yds., Green	1/16" min. overage preferred	4097	417.3800	\$ 417.38	55121734	-
103	1	Type ASTM-XI Sheeting, 21 inch x 50 yds., Fluorescent Orange	1/16" min. overage preferred	4084	417.3800	\$ 417.38	55121734	-
104	1	Type ASTM-XI Sheeting, 21 inch x 50 yds., Fluorescent Yellow	1/16" min. overage preferred	4081	417.3800	\$ 417.38	55121734	-
105	1	Type ASTM-XI Sheeting, 21 inch x 50 yds., Fluorescent Yellow Green	1/16" min. overage preferred	4083	417.3800	\$ 417.38	55121734	-
106	1	Type ASTM-XI Sheeting, 24-1/2 inch x 50 yds., White	-	4090	486.9400	\$ 486.94	55121734	611024
107	1	Type ASTM-XI Sheeting, 24-1/2 inch x 50 yds., Blue	-	4095	486.9400	\$ 486.94	55121734	-
108	1	Type ASTM-XI Sheeting, 24-1/2 inch x 50 yds., Green	-	4097	486.9400	\$ 486.94	55121734	-
109	4	Type ASTM-XI Sheeting, 24-1/2 inch x 50 yds., Fluorescent Orange	-	4084	486.9400	\$ 1,947.76	55121734	613024
110	14	Type ASTM-XI Sheeting, 24-1/2 inch x 50 yds., Fluorescent Yellow	-	4081	486.9400	\$ 6,817.16	55121734	612024
111	1	Type ASTM-XI Sheeting, 24-1/2 inch x 50 yds., Fluorescent Yellow Green	-	4083	486.9400	\$ 486.94	55121734	612424
112	1	Type ASTM-XI Sheeting, 30-1/2 inch x 50 yds., White	-	4090	606.1900	\$ 606.19	55121734	-
113	1	Type ASTM-XI Sheeting, 30-1/2 inch x 50 yds., Blue	-	4095	606.1900	\$ 606.19	55121734	-
114	1	Type ASTM-XI Sheeting, 30-1/2 inch x 50 yds., Green	-	4097	606.1900	\$ 606.19	55121734	-
115	2	Type ASTM-XI Sheeting, 30-1/2 inch x 50 yds., Fluorescent Orange	-	4084	606.1900	\$ 1,212.38	55121734	613030

116	6	Type ASTM-XI Sheeting, 30-1/2 inch x 50 yds., Fluorescent Yellow	-	4081	606.1900	\$ 3,637.14	55121734	612030
117	7	Type ASTM-XI Sheeting, 30-1/2 inch x 50 yds., Fluorescent Yellow Green	-	4083	606.1900	\$ 4,243.33	55121734	612430
118	1	Type ASTM-XI Sheeting, 36 inch x 50 yds., White	3/16" min. overage preferred	4090	715.5000	\$ 715.50	55121734	611036
119	1	Type ASTM-XI Sheeting, 36 inch x 50 yds., Blue	5/16" min. overage preferred	4095	715.5000	\$ 715.50	55121734	-
120	1	Type ASTM-XI Sheeting, 36 inch x 50 yds., Green	5/16" min. overage preferred	4097	715.5000	\$ 715.50	55121734	-
121	2	Type ASTM-XI Sheeting, 36 inch x 50 yds., Fluorescent Orange	3/16" min. overage preferred	4084	715.5000	\$ 1,431.00	55121734	613036
122	22	Type ASTM-XI Sheeting, 36 inch x 50 yds., Fluorescent Yellow	5/16" min. overage preferred	4081	715.5000	\$ 15,741.00	55121734	612036
123	1	Type ASTM-XI Sheeting, 36 inch x 50 yds., Fluorescent Yellow Green	5/16" min. overage preferred	4083	715.5000	\$ 715.50	55121734	612436
124	1	Type ASTM-XI Sheeting, 42 inch x 50 yds., White	5/16" min. overage preferred	4090	834.7500	\$ 834.75	55121734	-
125	1	Type ASTM-XI Sheeting, 42 inch x 50 yds., Blue	5/16" min. overage preferred	4095	834.7500	\$ 834.75	55121734	-
126	1	Type ASTM-XI Sheeting, 42 inch x 50 yds., Green	5/16" min. overage preferred	4097	834.7500	\$ 834.75	55121734	-
127	1	Type ASTM-XI Sheeting, 42 inch x 50 yds., Fluorescent Orange	5/16" min. overage preferred	4084	834.7500	\$ 834.75	55121734	-
128	1	Type ASTM-XI Sheeting, 42 inch x 50 yds., Fluorescent Yellow	5/16" min. overage preferred	4081	834.7500	\$ 834.75	55121734	-
129	1	Type ASTM-XI Sheeting, 42 inch x 50 yds., Fluorescent Yellow Green	5/16" min. overage preferred	4083	834.7500	\$ 834.75	55121734	-
130	11	Type ASTM-XI Sheeting, 48 inch x 50 yds., White	7/16" min. overage preferred	4090	954.0000	\$ 10,494.00	55121734	611048
131	2	Type ASTM-XI Sheeting, 48 inch x 50 yds., Blue	7/16" min. overage preferred	4095	954.0000	\$ 1,908.00	55121734	-
132	2	Type ASTM-XI Sheeting, 48 inch x 50 yds., Green	7/16" min. overage preferred	4097	954.0000	\$ 1,908.00	55121734	-
133	25	Type ASTM-XI Sheeting, 48 inch x 50 yds., Fluorescent Orange	7/16" min. overage preferred	4084	954.0000	\$ 23,850.00	55121734	613048
134	8	Type ASTM-XI Sheeting, 48 inch x 50 yds., Fluorescent Yellow	7/16" min. overage preferred	4081	954.0000	\$ 7,632.00	55121734	612048
135	11	Type ASTM-XI Sheeting, 48 inch x 50 yds., Fluorescent Yellow Green	7/16" min. overage preferred	4083	954.0000	\$ 10,494.00	55121734	612448

## SECTION IV : Type ASTM-I, ASTM-IV, and Type ASTM-XI Retroreflective Sheeting Matched Components

Contract Item Number	Estimated Quantity	Item Description	Overage Preferences	Manufacturer Product Code	Unit Cost	Extended Total Amount (Qty x Unit Cost)	UNSPSC Commodity Code	DOH Inventory Subcode
136	1	Transparent film, Acrylic, 12 inch x 50 yds., Yellow	NA	1171	94.5000	\$ 94.50	55121734	-
137	1	Transparent film, Acrylic, 12 inch x 50 yds., Red	NA	1172	94.5000	\$ 94.50	55121734	-
138	1	Transparent film, Acrylic, 12 inch x 50 yds., Blue	NA	1175	94.5000	\$ 94.50	55121734	-
139	1	Transparent film, Acrylic, 12 inch x 50 yds., Green	NA	1177	94.5000	\$ 94.50	55121734	-
140	1	Transparent film, Acrylic, 12 inch x 50 yds., Brown	NA	1179	94.5000	\$ 94.50	55121734	-
141	1	Transparent film, Acrylic, 15 inch x 50 yds., Yellow	NA	1171	118.1300	\$ 118.13	55121734	-
142	1	Transparent film, Acrylic, 15 inch x 50 yds., Red	NA	1172	118.1300	\$ 118.13	55121734	-
143	1	Transparent film, Acrylic, 15 inch x 50 yds., Blue	NA	1175	118.1300	\$ 118.13	55121734	-
144	1	Transparent film, Acrylic, 15 inch x 50 yds., Green	NA	1177	118.1300	\$ 118.13	55121734	-
145	1	Transparent film, Acrylic, 15 inch x 50 yds., Brown	NA	1179	118.1300	\$ 118.13	55121734	-
146	1	Transparent film, Acrylic, 18 inch x 50 yds., Yellow	NA	1171	141.7500	\$ 141.75	55121734	-
147	1	Transparent film, Acrylic, 18 inch x 50 yds., Red	NA	1172	141.7500	\$ 141.75	55121734	-
148	1	Transparent film, Acrylic, 18 inch x 50 yds., Blue	NA	1175	141.7500	\$ 141.75	55121734	-
149	1	Transparent film, Acrylic, 18 inch x 50 yds., Green	NA	1177	141.7500	\$ 141.75	55121734	904018
150	1	Transparent film, Acrylic, 18 inch x 50 yds., Brown	NA	1179	141.7500	\$ 141.75	55121734	906018
151	1	Transparent film, Acrylic, 24 inch x 50 yds., Yellow	NA	1171	189.0000	\$ 189.00	55121734	902024
152	1	Transparent film, Acrylic, 24 inch x 50 yds., Red	NA	1172	189.0000	\$ 189.00	55121734	907024
153	1	Transparent film, Acrylic, 24 inch x 50 yds., Blue	NA	1175	189.0000	\$ 189.00	55121734	905024
154	11	Transparent film, Acrylic, 24 inch x 50 yds., Green	NA	1177	189.0000	\$ 2,079.00	55121734	904024
155	1	Transparent film, Acrylic, 24 inch x 50 yds., Brown	NA	1179	189.0000	\$ 189.00	55121734	906024
156	1	Transparent film, Acrylic, 30 inch x 50 yds., Yellow	NA	1171	236.2500	\$ 236.25	55121734	-

157	1	Transparent film, Acrylic, 30 inch x 50 yds., Red	NA	1172	236.2500	\$ 236.25	55121734	907030
158	1	Transparent film, Acrylic, 30 inch x 50 yds., Blue	NA	1175	236.2500	\$ 236.25	55121734	905030
159	29	Transparent film, Acrylic, 30 inch x 50 yds., Green	NA	1177	236.2500	\$ 6,851.25	55121734	904030
160	1	Transparent film, Acrylic, 30 inch x 50 yds., Brown	NA	1179	236.2500	\$ 236.25	55121734	906030
161	1	Transparent film, Acrylic, 36 inch x 50 yds., Yellow	NA	1171	283.5000	\$ 283.50	55121734	902036
162	1	Transparent film, Acrylic, 36 inch x 50 yds., Red	NA	1172	283.5000	\$ 283.50	55121734	907036
163	1	Transparent film, Acrylic, 36 inch x 50 yds., Blue	NA	1175	283.5000	\$ 283.50	55121734	905036
164	7	Transparent film, Acrylic, 36 inch x 50 yds., Green	NA	1177	283.5000	\$ 1,984.50	55121734	904036
165	1	Transparent film, Acrylic, 36 inch x 50 yds., Brown	NA	1179	283.5000	\$ 283.50	55121734	906036
166	1	Transparent film, Acrylic, 42 inch x 50 yds., Yellow	NA	1171	330.7500	\$ 330.75	55121734	-
167	1	Transparent film, Acrylic, 42 inch x 50 yds., Red	NA	1172	330.7500	\$ 330.75	55121734	-
168	1	Transparent film, Acrylic, 42 inch x 50 yds., Blue	NA	1175	330.7500	\$ 330.75	55121734	-
169	1	Transparent film, Acrylic, 42 inch x 50 yds., Green	NA	1177	330.7500	\$ 330.75	55121734	904042
170	1	Transparent film, Acrylic, 42 inch x 50 yds., Brown	NA	1179	330.7500	\$ 330.75	55121734	-
171	1	Transparent film, Acrylic, 48 inch x 50 yds., Yellow	NA	1171	378.0000	\$ 378.00	55121734	-
172	10	Transparent film, Acrylic, 48 inch x 50 yds., Red	NA	1172	378.0000	\$ 3,780.00	55121734	907048
173	11	Transparent film, Acrylic, 48 inch x 50 yds., Blue	NA	1175	378.0000	\$ 4,158.00	55121734	905048
174	10	Transparent film, Acrylic, 48 inch x 50 yds., Green	NA	1177	378.0000	\$ 3,780.00	55121734	904048
175	2	Transparent film, Acrylic, 48 inch x 50 yds., Brown	NA	1179	378.0000	\$ 756.00	55121734	906048
176	1	Opaque film, Vinyl, 3/8 inch x 50 yds., Black	NA	3650-12	2.2000	\$ 2.20	55121734	518038

177	1	Opaque film, Vinyl, 5/8 inch x 50 yds., Black	NA	3650-12	3.6700	\$ 3.67	55121734	518062
178	1	Opaque film, Vinyl, 3/4 inch x 50 yds., Black	NA	3650-12	4.4100	\$ 4.41	55121734	518075
179	1	Opaque film, Vinyl, 7/8 inch x 50 yds., Black	NA	3650-12	5.1400	\$ 5.14	55121734	518088
180	100	Opaque film, Vinyl, 1-1/4 inch x 50 yds., Black	NA	3650-12	7.3400	\$ 734.00	55121734	518125
181	1	Opaque film, Vinyl, 18 inch x 50 yds., Matte White	NA	7125-20*	159.0000	\$ 159.00	55121734	-
182	1	Opaque film, Vinyl, 18 inch x 50 yds., Black	NA	7125-12*	159.0000	\$ 159.00	55121734	-
183	1	Opaque film, Vinyl, 18 inch x 50 yds., Yellow	NA	7125-15*	318.0000	\$ 318.00	55121734	-
184	1	Opaque film, Vinyl, 18 inch x 50 yds., Blue	NA	7125-17*	318.0000	\$ 318.00	55121734	-
185	1	Opaque film, Vinyl, 24 inch x 50 yds., Matte White	NA	7125-20*	318.0000	\$ 318.00	55121734	-
186	1	Opaque film, Vinyl, 24 inch x 50 yds., Black	NA	7125-12	318.0000	\$ 318.00	55121734	518024
187	1	Opaque film, Vinyl, 24 inch x 50 yds., Yellow	NA	7125-15*	318.0000	\$ 318.00	55121734	-
188	1	Opaque film, Vinyl, 24 inch x 50 yds., Blue	NA	7125-17*	318.0000	\$ 318.00	55121734	-
189	1	Opaque film, Vinyl, 30 inch x 50 yds., Matte White	NA	7125-20*	318.0000	\$ 318.00	55121734	-
190	4	Opaque film, Vinyl, 30 inch x 50 yds., Black	NA	7125-12*	318.0000	\$ 1,272.00	55121734	518030
191	1	Opaque film, Vinyl, 30 inch x 50 yds., Yellow	NA	7125-15*	318.0000	\$ 318.00	55121734	512030
192	1	Opaque film, Vinyl, 30 inch x 50 yds., Blue	NA	7125-17*	318.0000	\$ 318.00	55121734	-
193	1	Opaque film, Vinyl, 36 inch x 50 yds., Matte White	NA	7125-20*	318.0000	\$ 318.00	55121734	-
194	4	Opaque film, Vinyl, 36 inch x 50 yds., Black	NA	7125-12*	318.0000	\$ 1,272.00	55121734	518036
195	1	Opaque film, Vinyl, 36 inch x 50 yds., Yellow	NA	7125-15*	318.0000	\$ 318.00	55121734	512036
196	1	Opaque film, Vinyl, 36 inch x 50 yds., Blue	NA	7125-17*	318.0000	\$ 318.00	55121734	-
197	1	Opaque film, Vinyl, 48 inch x 50 yds., Matte White	NA	7125-20	318.0000	\$ 318.00	55121734	-

198	29	Opaque film, Vinyl, 48 inch x 50 yds., Black	NA	7125-12	318.0000	\$ 9,222.00	55121734	518048
199	1	Opaque film, Vinyl, 48 inch x 50 yds., Yellow	NA	7125-15	318.0000	\$ 318.00	55121734	-
200	1	Opaque film, Vinyl, 48 inch x 50 yds., Blue	NA	7125-17	318.0000	\$ 318.00	55121734	-
201	1	Opaque film, Vinyl, 60 inch x 50 yds., Matte White	NA	7125-20	397.5000	\$ 397.50	55121734	-
202	1	Opaque film, Vinyl, 60 inch x 50 yds., Black	NA	7125-12	397.5000	\$ 397.50	55121734	-
203	1	Opaque film, Vinyl, 60 inch x 50 yds., Yellow	NA	7125-15*	318.0000	\$ 318.00	55121734	-
204	1	Opaque film, Vinyl, 60 inch x 50 yds., Blue	NA	7125-17*	318.0000	\$ 318.00	55121734	-
<b>BID TOTAL</b>						<b>\$</b>		<b>291,205.07</b>

# West Virginia Ethics Commission



## Disclosure of Interested Parties to Contracts

Pursuant to *W. Va. Code* § 6D-1-2, a state agency may not enter into a contract, or a series of related contracts, that has/have an actual or estimated value of \$1 million or more until the business entity submits to the contracting state agency a Disclosure of Interested Parties to the applicable contract. In addition, the business entity awarded a contract is obligated to submit a supplemental Disclosure of Interested Parties reflecting any new or differing interested parties to the contract within 30 days following the completion or termination of the applicable contract.

For purposes of complying with these requirements, the following definitions apply:

*"Business entity"* means any entity recognized by law through which business is conducted, including a sole proprietorship, partnership or corporation, but does not include publicly traded companies listed on a national or international stock exchange.

*"Interested party"* or *"Interested parties"* means:

- (1) A business entity performing work or service pursuant to, or in furtherance of, the applicable contract, including specifically sub-contractors;
- (2) the person(s) who have an ownership interest equal to or greater than 25% in the business entity performing work or service pursuant to, or in furtherance of, the applicable contract. (This subdivision does not apply to a publicly traded company); and
- (3) the person or business entity, if any, that served as a compensated broker or intermediary to actively facilitate the applicable contract or negotiated the terms of the applicable contract with the state agency. (This subdivision does not apply to persons or business entities performing legal services related to the negotiation or drafting of the applicable contract.)

*"State agency"* means a board, commission, office, department or other agency in the executive, judicial or legislative branch of state government, including publicly funded institutions of higher education: Provided, that for purposes of *W. Va. Code* § 6D-1-2, the West Virginia Investment Management Board shall not be deemed a state agency nor subject to the requirements of that provision.

The contracting business entity must complete this form and submit it to the contracting state agency prior to contract award and to complete another form within 30 days of contract completion or termination.

*This form was created by the State of West Virginia Ethics Commission, 210 Brooks Street, Suite 300, Charleston, WV 25301-1804. Telephone: (304)558-0664; fax: (304)558-2169; e-mail: [ethics@wv.gov](mailto:ethics@wv.gov); website: [www.ethics.wv.gov](http://www.ethics.wv.gov).*



West Virginia Ethics Commission  
**Disclosure of Interested Parties to Contracts**

(Required by W. Va. Code § 6D-1-2)

Name of Contracting Business Entity: 3M Company Address: 3M Center  
Building 225, MC:225-4N-14

Name of Authorized Agent: Maria Paraschou Address: Saint Paul, MN 55144

Contract Number: CRFQ-DOT2100000167 Contract Description: Reflective Sign Sheeting

Governmental agency awarding contract: West Virginia Dept. of Admin., Purchasing Div.

Check here if this is a Supplemental Disclosure

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below (*attach additional pages if necessary*):

**1. Subcontractors or other entities performing work or service under the Contract**

Check here if none, otherwise list entity/individual names below.

**2. Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)**

Check here if none, otherwise list entity/individual names below.

**3. Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)**

Check here if none, otherwise list entity/individual names below.

Signature: 

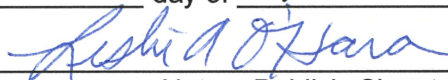
Date Signed: 7/19/2021

**Notary Verification**

State of Minnesota, County of Ramsey:

I, Maria Paraschou, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 19th day of July, 2021.



Notary Public's Signature

**To be completed by State Agency:**

Date Received by State Agency: \_\_\_\_\_

Date submitted to Ethics Commission: \_\_\_\_\_

Governmental agency submitting Disclosure: \_\_\_\_\_



STATE OF WEST VIRGINIA  
Purchasing Division

# PURCHASING AFFIDAVIT

**CONSTRUCTION CONTRACTS:** Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

**ALL CONTRACTS:** Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

**EXCEPTION:** The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**DEFINITIONS:**

**"Debt"** means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

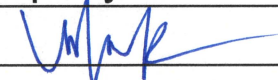
**"Employer default"** means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

**"Related party"** means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

**WITNESS THE FOLLOWING SIGNATURE:**

Vendor's Name: 3M Company

Authorized Signature:  Date: July 19, 2021

State of Minnesota

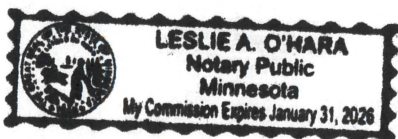
County of Ramsey, to-wit:

Taken, subscribed, and sworn to before me this 19 day of July, 2021.

My Commission expires January 31, 2026.

**AFFIX SEAL HERE**

**NOTARY PUBLIC** 



West Virginia Ethics Commission  
**Disclosure of Interested Parties to Contracts**

(Required by W. Va. Code § 6D-1-2)

Name of Contracting Business Entity: 3M Company Address: 3M Center  
Building 225, MC:225-4N-14

Name of Authorized Agent: Maria Paraschou Address: Saint Paul, MN 55144

Contract Number: CRFQ-DOT2100000167 Contract Description: Reflective Sign Sheeting

Governmental agency awarding contract: West Virginia Dept. of Admin., Purchasing Div.

Check here if this is a Supplemental Disclosure

List the Names of Interested Parties to the contract which are known or reasonably anticipated by the contracting business entity for each category below (*attach additional pages if necessary*):

**1. Subcontractors or other entities performing work or service under the Contract**

Check here if none, otherwise list entity/individual names below.

**2. Any person or entity who owns 25% or more of contracting entity (not applicable to publicly traded entities)**

Check here if none, otherwise list entity/individual names below.

**3. Any person or entity that facilitated, or negotiated the terms of, the applicable contract (excluding legal services related to the negotiation or drafting of the applicable contract)**

Check here if none, otherwise list entity/individual names below.

Signature: 

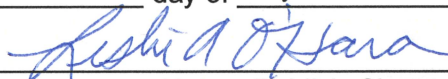
Date Signed: 7/19/2021

**Notary Verification**

State of Minnesota, County of Ramsey:

I, Maria Paraschou, the authorized agent of the contracting business entity listed above, being duly sworn, acknowledge that the Disclosure herein is being made under oath and under the penalty of perjury.

Taken, sworn to and subscribed before me this 19th day of July, 2021.



Notary Public's Signature

**To be completed by State Agency:**

Date Received by State Agency: \_\_\_\_\_

Date submitted to Ethics Commission: \_\_\_\_\_

Governmental agency submitting Disclosure: \_\_\_\_\_



## GENERAL TERMS AND CONDITIONS:

**1. CONTRACTUAL AGREEMENT:** Issuance of a Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

**2. DEFINITIONS:** As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

**2.1. "Agency" or "Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

**2.2. "Bid" or "Proposal"** means the vendors submitted response to this solicitation.

**2.3. "Contract"** means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

**2.4. "Director"** means the Director of the West Virginia Department of Administration, Purchasing Division.

**2.5. "Purchasing Division"** means the West Virginia Department of Administration, Purchasing Division.

**2.6. "Award Document"** means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

**2.7. "Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

**2.8. "State"** means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

**2.9. "Vendor" or "Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

**3. CONTRACT TERM; RENEWAL; EXTENSION:** The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

**Term Contract**

**Initial Contract Term:** This Contract becomes effective on upon award and the initial contract term extends until One Year (1).

**Renewal Term:** This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to three (3) successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

**Alternate Renewal Term** – This contract may be renewed for \_\_\_\_\_ successive \_\_\_\_\_ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

**Delivery Order Limitations:** In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

**Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within \_\_\_\_\_ days.

**Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within \_\_\_\_\_ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that maintenance, monitoring, or warranty services will be provided for \_\_\_\_\_ year(s) thereafter.

**One Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

**Other:** See attached \_\_\_\_\_

**4. AUTHORITY TO PROCEED:** Vendor is authorized to begin performance of this contract on the date of encumbrance listed on the front page of the Award Document unless either the box for “Fixed Period Contract” or “Fixed Period Contract with Renewals” has been checked in Section 3 above. If either “Fixed Period Contract” or “Fixed Period Contract with Renewals” has been checked, Vendor must not begin work until it receives a separate notice to proceed from the State. The notice to proceed will then be incorporated into the contract via change order to memorialize the official date that work commenced.

**5. QUANTITIES:** The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

**Open End Contract:** Quantities listed in this Solicitation are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

**Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

**Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

**One Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General’s office.

**6. EMERGENCY PURCHASES:** The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One Time Purchase contract.

**7. REQUIRED DOCUMENTS:** All of the items checked below must be provided to the Purchasing Division by the Vendor as specified below.

**BID BOND (Construction Only):** Pursuant to the requirements contained in W. Va. Code § 5-22-1(c), All Vendors submitting a bid on a construction project shall furnish a valid bid bond in the amount of five percent (5%) of the total amount of the bid protecting the State of West Virginia. The bid bond must be submitted with the bid.

**PERFORMANCE BOND:** The apparent successful Vendor shall provide a performance bond in the amount of 100% of the contract. The performance bond must be received by the Purchasing Division prior to Contract award.

**LABOR/MATERIAL PAYMENT BOND:** The apparent successful Vendor shall provide a labor/material payment bond in the amount of 100% of the Contract value. The labor/material payment bond must be delivered to the Purchasing Division prior to Contract award.

In lieu of the Bid Bond, Performance Bond, and Labor/Material Payment Bond, the Vendor may provide certified checks, cashier's checks, or irrevocable letters of credit. Any certified check, cashier's check, or irrevocable letter of credit provided in lieu of a bond must be of the same amount and delivered on the same schedule as the bond it replaces. A letter of credit submitted in lieu of a performance and labor/material payment bond will only be allowed for projects under \$100,000. Personal or business checks are not acceptable. Notwithstanding the foregoing, West Virginia Code § 5-22-1 (d) mandates that a vendor provide a performance and labor/material payment bond for construction projects. Accordingly, substitutions for the performance and labor/material payment bonds for construction projects is not permitted.

**MAINTENANCE BOND:** The apparent successful Vendor shall provide a two (2) year maintenance bond covering the roofing system. The maintenance bond must be issued and delivered to the Purchasing Division prior to Contract award.

**LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

**8. INSURANCE:** The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below and must include the State as an additional insured on each policy prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether or not that insurance requirement is listed in this section.

[Please see 3M Qualifications and Explanations table included in our response.](#)

Vendor must maintain:

**Commercial General Liability Insurance** in at least an amount of: 1,000,000.00 per occurrence.

**Automobile Liability Insurance** in at least an amount of: 1,000,000.00 per occurrence.

**Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: \_\_\_\_\_ per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

**Commercial Crime and Third Party Fidelity Insurance** in an amount of: \_\_\_\_\_ per occurrence.

**Cyber Liability Insurance** in an amount of: \_\_\_\_\_ per occurrence.

**Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

**Pollution Insurance** in an amount of: \_\_\_\_\_ per occurrence.

**Aircraft Liability** in an amount of: \_\_\_\_\_ per occurrence.

State of West Virginia must be listed as additional insured on insurance certificate. Certificate holder should read as follows:

State of WV  
1900 Kanawha Blvd. E., Bldg 5  
Charleston, WV 25305

+

+



Notwithstanding anything contained in this section to the contrary, the Director of the Purchasing Division reserves the right to waive the requirement that the State be named as an additional insured on one or more of the Vendor's insurance policies if the Director finds that doing so is in the State's best interest.

**9. WORKERS' COMPENSATION INSURANCE:** The apparent successful Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

**10. [Reserved]**

**11. LIQUIDATED DAMAGES:** This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

\_\_\_\_\_ for \_\_\_\_\_

Liquidated Damages Contained in the Specifications

[Please see 3M Qualifications and Explanations table included in our response.](#)

**12. ACCEPTANCE:** Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

**13. PRICING:** The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

[Please see 3M Qualifications and Explanations table included in our response.](#)

**14. PAYMENT IN ARREARS:** Payment in advance is prohibited under this Contract. Payment may only be made after the delivery and acceptance of goods or services. The Vendor shall submit invoices, in arrears.

**15. PAYMENT METHODS:** Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

**16. TAXES:** The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

**17. ADDITIONAL FEES:** Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

**18. FUNDING:** This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available.

**19. CANCELLATION:** The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

**20. TIME:** Time is of the essence with regard to all matters of time and performance in this Contract.

**21. APPLICABLE LAW:** This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code or West Virginia Code of State Rules is void and of no effect.

**22. COMPLIANCE WITH LAWS:** Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

**SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

**23. ARBITRATION:** Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

**24. MODIFICATIONS:** This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

**25. WAIVER:** The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

**26. SUBSEQUENT FORMS:** The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

**27. ASSIGNMENT:** Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

**28. WARRANTY:** The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

Please see [3M Qualifications and Explanations table included in our response.](#)

**29. STATE EMPLOYEES:** State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

**30. PRIVACY, SECURITY, AND CONFIDENTIALITY:** The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/default.html>.

**31. YOUR SUBMISSION IS A PUBLIC DOCUMENT:** Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

**DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.**

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

**32. LICENSING:** In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

**SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

**33. ANTITRUST:** In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia 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 West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

Please see [3M Qualifications and Explanations table included in our response.](#)

**34. VENDOR CERTIFICATIONS:** By signing its bid or entering into this Contract, Vendor certifies (1) that its bid or offer was made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, person or entity submitting a bid or offer for the same material, supplies, equipment or services; (2) that its bid or offer is in all respects fair and without collusion or fraud; (3) that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; and (4) that it has reviewed this Solicitation in its entirety; understands the requirements, terms and conditions, and other information contained herein.

Vendor's signature on its bid or offer also affirms that neither it nor its representatives have any interest, nor shall acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency. The individual signing this bid or offer on behalf of Vendor certifies that he or she is authorized by the Vendor to execute this bid or offer or any documents related thereto on Vendor's behalf; that he or she is authorized to bind the Vendor in a contractual relationship; and that, to the best of his or her knowledge, the Vendor has properly registered with any State agency that may require registration.

**35. VENDOR RELATIONSHIP:** The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

**36. INDEMNIFICATION:** The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

[Please see 3M Qualifications and Explanations table included in our response.](#)

**37. PURCHASING AFFIDAVIT:** In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State, Vendors are required to sign, notarize, and submit the Purchasing Affidavit to the Purchasing Division affirming under oath that it is not in default on any monetary obligation owed to the state or a political subdivision of the state.

**38. ADDITIONAL AGENCY AND LOCAL GOVERNMENT USE:** This Contract may be utilized by other agencies, spending units, and political subdivisions of the State of West Virginia; county, municipal, and other local government bodies; and school districts (“Other Government Entities”), provided that both the Other Government Entity and the Vendor agree. Any extension of this Contract to the aforementioned Other Government Entities must be on the same prices, terms, and conditions as those offered and agreed to in this Contract, provided that such extension is in compliance with the applicable laws, rules, and ordinances of the Other Government Entity. A refusal to extend this Contract to the Other Government Entities shall not impact or influence the award of this Contract in any manner.

**39. CONFLICT OF INTEREST:** Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

**40. REPORTS:** Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at [purchasing.requisitions@wv.gov](mailto:purchasing.requisitions@wv.gov).

**41. BACKGROUND CHECK:** In accordance with W. Va. Code § 15-2D-3, the Director of the Division of Protective Services shall require any service provider whose employees are regularly employed on the grounds or in the buildings of the Capitol complex or who have access to sensitive or critical information to submit to a fingerprint-based state and federal background inquiry through the state repository. The service provider is responsible for any costs associated with the fingerprint-based state and federal background inquiry.

After the contract for such services has been approved, but before any such employees are permitted to be on the grounds or in the buildings of the Capitol complex or have access to sensitive or critical information, the service provider shall submit a list of all persons who will be physically present and working at the Capitol complex to the Director of the Division of Protective Services for purposes of verifying compliance with this provision. The State reserves the right to prohibit a service provider’s employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check.

Revised 03/15/2021

Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

**42. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS:** Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

- a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
- b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
- c. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
- d. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

**43. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL:** In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a

“substantial labor surplus area”, as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

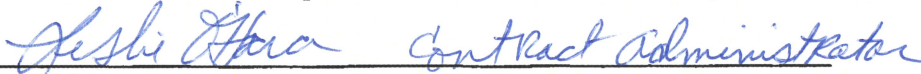
All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

**44. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE:** W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least \$1 million, the vendor must submit to the Agency a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-award interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

**45. PROHIBITION AGAINST USED OR REFURBISHED:** Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.




**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

 Contract Administrator  
(Name, Title)  
Leslie O'Hara, Contract Administrator  
(Printed Name and Title)  
3M Center, Bldg. 225, Mailcode: 225-4N-14, St. Paul, MN 55144  
(Address)  
651-381-2677 / fax: 800-591-9293  
(Phone Number) / (Fax Number)  
tbidgroup@mmm.com  
(email address)

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

3M Company  
(Company)

  
(Authorized Signature) (Representative Name, Title)

Maria Paraschou, Sr. Proposal & Contract Manager  
(Printed Name and Title of Authorized Representative)

7/19/2021  
(Date)

651-737-5281 / fax: 800-591-9293  
(Phone Number) (Fax Number)

Item	Document Description	Section Description	Page Letter	3M's Explanations/Exceptions/Qualifications
1	TERMS AND CONDITIONS	8. INSURANCE	5-6 of 14	3M generally does not provide additional insured coverage in procurements involving only product sales.
2	TERMS AND CONDITIONS	11. LIQUIDATED DAMAGES	6 OF 14	3M generally does not accept liquidated damages as they typically amount to penalty provisions, but is confident that our product warranties will adequately provide loss and risk protection. <i>See also Specification, Section 6.2. Late Delivery &amp; Section 6.5 Return of Unacceptable Items (below, Line 5).</i>
3	TERMS AND CONDITIONS	13. PRICING	6 OF 14	The pricing that 3M Company offers is based on the contract's other terms such as length of a contract, the breadth of products covered, the size of the sales opportunity and many other market factors. In this instance, 3M will offer competitive pricing based on these factors but is not necessarily offering the lowest prices for each item. Because governments generally impose significantly different contract terms and such terms and conditions are not comparable to each other or to 3M's commercial terms, 3M cannot guarantee the lowest pricing in all instances.
4	TERMS AND CONDITIONS	28. WARRANTY	8 OF 14	3M will provide its standard warranty for the material provided under this contract. The warranty is contained in 3M's product bulletins which accompany this bid response.
5	TERMS AND CONDITIONS	33. ANTITRUST	9 OF 14	3M will assign material claims against any third party suppliers for antitrust violations that 3M may sell in connection
6	TERMS AND CONDITIONS	36. INDEMNIFICATION	10 of 14	3M agrees to indemnify and hold harmless the State, its officers and agents from third party claims, damages, losses or causes of action directly caused by the negligent or willful acts or omissions of work or services of 3M or its employees, in the performance of this agreement.
7	SPECIFICATIONS	6.2 LATE DELIVERY	11 OF 13	At time of order, 3M customer service team is able to verify, if there will be a delay in product delivery. 3M's delivery policy is 20 to 30 days after receipt of order (ARO) on all standard size rolls. 3M is not able to accept price penalty on delayed delivery.
8	SPECIFICATIONS	6.5 RETURN OF UNACCEPTABLE ITEMS	11 OF 13	It is the responsibility of the customer to report to 3M Customer Service within ten days of receipt any damaged or unacceptable, or lost and/or short shipments. 3M is unable to accept price penalty on delayed delivery of reshipments on return goods.
9	SPECIFICATIONS	6.6 RETURN DUE TO AGENCY ERROR	12 OF 13	3M Customer Service must authorize all returns. Excludes Commercial Solutions Division items and items sold by other 3M divisions. Standard: Prepackaged finished goods of standard size are returnable. Non-standard: Prepackaged finished goods of a non-standard size are not returnable. See Product Catalog for listing of standard sizes. Request for return must be made within 90 days from the date the order was shipped and a 15% handling charge will be assessed.

Item	Document Description	Section Description	Page Letter	3M's Explanations/Exceptions/Qualifications
10	EXHIBIT A - PRICING PAGE	SECTION V, ITEMS #181 & #182, #185 & #186	Note asterisk "*", on line item	3M Transportation Safety Division is able to provide products from our sister division, Commercial Solutions Division (CSD). CSD product 7125 color series is only available in 48" rolls. However, 7125-12 (black) and 7125-20 (matte white) are available in 24" and 48" rolls. The 24" rolls have a minimum order quantity of two rolls. <u>Prices listed on these line items for colors Black (12) and Matte White (20) roll sizes 18" and 24" are priced at the 24" size rolls, with an MOQ of two rolls.</u>
11	EXHIBIT A - PRICING PAGE	SECTION V, ITEMS #183 & 184, 187 TO 196.	Note asterisk "*", on line item	3M Transportation Safety Division is able to provide products from our sister division, Commercial Solutions Division (CSD). The Yellow (15) and Blue (17) are not available in 18, 24, 30, or 36 inch rolls. <u>The 7125 black (12) and matte white (20) are not available in 30 or 36 inch rolls. Price reflected on these lines are 48 inch roll size.</u>
12	EXHIBIT A - PRICING PAGE	SECTION V, ITEM# 203	Note asterisk "*", on line item	3M Transportation Safety Division is able to provide products from our sister Division, Commercial Solutions Division (CSD). <u>CSD product 7125-15 (Yellow) largest available size is 48". Price listed reflects the 48" roll size.</u>
13	EXHIBIT A - PRICING PAGE	SECTION V, ITEM# 204	Note asterisk "*", on line item	3M Transportation Safety Division is able to provide products from our sister Division, Commercial Solutions Division (CSD). <u>CSD product 7125-17 (Blue) largest available size is 48". Price listed reflects the 48" roll size.</u>

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

**SPECIFICATIONS**

1. **PURPOSE AND SCOPE:** The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Division of Highways (WVDOH) and the West Virginia Division of Highways to establish an open-end contract for Reflective Sign Sheeting & Associated Materials.
  
2. **DEFINITIONS:** The terms listed below shall have the meanings assigned to them below. Additional definitions can be found in section 2 of the General Terms and Conditions.
  - 2.1 **“Contract Item” or “Contract Items”** means the list of items identified in Section 3.1 below and on the Pricing Pages.
  - 2.2 **“Pricing Pages”** means the schedule of prices, estimated order quantity, and totals contained in wvOASIS or attached hereto as Exhibit\_A, and used to evaluate the Solicitation responses.
  - 2.3 **“Solicitation”** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.
  - 2.4 **“RFQ”** means the official RFQ published by the Purchasing Division.
  - 2.5 **“WVDOH”** means the West Virginia Division of Highways
  - 2.6 **“CSS”** means the WVDOH Central Sign Shop manufacturing facility.
  - 2.7 **“Type ASTM-I Reflective Sheeting”** means a retroreflective sheeting referred to as “engineering grade” that is typically a non-metalized micro-prismatic retroreflective element material.
  - 2.8 **“Type ASTM-IV Reflective Sheeting”** means a retroreflective sheeting referred to as “high-intensity” that is typically a non-metalized micro-prismatic retroreflective element material.
  - 2.9 **“Type ASTM-XI Reflective Sheeting”** means a retroreflective sheeting typically manufactured as a non-metalized cube corner micro-prismatic retroreflective element material.
  - 2.10 **“Opaque Film”** means an opaque, typically vinyl or acrylic pressure-sensitive film designed for permanent graphics that may be pre-spaced and electronically cut.

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

- 2.11 “Transparent Film”** means a colored, transparent, typically acrylic, pressure-sensitive film designed for permanent graphics that may be pre-spaced and electronically cut.
- 2.12 “Opaque Ink”** means an opaque, weather resistant, quick drying ink designed for use in traffic sign screen printing processes.
- 2.13 “Transparent ink”** means a transparent, weather resistant, quick drying ink designed for use in traffic sign screen printing processes.
- 2.14 “UV”** means ultraviolet.
- 2.15 “O.D.”** means Outside Diameter.
- 2.16 “I.D.”** means Inside Diameter
- 2.17 “Overage”** means the total width of excess material (beyond the specified nominal width) provided on a roll of reflective sheeting material in order to insure complete coverage of the aluminum blanks the material is applied to.
- 2.18 “Matched Components”** means the reflective sheeting manufacturer’s recommended transparent & opaque inks & films to be used for manufacturing purposes with the manufacturer’s reflective sheeting products.
- 2.19 “Standard Specifications”** means the portion of the WVDOH Standard Specifications for Roads and Bridges pertaining to the materials included in this Contract. Any products utilized in the contraction, repair or maintenance of the State and Federal Highway system must be tested and/or certified to meet the requirements contained in the Standard Specifications and must be listed on the WVDOH APL as applicable. Product evaluation and/or testing is performed by the WVDOT Materials Control Safety Testing Division (MCS&T) to ensure product compliance with the Standard Specifications. A product that has not been certified and approved by MCS&T will not be eligible for consideration. If a vendor is interested in having additional products add to the APL, the vendor should contact the MCS&T Division or visit the following URL:
- <https://transportation.wv.gov/highways/mcst/Pages/default.aspx>
- 2.20** The current Standard Specifications which pertain to the materials in this Contract are contained in Section 715.9.2 of the publication West Virginia Department of

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

Transportation, Division of Highways, Standard Specifications Roads and Bridges, 2017 Edition. This publication may be found at the following address:

[http://www.transportation.wv.gov/highways/contractadmin/specifications/2017StandSpec/Documents/2017\\_Standard.pdf](http://www.transportation.wv.gov/highways/contractadmin/specifications/2017StandSpec/Documents/2017_Standard.pdf)

Specific material approval requirements for the materials included in this Contract, as well as compensative requirements of the material manufacturer in the event of material failure, as defined by the material durability and warranty requirements, are included in the Standard Specifications. Material approval requirements include, but may not be limited to, performance, durability, testing, manufacturer certification, and general material characteristic requirements. The Standard Specifications also specifies additional requirements required to be met by materials in order for those materials to be qualified for use in manufacturing processes within the CSS. All materials supplied under this Contract must be qualified for use in manufacturing processes within the CSS. The specifications and Contract Award provisions herein are reflective of this requirement.

- 2.21** “APL” means the version of the WVDOH Approved Products List for Retroreflective Sign Sheeting in effect as of the advertising date of this Contract. This APL may be found at:

[https://transportation.wv.gov/highways/mcst/Pages/APL\\_By\\_Number.aspx](https://transportation.wv.gov/highways/mcst/Pages/APL_By_Number.aspx)

The APL is established in a manner consistent with the requirements contained in the Standard Specifications. All materials supplied under this Contract shall be listed on the APL. Additional requirements shall apply as specified herein. The APL establishes a list of products that meet the acceptable level of quality and is not intended to reflect a preference or favor any particular brand or vendor. Any manufacturer whose product(s) meet the established level of quality may become an approved supplier and have their product(s) added to the APL in accordance with the approval procedures described in the Standard Specifications.

Note that, as indicated in the Standard Specifications, the inclusion of the manufacturer’s reflective sheeting material on the APL is not the sole requirement for that material to be eligible to be supplied under this Contract. All requirements are specified in detail in the Standard Specifications. The APL notes any restrictions in place in regard to the use of a particular reflective sheeting product or its’ matched components for manufacturing purposes within the CSS.

### **3. GENERAL REQUIREMENTS:**

- 3.1 Contract Items and Mandatory Requirements:** Vendor shall provide Agency with the Contract Items listed below on an open-end and continuing

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

basis. Contract Items must meet or exceed the mandatory requirements as shown below.

The specifications of this RFQ and/or any WVDOH Standards referenced in and/or attached to this RFQ may include references to specific recognized “industry standard” specifications which are issued by third parties, such as the American Society for Testing and Materials (ASTM) and the American Association of State and Highway Transportation Officials (AASHTO). Such specifications are protected by strict copyright restrictions and cannot be published as part of this RFQ. The ability to access such specifications shall be considered a mandatory requirement for participation in the RFQ process as a Vendor or as a supplier to the Vendor, as applicable.

**3.1.1 Contract Bid Items:** The following Sections and described Items are listed on the Pricing Pages (see attachment: EXHIBIT\_A Pricing Pages).

**3.1.1.1 Section I: Type ASTM-I Retroreflective Sheeting**

**3.1.1.1.1** The reflective sheeting material supplied under this Section shall be listed on the APL. The reflective sheeting material and the manufacturer recommended matched components (transparent film & ink, opaque film & ink) for use with the supplied reflective sheeting must all be approved by the WVDOH for manufacturing purposes within the CSS.

**3.1.1.1.2** For particular nominal roll sizes of reflective sheeting listed on the Pricing Pages, a “preferred” overage is indicated in the “Overage Preferences” column. The preferred overage indicates the agencies’ preferred overages only, and are not a minimum requirement; however, these materials shall be provided with overage. If nothing is indicated in the “Overage Preferences” column, then no overage is required; however, the width specified in the “Item Description” column shall be the minimum actual width of the material.

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

**3.1.1.1.3** The manufacturer of the material supplied under this Section shall be the same manufacturer whose material is supplied under Sections II & III.

**3.1.1.2 Section II: Type ASTM-IV Retroreflective Sheeting**

**3.1.1.2.1** The reflective sheeting material supplied under this Section shall be listed on the APL. The reflective sheeting material and the manufacturer recommended matched components (transparent film & ink, opaque film & ink) for use with the supplied reflective sheeting must all be approved by the WVDOH for manufacturing purposes within the CSS.

**3.1.1.2.2** For particular nominal roll sizes of reflective sheeting listed on the Pricing Pages, a “preferred” overage is indicated in the “Overage Preferences” column. The preferred overage indicates the agencies’ preferred overages only, and are not a minimum requirement; however, these materials shall be provided with overage. If nothing is indicated in the “Overage Preferences” column, then no overage is required; however, the width specified in the “Item Description” column shall be the minimum actual width of the material.

**3.1.1.2.3** The manufacturer of the material supplied under this Section shall be the same manufacturer whose material is supplied under Sections I & III.

**3.1.1.3 Section III: Type ASTM-XI Retroreflective Sheeting**

**3.1.1.3.1** The reflective sheeting material supplied under this Section shall be listed on the APL. The reflective sheeting material and the manufacturer recommended matched components (transparent film & ink, opaque film & ink) for use with the



REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

supplied reflective sheeting must all be approved by the WVDOH for manufacturing purposes within the CSS.

**3.1.1.3.2** For particular nominal roll sizes of reflective sheeting listed on the Pricing Pages, a “preferred” overage is indicated in the “Overage Preferences” column. The preferred overage indicates the agencies’ preferred overages only, and are not a minimum requirement; however, these materials shall be provided with overage. If nothing is indicated in the “Overage Preferences” column, then no overage is required; however, the width specified in the “Item Description” column shall be the minimum actual width of the material.

**3.1.1.3.3** The manufacturer of the material supplied under this Section shall be the same manufacturer whose material is supplied under Sections I & II.

**3.1.1.4 Section IV: Type ASTM-I, ASTM-IV, and Type ASTM-XI Retroreflective Sheeting Matched Components**

**3.1.1.4.1** Transparent and opaque matched component films for use with the reflective sheetings provided under Sections I, II, and III shall be supplied under this Section.

**3.1.1.4.2** The films supplied under this Section shall be the manufacturer recommended films for use with the reflective sheetings provided under Sections I, II, and III.

**3.1.1.4.3** The manufacturer of the material supplied under this Section shall be the same manufacturer whose material is supplied under Sections I, II, and III.

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

**3.1.1.5 Ancillary Items:** For particular Sections of this Contract, the Vendor shall be required to supply ancillary items with the sheeting materials. These ancillary items shall be supplied at **no additional cost to the Agency** and shall be incidental to the pricing provided by the Vendor for the bid items in the applicable Sections of the Contract. The quantity of the items provided shall be based on the square footage of sheeting material ordered, as described below.

**3.1.1.5.1 Inks:** This requirement shall apply to Sections II and III of this Contract. The ink provided shall be the reflective sheeting material manufacturer recommended matched component ink with UV inhibitor.

**3.1.1.5.1.1** The Vendor shall be required to supply one (1) gallon of transparent ink per 1,200 square feet of reflective sheeting ordered and/or one (1) gallon of black ink per 2,500 square feet of reflective sheeting ordered.

**3.1.1.5.1.2** The square footage shall be calculated based on the nominal roll size (the size listed under the line item).

**3.1.1.5.1.3** The number of gallons of ink in each color shall be indicated by the purchasing Agency on the Release Order.

**3.1.1.5.1.4** The quantity of ink required to be supplied shall be based on the total combined square footage of materials ordered under Sections II and III.

**Example:** If the Agency orders 8,500 combined square feet of material under Sections II and III, the Agency may elect to require the Vendor to supply five (5) gallons of transparent ink and one (1) gallon of black ink [(1 x 2,500) + (5 x 1,200) = 8,500].

The Vendor shall not be required to supply partial gallons. For example, if the Agency orders 8,000 combined square feet of material under Sections II

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

and III, and the Agency requires the Vendor to supply one (1) gallon of black ink, the Vendor shall only be required to supply as much as four (4) gallons of transparent ink.

**3.1.1.5.2 Nylon Washers:** This requirement shall apply to Sections II and III of this Contract. The washers provided shall measure 5/16" (I.D.) x 7/8" (O.D.) x 1/16" thick, and shall be manufactured from commercial grade nylon.

**3.1.1.5.2.1** The Vendor shall be required to supply one (1) package of washers per 3,500 square feet of reflective sheeting ordered.

**3.1.1.5.2.2** In order to integrate with the WVDOH's inventory system, each package of washers shall include 1,000 individual washers.

**3.1.1.5.2.3** The square footage shall be calculated based on the nominal roll size (the size listed under the line item). The total square footage of reflective sheeting ordered under Sections II and III shall be combined in order to determine the quantity of washers required to be supplied.

**3.1.1.5.2.4** The number of washers required to be supplied shall be indicated by the purchasing Agency on the Release Order.

**Example:** If 17,500 total square feet of reflective sheeting material is ordered from the indicated Sections, the Vendor shall be required to supply 5,000 washers (five packages) ( $5 \times 3,500 = 17,500$ ).

The Vendor shall not be required to supply partial packages. For example, if 18,500 total square feet of reflective sheeting is ordered, then the Vendor shall only be required to supply five (5) packages (5,000 washers).

REQUEST FOR QUOTATION  
Reflective Sign Sheeting & Associated Materials

---

**3.1.1.5.3 Slip Sheeting:** This requirement shall apply to Sections II and III of this Contract. With the exception of 12-3/4" reflective sheeting and nominal roll widths of sheeting less than 12".

**3.1.1.5.3.1** The Vendor shall supply slip sheeting equal in width to each different width (nominal) reflective sheeting material ordered under these Sections.

**3.1.1.5.3.2** The total length of each width supplied shall be at least equal to the total length of each width of reflective sheeting ordered under these Sections.

**3.1.1.5.3.3** All slip sheeting shall be supplied in roll form.

**3.1.1.5.3.4** The slip sheeting shall be compatible with the sheeting manufacturer's reflective sheeting material and matched components.

**3.1.1.5.3.5** The minimum total length of each width of slip sheeting required to be supplied shall be indicated by the purchasing Agency on the Release Order.

#### **4. CONTRACT AWARD:**

**4.1 Contract Award:** The Contract is intended to provide Agencies with a purchase price on all Contract Items.

Award shall not be split for this Contract. Award of this Contract shall be based on the lowest overall bid received. In order to be considered for award, the Vendor must provide a bid for **all** items and all materials to be provided shall meet the requirements specified herein.

**4.2 Pricing Pages:** Vendor should complete the Pricing Pages by providing a unit price for each item listed.

In order to be considered for award, the Vendor must provide a bid for **all items** and the materials bid must meet all applicable requirements and specifications included and referenced herein. Failure to provide pricing for all items on the pricing pages will result in bid disqualification.

REQUEST FOR QUOTATION  
Reflective Sign Sheeting & Associated Materials

---

The Vendor should also specify the material to be supplied (manufacturer product code) in the location provided for each line item. This Contract shall not be awarded to any Vendor prior to receipt of this information from the Vendor.

The Vendor should also enter a calculated value [estimated quantity x unit price] in the "Extended Total Amount" column.

The Pricing Pages contain a list of the Contract Items and estimated purchase volume. The estimated purchase volume for each item represents the approximate volume of anticipated purchases only. No future use of the Contract or any individual item is guaranteed or implied.

Vendor should electronically enter the information into the Pricing Pages through wvOASIS, if available, or as an electronic document. In most cases, the Vendor can request an electronic copy of the Pricing Pages for bid purposes by sending an email request to the following address: [John.W.Estep@wv.gov](mailto:John.W.Estep@wv.gov)

**5. ORDERING AND PAYMENT:**

- 5.1 Ordering:** Vendor shall accept orders through wvOASIS, regular mail, facsimile, e-mail, or any other written form of communication. Vendor may, but is not required to, accept on-line orders through a secure internet ordering portal/website. If Vendor has the ability to accept on-line orders, it should include in its response a brief description of how Agencies may utilize the on-line ordering system. Vendor shall ensure that its on-line ordering system is properly secured prior to processing Agency orders on-line.
- 5.2 Payment:** Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia.
- 5.3 Minimum Order Size:** There shall be no minimum order size associated with this Contract.

**6. DELIVERY AND RETURN:**

- 6.1 Delivery Time:** Vendor shall deliver standard orders within twenty-five (25) working days after orders are received. Vendor shall ship all orders in accordance with the above schedule and shall not hold orders until a minimum delivery quantity is met.
- 6.2 Late Delivery:** The Agency placing the order under this Contract must be notified in writing if orders will be delayed for any reason. Any delay in delivery that could

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

cause harm to an Agency will be grounds for cancellation of the delayed order, and/or obtaining the items ordered from a third party.

Any Agency seeking to obtain items from a third party under this provision must first obtain approval of the Purchasing Division.

Regardless of whether or not the vendor provides written notification of an order delay, if the Vendor is unable to deliver in full within twenty-five (25) Working Days after receipt of the order, the Vendor shall be subject to a daily (per Calendar Day) penalty in the amount of \$150.00 at the purchasing Agency's discretion for each Calendar Day beyond the delivery deadline date until the order is received in full. This penalty shall be assessed by subtracting the penalty from the original total value of the Release Order. The penalty shall not exceed the original total amount of the Release Order.

[Please see 3M Qualifications and Explanations table included in our response.](#)

**6.3 Delivery Payment/Risk of Loss:** Standard order delivery shall be F.O.B. destination to the Agency's location. Vendor shall include the cost of standard order delivery charges in its bid pricing/discount and is not permitted to charge the Agency separately for such delivery.

**6.4 Packaging & Material Condition:** Upon delivery, all materials shall be of good appearance free from ragged edges, cracks, and extraneous materials, and shall be supplied in roll form. The materials shall be evenly wound on a core of sufficient rigidity to prevent distortion of the roll. For sheeting materials, the maximum number of splices shall be four (4) per 50-yd roll. Each splice shall be visible at the edge of the roll. Rolls shall be packaged snugly in corrugated fiberboard boxes such that no damage or defacement may occur during shipment or storage.

**6.5 Return of Unacceptable Items:** If the Agency deems the Contract Items to be unacceptable, the Contract Items shall be returned to Vendor at Vendor's expense and with no restocking charge. Vendor shall either make arrangements for the return within five (5) days of being notified that items are unacceptable, or permit the Agency to arrange for the return and reimburse Agency for delivery expenses. If the original packaging cannot be utilized for the return, Vendor will supply the Agency with appropriate return packaging upon request. All returns of unacceptable items shall be F.O.B. the Agency's location. The returned product shall either be replaced, or the Agency shall receive a full credit or refund for the purchase price, at the Agency's discretion. If the Agency elects to have the returned items replaced, the provisions of Sections 6.1 and 6.2 shall remain in effect until the order is completed in full with material accepted by the Agency.

[Please see 3M Qualifications and Explanations table included in our response.](#)

**6.6 Return Due to Agency Error:** Items ordered in error by the Agency will be returned for credit within 30 days of receipt, F.O.B. Vendor's location. Vendor shall not charge a restocking fee if returned products are in a resalable condition. Items shall be deemed to be in a resalable condition if they are unused and in the original

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

packaging. Any restocking fee for items not in a resalable condition shall be the lower of the Vendor's customary restocking fee or 5% of the total invoiced value of the returned items.

Please see [3M Qualifications and Explanations table included in our response](#).

**7. VENDOR DEFAULT:**

**7.1** The following shall be considered a vendor default under this Contract.

- 7.1.1 Failure to provide Contract Items in accordance with the requirements contained herein.
- 7.1.2 Failure to comply with other specifications and requirements contained herein.
- 7.1.3 Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.
- 7.1.4 Failure to remedy deficient performance upon request.

**7.2** The following remedies shall be available to Agency upon default.

- 7.2.1 Immediate cancellation of the Contract.
- 7.2.2 Immediate cancellation of one or more release orders issued under this Contract.
- 7.2.3 Any other remedies available in law or equity.

**8. MISCELLANEOUS:**

- 8.1 No Substitutions:** Vendor shall supply only Contract Items submitted in response to the Solicitation unless a contract modification is approved in accordance with the provisions contained in this Contract.
- 8.2 Vendor Supply:** Vendor must carry sufficient inventory of the Contract Items being offered to fulfill its obligations under this Contract. By signing its bid, Vendor certifies that it can supply the Contract Items contained in its bid response.

REQUEST FOR QUOTATION  
**Reflective Sign Sheeting & Associated Materials**

---

- 8.3 Reports:** Vendor shall provide quarterly reports and annual summaries to the Agency showing the Agency's items purchased, quantities of items purchased, and total dollar value of the items purchased. Vendor shall also provide reports, upon request, showing the items purchased during the term of this Contract, the quantity purchased for each of those items, and the total value of purchases for each of those items. Failure to supply such reports may be grounds for cancellation of this Contract.
- 8.4 Technical Assistance:** If awarded any Section of this Contract, the successful Vendor shall, upon request by any of the Agencies named in this Contract, provide technical assistance for the service of application equipment and instruction and training of Agency personnel in the proper application of the materials supplied. This may include, but shall not be limited to, calibration and troubleshooting of application equipment, training films, material application, screen printing, packaging, storage, and the proper use & handling of inks.
- 8.5 Contract Manager:** During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

**Contract Manager:** [Maria Paraschou](#)  
**Telephone Number:** 651-737-5281  
**Fax Number:** 800-591-9293  
**Email Address:** [mparaschou@mmm.com](mailto:mparaschou@mmm.com)



# State of West Virginia



## Certificate

*I, Mac Warner, Secretary of State of the State of West Virginia, hereby certify that*

**3M COMPANY**

a corporation formed under the laws of Delaware filed an application to be registered as a foreign corporation authorizing it to transact business in West Virginia. The application was found to conform to law and a "Certificate of Authority" was issued by the West Virginia Secretary of State on January 23, 1960.

I further certify that the corporation has not been revoked by the State of West Virginia nor has a Certificate of Withdrawal been issued to the corporation by the West Virginia Secretary of State.

Accordingly, I hereby issue this Certificate of Authorization

## CERTIFICATE OF AUTHORIZATION

Validation ID:3WV5Y\_W8KWD



*Given under my hand and the  
Great Seal of the State of  
West Virginia on this day of*

*April 02, 2021*

*Mac Warner*

*Secretary of State*

## Business Entity Search

Transaction Number: 20210402146223

Status: CompletedOk

Amount: \$10.00

Company Name: 3M Company

Name: Renee Schipansky

Address: 3M Center

St Paul

St Paul WV 55144

Phone: 651-737-2443

e-Mail: 3mtax@mmm.com

Card Holder: Renee Schipansky

Card Type: Visa

Card: 54XXXXXXXXXX6921

# 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 sub delegation 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><b><u>3M Unitek Corporation</u></b> Gregg, Shawn McCloskey, Molly</p> <p><b><u>Advanced Materials Division</u></b> Davis, Scott Hanson, Scott Lockhart, Bruce Morin, Eric Race, Robert Utley, Elizabeth Ward, Charles</p> <p><b><u>Aearo Technologies LLC.</u></b> Hinko, David</p> <p><b><u>Automotive and Aerospace Solutions Division</u></b> <i>see Government Marketing-Sales</i></p> <p><b><u>Display Materials &amp; Systems Division</u></b> Summers, Micki</p> <p><b><u>Electrical Markets Division</u></b> Disanayaka, Bimsara Goldberg, Craig Irwin, Mike James, Brent</p>	<p><b><u>Electronics Materials Solutions Division</u></b> Anderson, Kevin</p> <p><b><u>Food Safety Department</u></b> <i>see Government Marketing-Sales (Federal Only)</i></p> <p><b><u>Government R&amp;D Contracts Department**</u></b> Kays, Steven*** Martinez, Rita</p> <p><b><u>3M Health Information Systems</u></b> Garrison, Garri Guyton, Elizabeth Hong-Larsen, Sally Mathison, John Peddicord, Kyle Smith, Andrea Stadther, Joseph</p> <p><b><u>Industrial Adhesives &amp; Tapes Division</u></b> <i>see Government Marketing-Sales (FSS Contracts Only)</i></p>	<p><b><u>Industrial Mineral Products Division</u></b> Erickson, Scott</p> <p><b><u>Medical Solutions Division</u></b> McDonald, Michael Dickson, Diana</p> <p><b><u>Oral Care Solutions Division</u></b> Gregg, Shawn McCloskey, Molly McDonald, Michael</p> <p><b><u>Personal Safety Division</u></b> Tabatha Williams (Scott Safety only)</p> <p><b><u>Separation &amp; Purification</u></b> Towne, Richard</p> <p><b><u>Stationery &amp; Office Supplies Division</u></b> <i>see Government Marketing-Sales (FSS Contracts Only)</i></p> <p><b><u>Transportation Safety Division</u></b> Do, Thanh-Huong**** Frampton, Steven Paraschou, Maria Seputis, Julie**** Trac, Phu****</p>
--	--	--

**Authority Applies to any Business Unit or Staff Function**

<b><u>Global Channel Services</u></b> Constantine, Lauri	<b><u>Government Marketing-Sales</u></b> Weller, Greg Audette-Williams, Michelle	<b><u>Government Contract Compliance</u></b> Bordas, Rich Carr, Terrance Horwitz, Charles Robinette, Thomas
<b><u>U.S. Pacific Branches</u></b> Mathers, Stephanie Kawasaki, Heidi		

**\*\*\*\*\* Authority to Make Country of Origin Certifications**

<b><u>Trade Compliance Department</u></b> Bottoms, Paul    Schultz, Anne    LaMere, Pierre    Schmitz, Jamie
---

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

Charles Horwitz  
Vice President, Government Contract Compliance  
3M Company

Date    5/27/2021

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

\*\* 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 includes AFRL TIA and Phase 2 activities for N95 lines for contract modifications.

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

\*\*\*\*\* Authority limited to include only Country of Origin Certifications.



Transportation Safety Division

# 3M™ High Intensity Prismatic Reflective Sheeting Series 3930

Product Bulletin Series 3930  
May 2018

Replaces Product Bulletin 3930 Dated January 2013

## 1 Description

High Intensity Prismatic Reflective Sheeting Series 3930 (“Sheeting”) is a non-metalized microprismatic lens reflective sheeting designed for use in the production of durable reflective traffic control signs, work zone devices, and delineators that are exposed vertically in service (“Signs”). Applied to properly prepared Sign substrates, 3M Series 3930 prismatic Sheeting provides long-term reflectivity and durability.

Series 3930 Sheeting is available in the following colors.

**Table 1. Product Codes by Color**

Color	Product Code
White	3930
Yellow	3931
Red	3932
Orange	3934
Blue	3935
Green	3937
Brown	3939

## 2 Specifications

### 2.1 Daytime Color (x, y, Y)

The chromaticity coordinates and total luminance factors of the retroreflective Sheeting conform to the limits presented in Table 2.

**Table 2. Daytime Color Specification Limits<sup>a</sup>**

Color	1		2		3		4		Reflectance Limit (Y)	
	x	y	x	y	x	y	x	y	Minimum	Maximum
White	0.303	0.300	0.368	0.366	0.340	0.393	0.274	0.329	27	
Yellow	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	15	45
Red	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346	2.5	15
Orange	0.558	0.352	0.636	0.364	0.570	0.429	0.506	0.404	10	30
Blue	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	1	10
Green	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	3	12
Brown	0.430	0.340	0.610	0.390	0.550	0.450	0.430	0.390	1	9

a. The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System.

### 2.2 Color Test - Ordinary Colored Sheeting

Conformance to standard chromaticity (x, y) and luminance factor (Y%) requirements shall be determined instrumentally, in accordance with ASTM E1164, on Sheeting applied to smooth test panels cut from aluminum alloy 6061-T6 or 5052-H38. Chromaticity and luminance factor values shall be determined using a HunterLab ColorFlex 45/0 spectrophotometer.<sup>1</sup> Calculations shall be performed using CIE Illuminant D65 and the 2° standard observer.

### 2.3 Coefficient of Retroreflection (R<sub>A</sub>)

The values shown in Table 3 are minimum coefficients of retroreflection, expressed in candelas per lux per square meter (cd/lux/m<sup>2</sup>).

**Table 3. Minimum Coefficient of Retroreflection R<sub>A</sub> for New Sheeting (cd/lux/m<sup>2</sup>)**

Entrance Angle <sup>a</sup>	Sheeting Color	Observation Angle <sup>b</sup>	
		0.2°	0.5°
-4°	White	560	200
	Yellow	420	150
	Red	84	30
	Orange	210	75
	Blue	30	13
	Green	56	21
	Brown	18	7.5
-30°	White	280	100
	Yellow	210	75
	Red	42	15
	Orange	105	37
	Blue	14	6
	Green	28	10
	Brown	8.5	3.5

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

b. Observation Angle – The angle between the illumination axis and the observation axis.

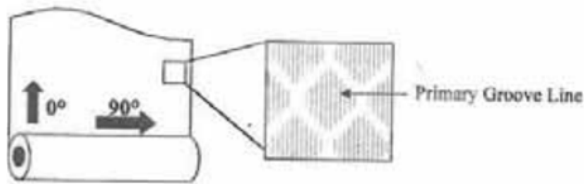
1. The instrumentally determined color values of retroreflective sheeting can vary significantly depending on the make and model of colorimetric spectrophotometer used, as well as the color and retroreflective optics of the sheeting (David M. Burns and Timothy J. Donahue, Measurement Issues in the Color Specification of Fluorescent Retroreflective Materials for High Visibility Traffic Signing and Personal Safety Applications, Proceedings of SPIE: Fourth Oxford Conference on Spectroscopy, 4826, pp. 39-49, 2003). For the purposes of this document, the HunterLab ColorFlex 45/0 spectrophotometer shall be the referee instrument.

## 2.4 Test for Coefficient of Retroreflection

Conformance to coefficient of retroreflection requirements shall be determined instrumentally, in accordance with ASTM E-810 “Test Method for Coefficient of Retroreflection of Retroreflective Sheeting.” Per ASTM E-810, the values presented in Table 3 are averages of  $R_A$  values obtained at  $0^\circ$  and  $90^\circ$  rotations.

## 2.5 Entrance Angularity Performance and Orientation

3M High Intensity Prismatic Reflective Sheeting Series 3930 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 ( $>50^\circ$ ) 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  $0^\circ$  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  $0^\circ$  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  $90^\circ$  orientation. See Figure 1 for details.



**Figure 1.** Primary groove lines used to define Sheeting orientation.

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.

## 2.6 Printed Colors and Overlay Films

When processed according to 3M recommendations, the coefficient of retroreflection of a screen-printed transparent color on white Sheeting shall be not less than 70% of the  $R_A$  value of the corresponding colored Sheeting presented in Table 3. White Sheeting covered with 3M ElectroCut™ Film Series 1170, when processed according to 3M recommendations, shall have a coefficient of retroreflection of not less than 100% of the value of the corresponding colored Sheeting, as presented in Table 3. The chromaticities and luminances of printed colors and overlay films shall conform to the specifications presented in Table 2.



## 3 Physical Properties

### 3.1 Fabrication Lines

The manufacture of prismatic Sheeting results in lines being present in the product, as shown in Figure 2. In prismatic Sheeting, these lines are slightly thicker than the seal pattern legs. Fabrication lines are noticeable in shop light but are not observable on the road, either in daylight or at night, under typical use conditions.

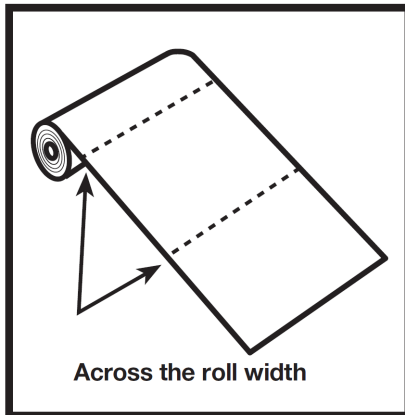


Figure 2. Fabrication lines.

### 3.2 Adhesive

Series 3930 Sheeting has a pressure-sensitive adhesive that is recommended for application at temperatures of 65°F (18°C) and higher.

## 4 Sign Fabrication Methods

### 4.1 Application

Series 3930 Sheeting should be applied to Sign substrates at temperatures of 65°F (18°C) and higher using any of the following methods:

Mechanical squeeze roll applicator – refer to [3M Information Folder 1.4](#). Applications to extrusions that are edge wrapped require sufficient softening of the Sheeting. This can be accomplished by directing additional heat to the “next to last” edge roller. This practice may increase productivity and minimize cracking.

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

Background or complete Sign applications of Series 3930 Sheeting must be performed with a roll laminator, either mechanical or hand driven.

### 4.2 Hand Application

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

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

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

### 4.3 Splices

Series 3930 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.

## 4.4 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.

## 5 Substrates

For traffic Sign use, the substrates that have been 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 Series 3930 Sheeting have the following characteristics:

- Clean
- Smooth
- Flat
- Rigid
- Dimensionally stable
- Weather resistant
- Non-porous
- High surface energy (pass water break test)

Refer to [3M Information Folder 1.7](#) for surface preparation recommendations. Substrates with low surface energies may require additional preparation steps, such as flame treatment, mechanical abrasion, or use of adhesion promoters prior to Sheeting application. 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.

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

## 6 Imaging

High intensity prismatic Sheeting may be processed into traffic Signs using any of the imaging methods described below. 3M assumes no responsibility for the failures of Sign face legends or backgrounds that have been processed with non-3M process colors or with matched component imaging materials other than those listed below.

### 6.1 Digital Imaging

3M High Intensity Prismatic Reflective Sheeting Series 3930 is compatible with the HP Latex 360/365 printers in combination with HP 831/HP 871 Latex inks. This compatibility is backed with a 3M MCS™ Warranty and 3M MCS Warranty for Traffic when the printing guidelines in [3M Information Folder 1.18](#) are followed and 3M ElectroCut™ Film 1170C Clear is applied over the finished graphics. See the “Limited Warranty” section of this document for more information on the MCS Warranties.

### 6.2 Screen Processing

Series 3930 Sheeting may be screen processed into traffic Signs using 3M Process Colors Series 880I or Series 880N before or after being mounted onto a substrate. 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. Refer to [3M Information Folder 1.8](#) for details. Clear coating is neither required nor recommended. Use of process color series other than 880I or 880N is not recommended.

### 6.3 3M ElectroCut™ Film

3M ElectroCut Film Series 1170 may be used on Series 3930 prismatic Sheeting to provide transparent colored background copy for traffic control Signs. Refer to [3M Product Bulletin 1170](#) for fabrication procedures.

## 6.4 Applied Cut-Out Copy

Series 3930 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. Refer to [3M Information Folder 1.10](#) for more information.

## 7 Cutting

Series 3930 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 Series 3930 Sheeting is not required.

### 7.1 Plotter Cutting

Programmable knife cut (electronic cutting):

- 1 Flat bed plotters can be used to either die cut or kiss cut Series 3930 Sheeting and offer the most consistent and reliable performances.
- 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, Series 3930 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.

### 7.2 Other Cutting Methods

Series 3930 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 Series 3930 Sheeting is 1 ½ inches, or 50 sheets. Cutting procedure details can be found in [3M Information Folder 1.10](#).

## 8 Installation

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

## 9 Shelf-Life, Storage, and Packaging

Series 3930 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.

Screen processed Signs must be protected with SCW 568 slipsheet paper. Place the glossy side of the slipsheet against the Sign face and pad the face with closed cell packaging foam. Double faced Signs must have the glossy side of a piece of slipsheeting against each face of the Sign.

Unmounted screened faces must be stored flat and interleaved with SCW 568 slipsheeting, glossy side against the Sign face.

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. Refer to [3M Information Folder 1.11](#) for instructions on packing for storage and shipment.

## 10 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.

## 11 Durability

The durabilities of Series 3930 Sheeting and finished Signs made using 3M Matched Component materials will depend upon substrate selection and preparation, compliance with recommended application procedures, geographic area, exposure conditions, and maintenance practices. Maximum durability of Series 3930 Sheeting can be expected in applications subject to vertical exposures on stationary objects, when processed and applied to aluminum substrates prepared according to the recommendations provided in [3M Information Folder 1.7](#). 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 3M.** Application to unprimed, excessively rough or non-weather-resistant surfaces, or exposure to severe or unusual conditions can shorten the performance lifetime of Series 3930 Sheeting. 3M process colors and ElectroCut™ Film, when used according to 3M recommendations, are generally expected to produce Signs with performances comparable to those of their colored reflective Sheeting components. Custom colors, certain lighter colors, heavily toned colors, and blends containing yellow or gold may 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, beyond the warranty period.

## 12 Health and Safety Information

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

## 13 Warranty Information

### 13.1 3M Basic Product Warranty and Limited Remedy

3M High Intensity Prismatic Reflective Sheeting Series 3930 (“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 Series 3930 Sheeting 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 refund or replacement of the Sheeting.

### 13.2 General Warranty Terms

- 3M makes the Additional Warranty (as defined below) as to any traffic control and guidance Sign in the United States and Canada made with 3M High Intensity Prismatic Reflective Sheeting Series 3930 and the Matched Component materials listed in Table 4, below. Any Additional Warranty is contingent on all components involved in the Additional Warranty being stored, applied, installed, and used only as 3M recommends in its Product Bulletins and Other Product Information.
- The Basic Warranty and any applicable Additional Warranty are collectively referred to as the “3M Warranty.”
- A Sign’s failure to meet the 3M Warranty must be solely the result of the Product or the matched component materials’ design or manufacturing defects. 3M has no obligation under the 3M Warranty if a Sign failure is caused by (a) outside causes including improper fabrication, handling, packing, storing, shipping, maintenance, or installation; (b) use of any material or product not recommended by 3M in this product bulletin, in the 3M information folders and product bulletins listed in Section 15, or in applicable 3M Technical Memorandums; (c) use of application equipment not recommended by 3M; (d) failure of Sign substrate; (e) loss of adhesion due to incompatible or improperly prepared substrate; (f) exposure to chemicals, abrasion, or other mechanical damage; (g) snow burial or any other Sign burial; (h) collisions, vandalism, or malicious mischief; or (i) an act of God.

- 3M reserves the right to determine method of replacement.
- Any replacement Product or Sign restoration will carry the unexpired warranty of the Product it replaces.
- Claims made under this warranty will be honored only if (a) the Sign was dated at the time of fabrication (“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 beyond the 3M Warranty.

**Table 4. Matched Component Materials**

Matched Components	
Process Colors	Series 880I Series 880N
ElectroCut™ Film	Series 1170
Premium Protective Overlay Film	Series 1160

### 13.3 Additional Warranty and Limited Remedy

The Additional Warranty for a Sign made with the Product is that the Sign will: (a) remain effective for its intended use when viewed from a moving vehicle under normal day and night driving conditions by a driver with normal vision and (b) after cleaning, will meet the minimum coefficient of retroreflection value stated in Table 5 for the applicable Warranty Period, as measured from the Sign’s Fabrication Date.

**Table 5. Minimum Percent of Initial  $R_A$  (See Table 3) Retained for Applicable Warranty Period for White, Yellow, Red, Green, Blue, and Brown Sheeting**

Warranty Period	Minimum Percentage $R_A$ Retained
1-7 Years	80%
8-10 Years	70%

- If any Sign made with the Product is proven not to have met the Additional Warranty, then a buyer’s **exclusive remedy**, and 3M’s sole obligation, at 3M’s option is:
- If this occurs within seven years of the Fabrication Date, then 3M will, at its expense, restore the Sign’s surface to its **original effectiveness**; or
- If this occurs during the remainder of the Additional Warranty Period, then 3M will furnish only the necessary Product and matched component materials quantities to restore the Sign’s surface to its original effectiveness.

### 13.4 Additional Warranty & Limited Remedy for 3934 Orange Product

The Additional Warranty for a Sign made with 3934 orange Sheeting (Orange Product) is that the Sign will: (a) remain effective for its intended use when viewed from a moving vehicle under normal day and night driving conditions by a driver with normal vision; (b) after cleaning, will retain the coefficient of retroreflection stated in Table 6 for three years, as measured from Fabrication Date; and (c) after cleaning, the Product will maintain daytime luminance equal to or greater than the minimum value specified in Table 2.

**Table 6. Minimum Coefficient of Retroreflection for 3934 Orange Sheeting Product ( $cd/lux/m^2$ ) (0.2° observation angle and -4° entrance angle)**

Warranty Period	Minimum $R_A$
3 Years	80

If any Sign made with the Orange Product is proven not to have met the Additional Warranty, then a buyer’s **exclusive remedy**, and 3M’s sole obligation, at 3M’s option, is that 3M will provide pro-rated replacement of the 3M materials.

Refer to 3M Information Folders and Product Bulletins for detailed information about recommended application procedures and equipment.

## 13.5 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.

## 13.6 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.

## 14 Other Product Information

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

## 15 Literature References

<a href="#">3M IF 1.4</a>	Instructions for Interstate Squeeze Roll Applicator
<a href="#">3M IF 1.5</a>	Hand Application Instructions
<a href="#">3M IF 1.6</a>	Hand Squeeze Roll Applicator
<a href="#">3M IF 1.7</a>	Sign Base Surface Preparation
<a href="#">3M IF 1.8</a>	Process Colors Series 880 and 900 Instructions for Use
<a href="#">3M IF 1.10</a>	Cutting, Premasking, and Prespacing
<a href="#">3M IF 1.11</a>	Sign Maintenance Management
<a href="#">3M IF 1.18</a>	Digital Imaging with HP Latex 360/365 Printers on 3M™ Reflective Sheeting Series 4000 and 3930
<a href="#">3M IF 3.5</a>	Digital Imaging with HP Latex 360/365/370/375 Printer on 3M™ Reflective Sheeting Series 4000 and 3930 for Rigid Temporary Traffic Control Signing Applications
<a href="#">3M PB 880I</a>	3M™ Process Color Series 880I
<a href="#">3M PB 880N</a>	3M™ Process Color Series 880N
<a href="#">3M PB 1160</a>	Premium Protective Overlay Film
<a href="#">3M PB 1170</a>	3M™ ElectroCut™ Film Series 1170

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

**For Information or Assistance**

**Call: 1-800-553-1380**

**In Canada Call:**

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

**Internet:**

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

3M, Science. Applied to Life., and ElectroCut are trademarks of 3M. Used under license in Canada.

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



**Transportation Safety Division**  
3M Center, Building 0225-04-N-14  
St. Paul, MN 55144-1000 USA

Phone 1-800-553-1380  
Web [3M.com/roadsafety](http://3M.com/roadsafety)

Please recycle. Printed in USA © 3M 2018.  
All rights reserved. Electronic Only



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™ DG<sup>3</sup> Series 4000 and 4000TT
- 3M Diamond Grade™ Translucent DG<sup>3</sup> Reflective Sheeting 4090T





Additionally, 3M™ ElectroCut Film 1170C Clear must be used with the following 3M reflective sheetings:  
 3M Diamond Grade DG<sup>3</sup> 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](http://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](http://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.

3M, 3M Science. Applied to Life., ElectroCut, Diamond Grade and MCS are trademarks of 3M. Used under license in Canada.

### Important Notice

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable at the time of this publication, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, special or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith. Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.



**Traffic Safety and Security Division**  
3M Center, Building 0225-04-N-14  
St. Paul, MN 55144-1000 USA  
Phone 1-800-553-1380  
Web 3M.com/roadwaysafety

**3M Canada Company**  
P.O. Box 5757  
London, Ontario N6A 4T1  
1-800-3MHELPS

**3M México, S.A. de C.V.**  
Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México, D.F. 01210

Please recycle. Printed in USA  
© 3M 2016. All rights reserved.  
Electronic Only



# Engineer Grade Prismatic Reflective Sheeting

## Series 3430 with Pressure Sensitive Adhesive

Product Bulletin 3430-U.S.

October 2013

Replaces Product Bulletin 3430 dated July 2009

---

### Description

3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430 is a non-metalized microprismatic lens retroreflective sheeting designed for production of reflective commercial signs and noncritical traffic control signs that are exposed vertically in service. Series 3430 sheeting can easily be identified by the visible integral “EGP” marking. When applied to properly prepared sign substrates, Series 3430 sheeting provides long-term reflectivity and durability. Series 3430 sheeting is available in the following colors.

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

---

### Sign Fabrication Methods

#### Application

Series 3430 sheeting incorporates a pressure sensitive adhesive and should be applied to the sign substrate at temperature of 65°F/18°C or higher by any of the following methods:

Mechanical squeeze roll applicator – Reference Information Folder 1.4.

Hand squeeze roll applicator — Reference Information Folder 1.6.

Hand application is recommended for copy only. See Information Folder 1.5.

All direct applied copy and border MUST be cut at all panel seams and squeegeed at the joint.

#### Splices

Series 3430 sheeting must 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. This is to prevent buckling as the sheeting expands when subject to extreme temperature and/or high humidity levels.

#### 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.

---

## Substrates

For traffic sign use, substrates found to be most reliable and durable are properly prepared aluminum sheets and extrusions. Users are urged to carefully evaluate all other substrates for adhesion and sign durability. Other substrates that may be satisfactory for proper application of sheeting will have the following characteristics:

- Clean
- Smooth
- Flat
- Rigid
- Dimensionally stable
- Weather resistant
- Non-porous
- High surface energy (passes water break test)

Refer to Information Folder 1.7 for surface preparation recommendations. Substrates with low surface energy may require additional preparation such as flame treatment, mechanical abrasion or use of adhesion promoters prior to sheeting application.

Engineer grade prismatic sheeting is designed primarily for applications to flat substrates. Any use that requires a radius of curvature of less than five inches should also be supported by rivets or bolts. Plastic substrates are not recommended where cold shock performance is required. **Sign failures caused by the substrate or improper surface preparation are not the responsibility of 3M.**

---

## Screen Processing

Engineer grade prismatic sheeting may be screen processed into traffic signs before or after mounting on a sign substrate, using 3M™ Process Colors Series 880I or Series 880N. Series 880I or 880N process colors can be screened at 60–100°F (16–38°C) at relative humidity of 20–50%. A PE 157 screen mesh with a fill pass is recommended. Refer to Information Folder 1.8 for details. Clear coating is not required or recommended. Use of other process colors series is not recommended. **Care should be taken to avoid flexing series 3430 sheeting before and especially after screening to eliminate the possibility of cracking from improper handling techniques.**

For screenprinted 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 color chromaticity and luminance shall conform to Table B.

---

## Cutting and Matching

Engineer grade prismatic sheeting may be cut into letters and shapes of at least three inches in height and stroke widths of at least one half inch. Smaller sizes are not recommended. Sealing cut edges of Series 3430 sheeting is not required.

### Plotter Cutting

Programmable knife cut (electronic cutting)

1. Flat bed plotters can either die cut or kiss cut and offer the most consistent and reliable performance.
2. Friction fed plotter. Kiss cut only. Success has been achieved using plotters that have 600 grams of down force and a 60° cutting blade. Additional drive wheels may need to be added to improve tracking. An alternative procedure is to cut sheeting from the liner side. Blade force and knife depth must be set to score but not cut through the topfilm. Break apart individual copy or apply premask to retain spacing.

### Other Cutting Methods

Engineer grade prismatic 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 have 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 series 3430 sheeting is one and a half inch or 50 sheets. Details on cutting can be found in Information Folder 1.10.

<b>Cleaning</b>	Signs that require cleaning should be flushed with water, then washed with a detergent solution and a 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 Information Folder 1.10.
<b>Storage and Packaging</b>	<p>3M™ Engineer Grade Prismatic 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. Finished signs and applied blanks should be stored on edge.</p> <p>Screen processed signs must be protected with SCW 568 slipsheet paper. Place the glossy side of the slipsheet against the sign face. Double faced signs must have the glossy side of the slipsheet against each face of the sign.</p> <p>Unmounted screened faces must be stored flat and interleaved with SCW 568 slipsheet, glossy side against the sign face.</p> <p>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.</p> <p>Panels or finished signs must remain dry during shipment and storage. If packaged signs become wet, unpack immediately and allow signs to dry. Refer to Information Folder 1.11 for instructions on packing for storage and shipment.</p>
<b>Installation</b>	Nylon washers are required when twist style fasteners are used to mount the sign.
<b>Health and Safety Information</b>	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.
<b>General Performance Considerations</b>	<p>Minimum coefficient of retroreflection, chromaticity limits, and daytime luminance factor (Y%) for the engineer grade prismatic sheeting series 3430 are given in Table A and Table B, respectively.</p> <p><b>Durability Considerations</b></p> <p>The durability of 3M™ Engineer Grade Prismatic Sheeting and finished signs using 3M's matched component materials (Table C) will depend upon substrate selection and preparation, compliance with recommended application procedures, geographic area, exposure conditions, and maintenance. Maximum durability of series 3430 can be expected in applications subject to vertical exposure on stationary objects when processed and applied to properly prepared aluminum according to 3M recommendations. Periodic sign inspection and regular sign replacement are strongly recommended in order for sign owners to establish their own effective service life expectation beyond any durability warranty, if provided.</p> <p><b>Substrate Considerations</b></p> <p>The user must determine the suitability of any nonmetallic sign backing for its intended use. Substrate manufacturer recommendations for preparation should be followed as well as guidance provided in Information Folder 1.7. Applications to unprimed, excessively rough or non-weather resistant surfaces can shorten the performance of such applications. <b>Sign failures caused by the substrate or improper surface preparation are not the responsibility of 3M.</b></p> <p><b>Exposure Considerations</b></p> <p>Exposure to severe or unusual conditions can shorten the performance of such applications. Signs in mountainous areas that are covered by snow for prolonged periods may also have reduced durability. Atmospheric conditions in certain geographic areas may result in reduced durability.</p> <p><b>Custom Process Colors Considerations</b></p> <p>Custom colors, certain lighter colors, heavily toned color or blends containing yellow or gold may have reduced durability.</p>

**General Performance Considerations (Continued)**

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

Obs. Angle <sup>1</sup>	Ent. Angle <sup>2</sup>	White	Yellow	Red	Green	Blue	Brown
0.2	-4	70	50	14.5	9.0	4.0	2.0
0.2	+30	30	22	6.0	3.5	1.7	1.0
0.5	-4	30	25	7.5	4.5	2.0	1.0
0.5	+30	15	13	3.0	2.2	0.8	0.5

Reflectivity conforms to ASTM D 4956.

<sup>1</sup>Observation Angle — The angle between the illumination axis and the observation axis.

<sup>2</sup>Entrance 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	x	y	x	y	x	y	x	y	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	12.0
Blue	.140	.035	.244	.210	.190	.255	.065	.216	1.0	10.0
Green	.026	.399	.166	.364	.286	.446	.207	.771	3.5	9.0
Brown	.430	.340	.610	.390	.550	.450	.430	.390	4.0	9.0

**Table C — Matched Component Materials**

Matched Components	
Process Colors	Series 880I
Process Colors	Series 880N
Premium Protective Overlay Film	Series 1160
Slipsheet	SCW 568
Prespacing Tape	SCPS-2
Premasking Tape	SCPM-3
Transfer Tape	TPM-5

**3M Basic Warranty and Limited Remedy**

3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430 (“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 refund or replacement of the sheeting.

**Limitation of Liability and Remedies**

3M WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO A BUYER FOR DIRECT (other than the applicable Limited Remedy stated above), SPECIAL, INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES (INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS) IN ANY WAY RELATED TO A PRODUCT OR THIS PRODUCT BULLETIN, REGARDLESS OF THE LEGAL OR EQUITABLE THEORY ON WHICH SUCH DAMAGES ARE SOUGHT.

---

<b>Literature Reference</b>	Information Folder 1.4	Instructions for Squeeze Roll Applicator
	Product Bulletin 880I	3M™ Process Color Series 880I
	Product Bulletin 880N	3M™ Process Color Series 880N
	Information Folder 1.5	Hand Application Instructions
	Information Folder 1.6	Instructions for Hand Squeeze Roll Applicator
	Information Folder 1.7	Sign Base Surface Preparation
	Information Folder 1.8	Process Color Instructions
	Information Folder 1.10	Cutting, Matching, Premasking, and Prespacing Instructions
	Information Folder 1.11	Sign Maintenance Management

**FOR INFORMATION OR ASSISTANCE  
CALL: 1-800-553-1380**

**IN CANADA CALL:  
1-800-265-1840**

**Internet:  
[www.3M.com/roadwaysafety](http://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.

**Important Notice**

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, special or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith. Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.

3M is a trademark of 3M. Used under license in Canada.



**Traffic Safety and Security Division**  
3M Center, Building 0235-3A-09  
St. Paul, MN 55144-1000  
1-800-553-1380  
[www.3M.com/roadwaysafety](http://www.3M.com/roadwaysafety)

**3M Canada Company**  
P.O. Box 5757  
London, Ontario N6A 4T1

**3M México, S.A. de C.V.**  
Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México, D.F. 01210

Please recycle.  
© 3M 2013. All rights reserved.



Transportation Safety Division

# 3M™ Diamond Grade™ DG<sup>3</sup> Reflective Sheeting Series 4000

Product Bulletin 4000  
January 2020

Replaces Product Bulletin 4000 Dated August 2019

## 1 Description

3M Diamond Grade DG<sup>3</sup> Reflective Sheeting Series 4000 (“Sheeting”) 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. Sheeting, as manufactured by 3M, meets 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 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. Signs must be manufactured, installed, and maintained as recommended in the applicable 3M Information Folders listed in Section 16, and legibility must be assessed after Signs have been cleaned as described in [3M Information Folder 1.11](#). 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 Geographic 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 (R<sub>A</sub>)

Table 3 describes the durations and coefficients of retained retroreflection<sup>1</sup> 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 as recommended in the applicable 3M Information Folders listed in Section 16 of this product bulletin.

**Table 3.** Minimum Retained coefficient of retroreflection<sup>a</sup> (R<sub>A</sub>, [cd/lx/m<sup>2</sup>]) for Sheeting over time

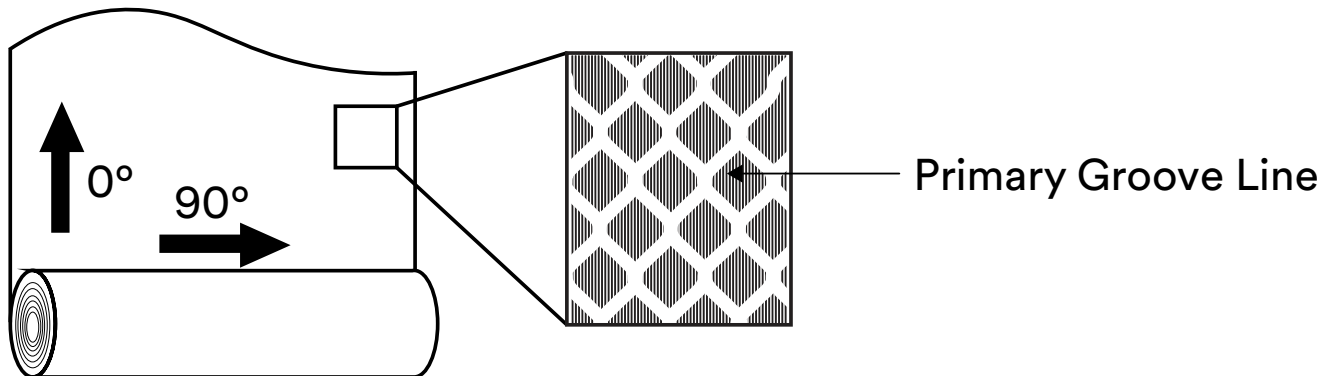
Sheeting	Years from Fabrication Date	Minimum Retained Coefficient of Retroreflection [cd/lx/m <sup>2</sup> ]
4090, 4091, 4092, 4095, 4097, 4099	On Fabrication Date	ASTM D4956 Type XI
	Up to 7 Years	80% of ASTM D4956 Type XI
	8-12 Years	70% ASTM D4956 Type XI
4081, 4083	On Fabrication Date	ASTM D4956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

a. 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.

1. 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 R<sub>A</sub> 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 ( $>50^\circ$ ) 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  $0^\circ$  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  $0^\circ$  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  $90^\circ$  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 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 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.

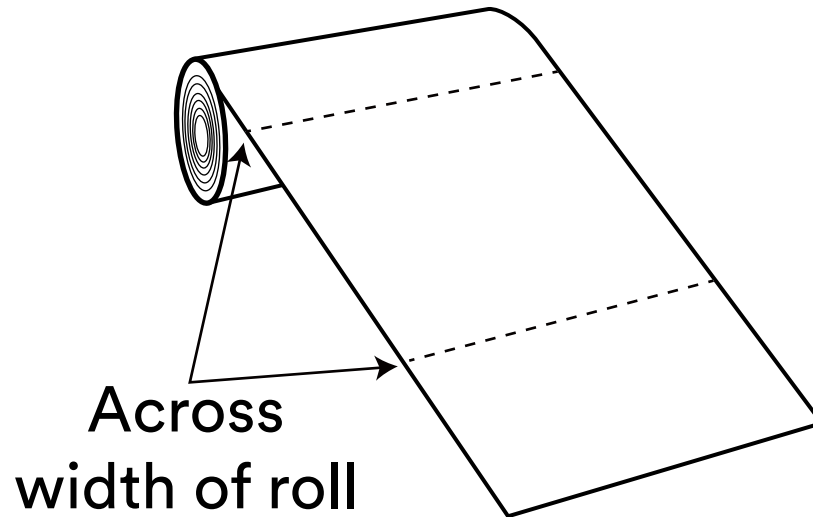


Figure 2. Fabrication lines

### 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 - refer to [3M Information Folder 1.4](#) for details. 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.

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

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. Refer to [3M Information Folder 1.5](#) for more details.

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

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

### 5.3 Splices

Sheeting must be butt spliced when more than one piece of Sheeting is used on a single piece of substrate. Sheeting pieces should not touch one another. 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)

Refer to [3M Information Folder 1.7](#) for surface preparation recommendations. Substrates with low surface energies may require additional preparation steps, such as flame treatment, mechanical abrasion, or use of adhesion promoters prior to Sheeting application. 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. Plastic substrates are not recommended where cold shock performance is required. **Sign failures caused by substrate failures or improper surface preparations are not the responsibility of 3M.**

## 7 Imaging

Diamond Grade DG<sup>3</sup> prismatic Sheeting may be processed into traffic Signs using any of the imaging methods described below. 3M assumes no responsibility for the failures of Sign face legends or backgrounds that have been processed with non-3M process colors or with matched component imaging materials other than those listed below.

### 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 3M MCS™ Warranty and 3M MCS Warranty for Traffic when the printing guidelines in [3M Information Folder 1.18](#) are followed and 3M ElectroCut™ Film 1170C Clear is applied over the finished graphics. See the “Limited Warranty” section of this document for more information on the MCS Warranties.

## 7.2 Screen Processing

Sheeting may be screen processed into traffic Signs using 3M 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. Refer to [3M Information Folder 1.8](#) for details. Clear coating is neither required nor recommended. Use of process colors series other than 880I or 880N is not recommended.

## 7.3 3M ElectroCut Film

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

## 7.4 Applying Cut-Out Copy

Diamond Grade DG<sup>3</sup> 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. Refer to [3M Information Folder 1.10](#) for more information.

# 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 topline. 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. Cutting procedure details can be found in [3M Information Folder 1.10](#).

# 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. Refer to [3M Information Folder 1.11](#) for instructions on packing for storage and shipment.

## 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 recommendations provided in [3M Information Folder 1.7](#). 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 3M.** 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

Read 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 prior to handling or use. To obtain SDSs and Article Information Sheets for 3M products, go to [3M.com/SDS](http://3M.com/SDS), contact 3M by mail, or for urgent requests call 1-800-364-3577.

## 14 Warranty Information

### 14.1 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”).

### 14.2 3M MCS™ Warranty and 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](#).

### 14.3 3M Warranty Terms and Conditions

- o 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 16.
- o 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 16, 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, or other mechanical damage; (h) snow burial or any other Sign burial; (i) collisions, vandalism, or malicious mischief; or (j) an act of God.

- o 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) 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.
- o 3M is not responsible for any additional warranties that the Sign Manufacturer offers to its customers beyond the 3M Warranty.

#### 14.4 Exclusive Limited Remedy

Valid claims under the 3M 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 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 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.

#### 14.5 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.

#### 14.6 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.

#### 14.7 Additional Limitations

See the [3M Digitally-Imaged Sign Warranty Bulletin](#) for terms, additional limitations of your warranty, if any, and limitations of liability.



## 15 Other Product Information

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

## 16 Literature References

- [3M IF 1.4](#) Instructions for Interstate Squeeze Roll Applicator
- [3M IF 1.5](#) Hand Application Instructions
- [3M IF 1.6](#) Hand Squeeze Roll Applicator
- [3M IF 1.7](#) Sign Base Surface Preparation
- [3M IF 1.8](#) Process Colors Series 880 and 900 Instructions for Use
- [3M IF 1.10](#) Cutting, Premasking, and Prespacing
- [3M IF 1.11](#) Sign Maintenance Management
- [3M IF 1.17](#) User Guide 3M™ Reflective Sheeting and HP Latex 360/365 Printers
- [3M PB 1170](#) 3M™ ElectroCut™ Film Series 1170
- [3M Digitally-Imaged Sign Warranty Bulletin](#)

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

## For Information or Assistance

Call: 1-800-553-1380

In Canada Call:

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

## Internet:

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

3M, Science. Applied to Life., Diamond Grade, MCS, and ElectroCut are trademarks of 3M. Used under license in Canada. All other trademarks are the property of their respective owners.

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.

## Important Notice

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable at the time of this publication, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, indirect, special, or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith. Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.



## Transportation Safety Division

3M Center, Building 0225-04-N-14  
St. Paul, MN 55144-1000 USA

Phone 1-800-553-1380

Web [3M.com/roadsafety](http://www.3M.com/roadsafety)

Please recycle. Printed in USA © 3M 2020.  
All rights reserved. Electronic Only

## Series 7725

### Product Description

- 2-mil cast, vinyl film

### Product Features

- Pressure-sensitive permanent adhesive
- Same color on both sides
- Transparent synthetic liner resists moisture absorption and static build up
- Lays flat for easier assembly of multi-color graphics
- Superior cutting as small as 0.25 inch (0.64 cm) and weeding
- Ideal for prespaced and electronically cut, screen printed or used in narrow width thermal transfer printing systems
- Expected Performance Life of 8 years (unwarranted period for unprinted film with no graphic protection, applied to a flat, vertical, outdoor surface)

### Recommended Types of Graphics and End Uses

See [3Mgraphics.com/warranties](http://3Mgraphics.com/warranties) for a complete list of compatible products that are approved by 3M for use with the base film covered in this Bulletin and used for the creation of a graphic that may be eligible for the 3M™ MCS™ Warranty.

- Prespaced and electronically cut graphics
- Commercial and industrial graphic applications, including emblems, vehicle graphics, labels, striping, general signage, and two-way window markings
- Thermal transfer printed graphics

### Recommended Compatible Products

See [3Mgraphics.com/warranties](http://3Mgraphics.com/warranties) for a complete list of compatible products that are approved by 3M for use with the base film covered in this Bulletin and used for the creation of a graphic that may be eligible for the 3M™ MCS™ Warranty.

### Screen Printing Inks for 3M™ MCS™ Warranty

- [3M™ Screen Printing Ink Series 1900 \(Solvent\)](#), line color only
- [3M™ Screen Printing UV Ink Series 9800](#), line color only

### Graphic Protection

- [3M™ Screen Print Gloss Clear 1920DR](#)
- [3M™ Screen Print Matte Clear 1930](#)
- [3M™ Screen Print UV Gloss Clear 9800CL](#)
- [3M™ Screen Print Matte Clear 9730UV](#)
- [3M™ Screen Print UV Gloss Clear 9740i](#)

### Application Tapes

See [3M Instruction Bulletin AT-1](#) to determine what application tape is recommend for your film or finished graphic.

#### Quick Links

- [3M Graphics Warranties](#)
- [Technical Information Selector](#)
- [Safety Data Sheets \(SDS\)](#)
- [Flammability \(ASTM E84 Reports\)](#)
- [Videos](#)

Some of these links lead to web-based resources that are not product-specific.

## Characteristics

These are typical values for unprocessed product. Processing may change the values.

### Physical Characteristics

Characteristic	Value																		
<b>Material</b>	Cast vinyl, glossy finish																		
<b>Opacity</b>	Opaque																		
<b>Film Color</b>	See "Colors" on page 3																		
<b>Thickness</b>	<b>Without adhesive:</b> 2 mil (0.05 mm) <b>With adhesive:</b> 2.5 – 3.5 mils (0.063 – 0.09 mm)																		
<b>Adhesive</b>	Pressure sensitive																		
<b>Adhesive Color</b>	Clear																		
<b>Liner</b>	Transparent synthetic																		
<b>Adhesion, Typical 24 hours after application</b>	<table> <tbody> <tr> <td>ABS</td> <td>4 pounds/inch (0.7 kg/cm)</td> </tr> <tr> <td>Acrylic</td> <td>4 pounds/inch (0.7 kg/cm)</td> </tr> <tr> <td>Acrylic enamel</td> <td>4 pounds/inch (0.7 kg/cm)</td> </tr> <tr> <td>Fruehauf pre-painted panels</td> <td>4 pounds/inch (0.7 kg/cm)</td> </tr> <tr> <td>Polycarbonate</td> <td>4 pounds/inch (0.7 kg/cm)</td> </tr> <tr> <td>Urethane paints</td> <td>4 pounds/inch (0.7 kg/cm)</td> </tr> <tr> <td>Aluminum, alodine</td> <td>8 pounds/inch (1.4 kg/cm)</td> </tr> <tr> <td>Chrome</td> <td>5 pounds/inch (0.9 kg/cm)</td> </tr> <tr> <td>Polypropylene</td> <td>3 pounds/inch (0.5 kg/cm)</td> </tr> </tbody> </table>	ABS	4 pounds/inch (0.7 kg/cm)	Acrylic	4 pounds/inch (0.7 kg/cm)	Acrylic enamel	4 pounds/inch (0.7 kg/cm)	Fruehauf pre-painted panels	4 pounds/inch (0.7 kg/cm)	Polycarbonate	4 pounds/inch (0.7 kg/cm)	Urethane paints	4 pounds/inch (0.7 kg/cm)	Aluminum, alodine	8 pounds/inch (1.4 kg/cm)	Chrome	5 pounds/inch (0.9 kg/cm)	Polypropylene	3 pounds/inch (0.5 kg/cm)
ABS	4 pounds/inch (0.7 kg/cm)																		
Acrylic	4 pounds/inch (0.7 kg/cm)																		
Acrylic enamel	4 pounds/inch (0.7 kg/cm)																		
Fruehauf pre-painted panels	4 pounds/inch (0.7 kg/cm)																		
Polycarbonate	4 pounds/inch (0.7 kg/cm)																		
Urethane paints	4 pounds/inch (0.7 kg/cm)																		
Aluminum, alodine	8 pounds/inch (1.4 kg/cm)																		
Chrome	5 pounds/inch (0.9 kg/cm)																		
Polypropylene	3 pounds/inch (0.5 kg/cm)																		
<b>Tensile Strength</b>	5 pounds/inch at 73 °F (0.9 kg/cm at 23 °C)																		
<b>Chemical Resistance</b>	<ul style="list-style-type: none"> <li>Resists mild alkalis, mild acids, and salt</li> <li>Excellent resistance to water (does not include immersion)</li> </ul>																		
<b>Flammability</b>	ASTM E84 test report: <a href="#">click here</a> or go to the On-line Catalog at 3Mgraphics.com All available test reports: call 1-800-328-3908																		

### Application Characteristics

Characteristic	Value
<b>Finished Graphic Application Recommendation</b>	<b>Graphic Orientation:</b> Vertical, non-vertical and horizontal <b>Surface type:</b> Flat, with and without rivets, simple curves <b>Substrate type:</b> Metal, glass, acrylic, polycarbonate, fiberglass, painted surfaces <b>Application method:</b> Wet <b>Application temperature:</b> (air and substrate): 50–100 °F (10–38 °C)
<b>Applied Shrinkage</b>	0.010 inches (0.3 mm) maximum
<b>Temperature Range After Application</b>	-40 to +225 °F (-40 to +107 °C) (not for extended periods of time at the extremes)
<b>Graphic Removal</b>	None, permanent

PLEASE SEE NEXT PAGE FOR UPDATED COLORS AVAILABLE

**Colors**

Solid Colors			Metallic and Transparent
10 White	53 Cardinal Red	101 Nimbus Gray	201 Slate
11 Pearl gray	54 Light Orange	103 Magenta	211 Charcoal
12 Black	56 Dark Green	105 Harvest Gold	217 Dark Blue
13 Tomato Red	57 Olympic Blue	107 Light Blue	227 Bright Blue
14 Bright Orange	58 Burgundy	117 Persian Blue	229 Copper
15 Bright Yellow	59 Putty	120 Satin Aluminum	239 Chocolate Brown
16 Khaki Green	61 Mid Gray	121 Light Gray	241 Gold
17 Vivid Blue	63 Geranium	127 Boat Blue	243 Steampunk Red
19 Deep Mahogany Brown	64 Apricot	131 Satin Gold	247 Petroleum Blue
20 Matte White	65 Light Lemon Yellow	136 Lime Green	249 Champagne
22 Matte Black	66 Forest Green	151 Traffic Gray	114 Transparent
23 Deep Red	69 Duranodic	177 Shadow Blue	
24 Terra Cotta	74 Red Orange	186 Bright Green	
25 Sunflower	77 Peacock Blue	187 Wedgewood Blue	
27 Indigo (Navy)	78 Plum	196 Apple Green	
29 Russet Brown	81 Stone Gray	197 Light Navy	
31 Medium Gray	86 Robin Egg Blue	263 Perfect match Red	
37 Sapphire Blue	89 Sandstone	273 Process Magenta	
38 Royal Purple	90 Antique White	276 Bottle Green	
39 Tan	91 Dove gray	293 Atomic Red	
41 Dark Gray	93 Imperial Red	307 Dark Aqua	
46 Kelly Green	96 Teal	357 Bermuda Blue	
47 Intense Blue	97 Soft Blue	397 Dark Blue	
48 Purple	98 Dark Violet		
49 Beige	99 Fawn		

**Warranty Information**

**(i) IMPORTANT NOTE**

Warranty information including limitations and exceptions and warranty periods for this product can be found at [3Mgraphics.com/warranties](http://3Mgraphics.com/warranties).

**(i) IMPORTANT NOTE**

Screen printed vehicle graphics require a liquid clear coat in order to be eligible for the 3M™ MCS™ Warranty. Liquid clear coats 1930 and 9730UV may haze, which is not covered by the 3M™ MCS™ Warranty.

**(i) IMPORTANT NOTE**

Graphics exposed to abrasive washing conditions, harsh cleaners or chemicals are not eligible for the 3M™ MCS™ Warranty.

## 3M™ Scotchcal™ Film Series 7725

### Series 7725

Film series 7725 are 2 mil, pressure-sensitive films designed for permanent graphics that may be prespaced and electronically cut, screen printed or used in narrow width thermal transfer printing systems. These films which are the same

color on both sides have a transparent synthetic liner that resists moisture absorption and static buildup, lays flat for easier assembly of multicolor graphics, and allows superior cutting and weeding. This film is available in 62 colors.

### Film Colors

Product	Basic Colors
7725-10	White
7725-12	Black
7725-20	Matte White
7725-22	Matte Black
7725-114	Transparent

### Colors available to Transportation Safety Division - May 2020

As of July 1, 2021:

- 7725-12 (Black) available in standard size rolls
- 7725-10 (white), -114 (clear), and standard colors available only in full-web width of 48" x 50.

Product	Standard Colors
7725-11	Pearl Gray
7725-13	Tomato Red
7725-14	Bright Orange
7725-15	Bright Yellow
7725-17	Vivid Blue
7725-19	Deep Mahogany Brown
7725-25	Sunflower
7725-29	Russet Brown
7725-31	Medium Gray
7725-37	Sapphire Blue
7725-41	Dark Gray
7725-46	Kelly Green
7725-47	Intense Blue
7725-49	Beige
7725-53	Cardinal Red
7725-54	Light Orange
7725-56	Dark Green
7725-57	Olympic Blue
7725-58	Burgundy
7725-63	Geranium
7725-66	Forest Green
7725-120	Satin Aluminum
7725-131	Satin Gold
7725-186	Bright Green
7725-196	Apple Green
7725-197	Light Navy
7725-263	Perfect Match Red
7725-276	Bottle Green

## Warranty Coverage Overview

The warranty coverage for eligible graphics is based on the user both reading and following all applicable and current 3M Graphics Product and Instruction Bulletins. The warranty period for eligible graphics is as stated in the 3M Graphics Warranties Matrices at the time that the film was purchased. Information found at [3Mgraphics.com/warranties](http://3Mgraphics.com/warranties) includes:

- [3M Graphics Warranties Bulletin](#)
  - This bulletin contains information on limitations and exceptions, and warranty period reductions for 3M Graphics Warranties. The warranty period may be reduced and stipulations may apply for certain constructions and applications, and graphic exposures as covered in this Bulletin.
- [3M Graphics Warranties Selector](#)
  - Use this selector to search for your vertical warranty period by product number, ink type, and ink/printer platform.
- [U.S. Desert Southwest Region Map](#)
  - Use this map of hot, arid desert areas to determine if you are subject to reduced warranted durabilities.

The warranties set forth in this Bulletin are made in lieu of all other express or implied warranties, including any implied warranty of merchantability, fitness for a particular purpose, or arising out of a course of dealing, custom, or usage of trade.

## 3M Basic Product Warranty

3M Graphics Products are warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in its applicable 3M Graphics Product Bulletin and as further set forth in the [3M Graphics Warranties Bulletin](#).

## Limited Remedy

The limited remedy applicable to each warranty is addressed in the 3M Graphics Warranties Bulletin found at [3Mgraphics.com/warranties](http://3Mgraphics.com/warranties).

## Limitation of Liability

Except to the extent prohibited by law, 3M SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO PURCHASER OR USER FOR ANY DIRECT (EXCEPT FOR THE LIMITED REMEDY PROVIDED HEREIN), INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LABOR, NON-3M MATERIAL CHARGES, LOSS OF PROFITS, REVENUE, BUSINESS, OPPORTUNITY, OR GOODWILL) RESULTING FROM OR IN ANY WAY RELATED TO 3M'S GRAPHICS PRODUCTS, SERVICES, OR THIS BULLETIN. This limitation of liability applies regardless of the legal or equitable theory under which such losses or damages are sought.

## Warranty Period Matrices (Film Colors 10, 12, 20, 22)

Table A. Warranty Period for Finished Graphics in a Standard U.S. Vertical Exposure.

Graphic Protection	No Printing			SOLVENT Ink Series 1900			UV Ink Series 9800			UV Ink Series 9800 Metallic		
	VEH	OUT	IN	VEH	OUT	IN	VEH	OUT	IN	VEH	OUT	IN
1920DR air dry	—	—	—	5	5	5	—	—	—	—	—	—
1920DR oven dry	—	—	—	6 <sup>1</sup>	6 <sup>1</sup>	6 <sup>1</sup>	—	—	—	—	—	—
1930	—	—	—	2	2	2	—	—	—	—	—	—
9740i	—	—	—	6	6	6	6	6	6	5	5	5
9730UV	—	—	—	3	3	3	3	3	3	—	—	—
9800CL	—	—	—	—	—	—	5	5	5	5	5	5
None	8	7	7	—	—	—	—	—	—	—	—	—

**Warranty Period Matrices (Film Colors 114, 120, 131, 201, 211, 217, 227, 229, 239, 241, 243, 247, 249)**

**Table B. Warranty Period for Finished Graphics in a Standard U.S. Vertical Exposure.**

Graphic Protection	No Printing			SOLVENT Ink Series 1900			UV Ink Series 9800			UV Ink Series 9800 Metallic		
	VEH	OUT	IN	VEH	OUT	IN	VEH	OUT	IN	VEH	OUT	IN
1920DR air dry	—	—	—	5	5	5	—	—	—	—	—	—
1920DR oven dry	—	—	—	5 <sup>1</sup>	5 <sup>1</sup>	5 <sup>1</sup>	—	—	—	—	—	—
1930	—	—	—	2	2	2	—	—	—	—	—	—
9740i	—	—	—	5	5	5	5	5	5	5	5	5
9730UV	—	—	—	3	3	3	3	3	3	—	—	—
9800CL	—	—	—	—	—	—	5	5	5	5	5	5
None	5	5	5	—	—	—	—	—	—	—	—	—

**Warranty Period Matrices (All other film colors)**

**Table C. Warranty Period for Finished Graphics in a Standard U.S. Vertical Exposure.**

Graphic Protection	No Printing			SOLVENT Ink Series 1900			UV Ink Series 9800			UV Ink Series 9800 Metallic		
	VEH	OUT	IN	VEH	OUT	IN	VEH	OUT	IN	VEH	OUT	IN
1920DR air dry	—	—	—	5	5	5	—	—	—	—	—	—
1920DR oven dry	—	—	—	6 <sup>1</sup>	6 <sup>1</sup>	6 <sup>1</sup>	—	—	—	—	—	—
1930	—	—	—	2	2	2	—	—	—	—	—	—
9740i	—	—	—	6	6	6	6	6	6	5	5	5
9730UV	—	—	—	3	3	3	3	3	3	—	—	—
9800CL	—	—	—	—	—	—	5	5	5	5	5	5
None	6	6	6	—	—	—	—	—	—	—	—	—

1. Warranty requires oven drying the last color of ink series 1900 and screen print 1920DR for 2 hours at 150 °F (65 °C).

**Reduced Warranty Period for Other Graphic Exposures**

For other graphic exposures, determine the applicable reduced warranty period by multiplying the standard warranty period (in years) for your graphic construction as shown in the applicable warranty period tables by the percentage shown for the intended graphic exposure. See "Exposure Types" on page 3 of the 3M Graphics Warranties Bulletin for graphic exposure definitions.

**Table D. Reduced Warranty Period for Other Graphic Exposures**

If the Graphic Exposure is:	Use this Percentage of Vertical Exposure, Warranty Period	Calculation Examples
Desert Southwest Vertical	70%	0.7 x 7 years = 4.9 years
U.S. Horizontal	0%	0 x 4 years = 0 years



## Legibility Warranty - Only for Fleet Graphics with Horizontal Exposure and Selected Constructions

Applications subjected to maximum sunlight and environmental conditions used on rooftops of commercially-owned fleet vehicles where identification from the air is needed are warranted for legibility only for the following constructions. The finished graphic will change color, lose gloss and chalk, which is not covered by warranty.

Film Colors: 10, 11, 12, 13, 14, 15, 20, 22, 53		Horizontal Exposure	
Ink Series	Clear	U.S.	U.S. Desert Southwest
No printing	None	5	3

## Additional Limitations

See the 3M Graphics Warranties Bulletin at [3MGraphics.com/warranties](http://3MGraphics.com/warranties), for terms, additional limitations of your warranty, if any, information on reduced warranties for different exposures, and limitations of liability.

## Factors that Affect Graphic Performance Life

The actual performance life of a graphic is affected by:

- the combinations of graphics materials used.
- complete ink drying or curing.
- selection, condition and preparation of the substrate.
- surface texture.
- application methods.
- angle and direction of sun exposure.
- environmental conditions.
- cleaning or maintenance methods.

## Graphics Manufacturing



Before using any equipment, always read the manufacturer's instructions for safe operation.

## Thermal Transfer Printing

Formulations and processing conditions can affect ink durability. Refer to the 3M Product and Instruction Bulletins for your ink limitations and proper usage.

This film can be imaged with narrow width thermal transfer printing systems. Refer to the equipment manufacturer's literature for details.

## Screen Printing

Formulations and processing conditions can affect ink durability. Refer to the Product and Instruction Bulletins for your ink for limitations and proper usage.

Whether you apply screen print clears with traditional screening methods or roller coating, use equipment designed to handle high viscosity materials and make sure the coating is evenly applied to the specifications in the clear's 3M Instruction Bulletin.

## Cutting

See [3M Instruction Bulletin 4.1](#) for Sheeting, Scoring and Film Cutting details.

## Weeding

The excess film should be weeded (removed) as soon after cutting as practical. This is to minimize the effect of possible adhesive flow 24 or more hours after cutting.

## Graphic Protection

Graphic protection may improve the appearance, performance and durability of the graphic. Click on the graphic protection options listed in the "Recommended Compatible Products" on page 1 or see the [3M Graphics Market Product Catalog](#), for more information.

## Application Tapes

There are two types of application tapes. See [3M Instruction Bulletin AT-1](#) to determine what application tape is recommended for your film or finished graphic.

### Premasking Tape

Increases stiffness during application while preventing stretching and damage. Use when little or no liner is exposed. See [3M Instruction Bulletin 4.3](#) for complete details.

### Prespacing Tape

Holds cut and weeded letters or graphics in place during application and after removing the film liner, while preventing stretching and damage. Use when large amounts of liner are exposed. See [3M Instruction Bulletin 4.3](#) for complete details.

## Application and Installation

In addition to other 3M Bulletins specified in this document, the following Bulletins provide details that you may need to successfully apply a graphic.

- [3M Instruction Bulletin 3.11](#). Screen Printing, 3M™ Screen Printing Ink Series 1900 four color and Screen Print Clear VI0402.
- [3M Instruction Bulletin 3.12](#). Screen Printing, 3M™ Screen Printing Ink Series 1900 Line Color and Screen Print Clear VI0402.
- [3M Instruction Bulletin 3.20](#). Screen Printing, 3M™ Screen Printing UV Ink Series 9800 for Line Color Only.
- [3M Instruction Bulletin 3.21](#). Screen Printing, 3M™ Screen Printing UV Ink Series 9800 for Four Color Only.
- [3M Instruction Bulletin 5.5](#) Application, General Procedures for Interior and Exterior Dry Application
- [3M Instruction Bulletin 5.7](#). Application, Wet Method for Translucent, Inkjet, Screen Printed and Cut Graphics.

## Maintenance and Cleaning

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline). See [3M Instruction Bulletin 6.5](#) for details.

## Removal

This film uses a permanent adhesive. This film is not easily or cleanly removable. See [3M Instruction Bulletin 6.5](#) for details.

## Shelf Life, Storage and Shipping

### Shelf Life

The shelf life is **never more than 3 years** from the date of manufacture on the original box.

If you process the film, the shelf life is changed to **1 year** from the processing date, but not later than the 3 year maximum from the manufacturing date.

### Storage Conditions

- 40° to 100°F (4° to 38°C)
- Out of sunlight
- Clean, dry area
- Original container
- Bring the film to print room temperature before using

### Shipping Finished Graphics

Flat, or rolled printed side out on 5 inch (13 cm) or larger core. This helps prevent the liner, and, if used, the application tape from popping off.

## Health and Safety



### CAUTION

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety and environmental information. To obtain SDS sheets for 3M products go to [3M.com/SDS](http://3M.com/SDS), or by mail or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501.

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

## Bulletin Change Summary

For the most current 3M Technical Information available to successfully use this product, please view this Bulletin electronically and click on the blue underlined links to view the relevant documents. This Bulletin has been substantially changed. Please read the entire Bulletin thoroughly.

### Release R APR-2016:

- Updated Product Bulletin to new format.
- Updated color options, see "Colors" on page 3.

### 3M Commercial Solutions

3M Center  
Building 220-12E-04  
St. Paul, MN 55144-1000  
1-800-328-3908  
Fax 651-736-4233  
[www.3M.com/graphics](http://www.3M.com/graphics)

### 3M Canada

PO Box 5757  
London, ON N6A 4T1  
1-800-265-1840  
Fax 519-452-6245

### 3M México S.A. de C.V.

Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México D.F. 01210  
General 5255-5270-0400  
Fax 5255-5270-2277

### 3M Puerto Rico, Inc.

350 Chardon Avenue  
Suite 1100  
San Juan, PR 00918  
General 787-620-3000  
Fax 787-620-3018



# Scotchcal™ Graphic Film

## Series 3650

### For Solvent and UV Screen Printing Only

#### 1. Product Description

##### A. Product Features

- 2-mil opaque film
- Available in white, black and transparent
- Pressure-sensitive adhesive
- Resists gasoline vapors and occasional petroleum spills
- Permanent film

##### B. Recommended Types of Graphics and End Uses

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the [3M™ MCS™ Warranty](#). Please read the entire Bulletin for details.

- Clear, window or 2-way graphics
- Outdoor and indoor graphics and signs
- Information labels
- Commercial fleet vehicle graphics and emblems
- Small format original equipment manufacturer's decorative and identification graphics, cautionary, safety and vandal-resistant labeling

##### C. Performance Overview

3M tests the performance of both individual products and finished graphic constructions. This table shows the best performance expected from this product without a Warranty Period and with a Warranty Period.

For detailed graphic construction and application options along with specific Warranty Periods, please see the Warranty Information, Section 5.

<b>Expected Performance Life.</b> This is the estimated period of time the product should perform satisfactorily.	
Unprinted film with no graphic protection, applied to a flat vertical outdoor surface in a non-abusive environment.	10 years (opaque) 8 years (transparent) Unwarranted Period
<b>3M™ MCS™ Warranty.</b> This is the maximum period of time 3M will warrant the finished graphic performance.	
Printed film with the best 3M ink and graphic protection option, applied to a flat, vertical surface.	7 years Warranty Period

## D. Limitations of End Uses

### (1) Unsuitable End Uses for This Film

This 3M product is not designed or recommended for the following uses. Please contact us to discuss other options.

- Graphics applied to corrugated surfaces
- Graphics applied to stainless steel vehicles
- Fleet or vehicle graphics without graphic protection
- Any graphic without graphic protection that is exposed to abrasive conditions, harsh cleaners or chemicals

Note: 3M Commercial Graphics Division policy is not to support applications of clear graphic film when a driver's view is obstructed and/or where local laws prohibit its use.

### (2) Light Passage Laws and Regulations



#### CAUTION

---

Some states have laws or regulations requiring minimum light passage that may limit or preclude the use of this product on vehicle windows. The user is responsible for determining and complying with all applicable standards.

---

### (3) Important Information About Bus Applications

Film used on buses must not be applied so as to restrict the safe use of emergency window exits. See the most current version of [Instruction Bulletin 5.4](#) for details.

## 2. Compatible Products

This section provides a list of products that are approved by 3M for use with the base film covered in this Bulletin, and used for the creation of a graphic that is covered by the 3M™ MCS™ Warranty. Refer to the Product and Instruction Bulletins listed in 3M Related Literature at the end of this Bulletin for more information about the compatible products.

### (1) Screen Printing Inks

- 3M™ Screen Printing Ink Series 1900 *line color and four-color*
- 3M™ Screen Printing UV Ink Series 9800 *line color and four-color*

### (2) Graphic Protection

- 3M™ Screen Print Gloss Clear 1920DR
- 3M™ Screen Print Low Gloss Clear 1930
- 3M™ Screen Print UV Gloss Clear 9740i
- 3M™ Screen Print Low Gloss Clear 9730UV
- 3M™ Screen Print UV Gloss Clear 9800CL
- 3M™ Screen Printing Clear VI0402

### (3) OEM Inks and Clears

*For OEM graphics only!*

- Sericol™ Duracal™ UV Screen Print Inks
- Sericol™ Duracal™ Screen Print Clear (*approved for OEM applications only*)

To identify a Sericol inks distributor, contact FUJIFILM North America Corporation, Graphic Systems Division at [http://www.fujifilmusa.com/products/graphic\\_arts\\_printing/index.html](http://www.fujifilmusa.com/products/graphic_arts_printing/index.html); 1101 W. Cambridge Drive, Kansas City, KS 66103; Tel: 1-800-255-4562 or 913-342-4060.

### (4) Other Products

- 3M™ Edge Sealer 3950
- 3M™ Prespacing Tape SCPS-2
- 3M™ Prespacing Tape SCPS-53X
- 3M™ Premasking Tape SCPM-3
- 3M™ Premasking Tape SCPM-44X

### 3. Characteristics

These are typical values for unprocessed product; processing may change the values. Contact your 3M representative for a custom specification.

#### A. Physical Characteristics

Characteristic	Value
Material	Vinyl
Color	3650-10: White 3650-12: Black 3650-114: Clear
Thickness	<b>Without adhesive:</b> 2 mils (0.05 mm) <b>With adhesive:</b> 3 to 4 mils (0.08 to 0.10 mm)
Adhesive type	Pressure sensitive
Adhesive color	3650-10: Gray-pigmented 3650-12: Clear 3650-114: Clear
Liner	Polyethylene-coated layflat
Tensile strength ( <i>minimum</i> )	5.5 pounds/inch at 73°F (0.9 kg/cm at 23°C)
Flammability	<a href="#">ASTM E84 test report</a> or go to the On-line Product Catalog at 3Mgraphics.com All other test reports: call 1-800-328-3908
Safety and regulatory recognition	Tested and found to comply with UL 969 - Standard for Marking and Labeling Systems. US file MH11410.

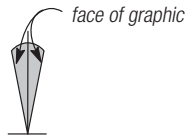
#### B. Application Characteristics

Characteristic	Value
Adhesion <i>24 hours after application</i>	<b>ABS:</b> 5 pounds/inch (0.9 kg/cm) <b>Acrylic, enamel:</b> 5 pounds/inch (0.9 kg/cm) <b>Aluminum, anodized:</b> 6 pounds/inch (0.11 kg/cm) <b>Chrome:</b> 5 pounds/inch (0.9 kg/cm) <b>Fruehauf pre-painted panels:</b> 4 pounds/inch (0.7 kg/cm)
Chemical resistance	Resists mild acids, mild alkalis, and salts. Excellent resistance to water ( <i>this does not include immersion</i> )
Finished graphic application recommendation	<b>Surface type:</b> Flat, with and without rivets <b>Substrate type:</b> Glass, metal, paint, fiberglass reinforced plastic, rigid plastic <b>Application temperature:</b> 50° to 100°F (10° to 38° C) <i>air and substrate</i> <b>Application method:</b> Fleet & Vehicles: dry All others: wet or dry
Applied film shrinkage	0.015 inch (0.4 mm)
Finished graphic exposure temperature	-65° to +160°F (-54° to +70°C)
Graphic removal	Permanent film

## 4. Definitions

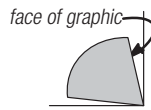
### A. Exposure Types

#### U.S. Vertical Exposure



The face of the graphic is +/- 10° from vertical.

#### U.S. Non-vertical Exposure



The face of the graphic is greater than 10° from vertical and greater than 5° from horizontal. This includes non-vertical surfaces of vehicle wraps or fleet graphics.

#### U.S. Horizontal Exposure



The face of the graphic is +/- 5° from horizontal.

#### U.S. Desert Southwest Exposure

Any outdoor graphic exposed to solar energy more than half of the daylight hours in Arizona, New Mexico and the desert areas of California, Nevada, Utah and Texas is subject to reduced warranties. A detailed map is available at [3Mgraphics.com](http://3Mgraphics.com) under Warranties.

### B. Graphic Types

#### Indoor Signs

Stationary graphics applied indoors and *not* exposed to the elements.

#### Outdoor Signs

Stationary graphics applied outdoors and exposed to the elements.

#### OEM

Labels and decorative graphics produced for and used by original equipment manufacturers.

#### Vehicle Types

**Vehicle.** Buses, vans, passenger vehicles, delivery trucks, pickup trucks, enclosed trailers.

**Straight Trucks, Semi-Tractors and Semi-Trailers.** Straight trucks, semi-tractors and semi-trailers used for commercial business purposes. Excludes air shields.

**Recreational Vehicle (RV).** Vehicles used for personal pleasure, such as campers, motor homes and trailers, that are not used in connection with any commercial or business enterprise.

### C. Graphic Construction

The products used to make a graphic, which may include film and/or flexible substrate, graphic protection, ink, printer and application tape.

### D. Graphic Protection

Overlaminated films or clear coats used to protect the graphic and/or change gloss.

## 5. Warranty Information

### A. Warranty Coverage Overview

The warranty coverage for each graphic is based on the user(s) both reading and following all applicable and current 3M Product and Instruction Bulletins. 3M will honor the Warranty Period stated in the base film's Product Bulletin that is current when the film was purchased. The Warranty Period may be reduced and stipulations may apply for certain constructions and applications, as covered in this Bulletin.

The following is made in lieu of all other express or implied warranties, including any implied warranty of merchantability or fitness for a particular purpose or implied warranty arising out of a course of dealing, custom or usage of trade.

### B. 3M Basic Product Warranty

This 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 and as further set forth in the [3M Commercial Graphics Warranties Brochure](#).

**C. Limited Remedy**

3M will replace or refund the price of any 3M materials that do not meet this warranty within the specified time periods. These remedies are exclusive.

**D. Limitation of Liability**

Except where prohibited by law, 3M SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO PURCHASER OR USER FOR ANY DIRECT (EXCEPT FOR THE LIMITED REMEDY PROVIDED ABOVE), INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LABOR, NON-3M MATERIAL CHARGES, LOSS OF PROFITS, REVENUE, BUSINESS, OPPORTUNITY, OR GOODWILL) RESULTING FROM OR IN ANY WAY RELATED TO SELLER'S PRODUCTS, SERVICES or THIS BULLETIN. This limitation of liability applies regardless of the legal or equitable theory under which such losses or damages are sought including breach of contract, breach of warranty, negligence, strict liability, or any other legal or equitable theory.

**E. Additional Limitations**

See the [3M Commercial Graphics Warranties Brochure](#) at 3Mgraphics.com, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

**F. 3M™ MCS™ Warranty**

Subject to Stipulations set forth in Section D., below

Finished graphics constructed with the materials specified and the exposure specified in the Warranty Period Table, Section F.(1), is eligible for the 3M™ MCS™ Warranty. For warranties for other exposures, see Section I.(1).

**(1) Warranty Period Table**  
for Finished Graphics  
in a Standard U.S. Vertical  
Exposure

Veh = Vehicle, RV, Straight Truck, Semi-Tractor and Semi-Trailer Graphics  
OEM = Small format OEM labels and graphics  
Signs = Indoor and Outdoor Sign Graphics

Graphic Protection	Warranty Period, in Years											
	No Printing			Ink Series 1900			Ink Series 9800			Ink Series 9800 Metallic		
	Veh	OEM	Signs	Veh	OEM	Signs	Veh	OEM	Signs	Veh	OEM	Signs
<b>Films 3650-10, 3650-12</b>												
1920DR	—	—	—	5	5	5	—	—	—	—	—	—
1930	—	—	—	2	2	2	—	—	—	—	—	—
V10402	—	—	—	6	5	6	—	—	—	—	—	—
9740i	—	—	—	6	5	6	7	5	7	7	5	7
9730UV	—	—	—	3	3	3	3	3	3	—	—	—
9800CL	—	—	—	—	—	—	5	5	5	5	5	5
None:				—	—	—	—	—	—	—	—	—
3650-10	8	5	7	—	—	—	—	—	2	—	—	—
3650-12	7	5	7	—	—	—	—	—	2	—	—	—
<b>Film 3650-114</b>												
1920DR	—	—	—	5	5	5	—	—	—	—	—	—
1930	—	—	—	2	3	3	—	—	—	—	—	—
V10402	—	—	—	5	5	5	—	—	—	—	—	—
9740i	—	—	—	5	5	5	5	5	5	5	5	5
9730UV	—	—	—	3	3	3	3	3	3	—	—	—
9800CL	—	—	—	—	—	—	5	5	5	5	5	5
None	5	5	5	—	—	—	—	—	—	—	—	—

**G. 3M™ MCS™ Warranty Using Sericol Inks**

**Application:** OEM graphics only  
**Film:** 3650-10, 3650-12, 3650-114  
**Ink and Graphic Protection:** Sericol Duracal UV Screen Print Ink and Clear  
**Warranty Period:** 3 years in a vertical exposure



## H. Legibility Warranty

For Fleet Graphics ONLY for Horizontal, Exposure and Selected Constructions

Applications subjected to maximum sunlight and environmental conditions used on rooftops of commercially-owned fleet vehicles where identification from the air is needed are warranted for legibility only for the following constructions. The graphic will change color, lose gloss and chalk.

Warranty Period, in Years

Films 3650-10, 3650-12		Horizontal Exposure	
Ink Series	Clear	U.S.	U.S. Desert Southwest
No printing	None	5	3
9800	9740i 9800CL	5	3

## I. General Warranty Stipulations for 3M™ MCS™ Warranty

These stipulations apply to the 3M™ MCS™ Warranty. Also see the Graphics Market Center Warranty Brochure.

### (1) Reduced Warranty Period for Other Graphic Exposures

For graphics oriented in a non-vertical or desert southwest, outdoor exposure, multiply the Warranty Period (in years) for your graphic construction as shown in the applicable Warranty Period Table, Section F.(1) by the percentage shown for the intended graphic exposure.

If the Graphic Exposure is	Use this Percentage of U.S. Vertical Exposure, Warranty Period	Warranty Period Calculation Examples
U.S. Non-vertical	50% (0.5)	0.5 x 5 years = 2.5 years
Desert Southwest Vertical	70% (0.7)	0.7 x 5 years = 3.5 years
Desert Southwest Non-vertical	35% (0.35)	0.35 x 5 years = 1.75 years
U.S. Horizontal	Warranted for legibility only. See Section 5.H. for more details.	

### (2) Abrasion and Loss of Gloss

- Abrasion damage and loss of gloss are not covered by any 3M warranty. This is considered normal wear and tear. However, to help maintain the appearance of your graphic, use the recommended graphic protection whenever:
  - it is required for the construction and end use as shown in the Warranty Period tables.
  - the graphic is exposed to abrasive conditions, harsh cleaners or chemicals.
- Clear 1930 may haze, which is not warranted.

### (3) Gasoline Vapor and Occasional Spills

For the best protection against staining for screen printed graphics subjected to gasoline vapors or occasional spills, use ink series 1900 with clear V10402.

### (4) Application to Glass

3M accepts no liability for glass breakage when using this film for window graphics. See [Instruction Bulletin 5.1](#) for details.

### (5) Application Outside the U.S.

Contact the 3M organization for that country.

### (6) Graphics Made with Components Not Sold or Recommended by 3M

The **3M™ MCS™ Warranty** does not cover finished graphics made with inks, film, graphic protection and/or application tapes that are not sold or recommended by 3M. The user is solely responsible for the graphic appearance, performance and durability of graphic constructions that include any other products.

## 6. Factors that Affect Graphic Performance Life

The actual performance life of a graphic depends on all of the following:

- correct combination of 3M-recommended graphics products.
- ink formulation.
- complete ink drying or curing.
- selection, condition and preparation of the substrate.
- surface texture.
- application methods.
- angle and direction of sun exposure.
- environmental conditions.
- cleaning or maintenance methods.

## 7. Graphics Manufacturing



---

Before using any equipment, always follow the manufacturers' instructions for safe operation.

---

### A. Screen Printing

Formulations and processing conditions can affect ink durability. Refer to the Product and Instruction Bulletins for your ink for limitations and proper usage.

- The liner on film series 3650 is not printable. If you need a printable liner, contact Technical Service at 800-328-3908.
- Graphic protection can improve the appearance, performance and durability of your graphic. A clear coat also prevents chalking on unprinted colored films. Use standard screen printing methods to apply clear coats.

### B. Cutting

The following are common cutting methods for this film. See [Instruction Bulletin 4.1](#) for details.

#### (1) Methods

- Bandsawing
- Hot kiss cutting
- Drum-type electronic cutting
- Flat-bed electronic cutting
- Guillotine
- Hand cut
- Cold and hot steel-rule die cutting
- Knifeless™ Tape

#### (2) Size of Cut Text

The following minimum values for cutting text from film series 3650 are based on upper case Helvetica medium type. Weeding is much more difficult with smaller text.

**Minimum stroke width:** 0.25 inch (6.35 mm)

**Minimum height:** 3.0 inch (76.2 mm)

**Minimum radius for end of stripe:** 0.024 inch (0.6 mm)

### C. Application Tapes

#### (1) When to Use Premasking Tape

- Use as an application aid to increase stiffness, and prevent stretching and damage during application.
- Use when little or no liner is exposed.

#### (2) When to Use Prespacing Tape

- Use to hold cut and weeded letters or graphics in registration after removing the film liner.
- Use to protect cut graphic parts from scratching or damage during application.
- Use when large amounts of liner are exposed.

### (3) How to Select a Tape

Determine whether you want to premask the graphic or prespace the film elements. Then locate the graphic protection on your graphic in the table below, and use the corresponding tape. See [Instruction Bulletin 4.3](#) for complete details.

**EXAMPLE:** If the film is protected by clear 9740i and you want to premask the film, use premasking tape SCPM-44X.

#### Select the tape based on what is on top of the graphic

Application Tape	Unprinted	1920DR, 1930	9740i 9730UV	9800 Ink Only	9800CL
Premasking SCPM-3	■	■	—	—	—
Prespacing SCPS-2	■	■	—	—	—
Premasking SCPM-44X	—	—	■	■	■
Prespacing SCPS-53X	—	—	■	■	■

— = This application tape is not recommended for the construction.

## 8. Application and Installation

A wet or dry application method may be used, EXCEPT on vehicles, which must be dry applied.

Refer to the 3M Related Literature section for a list of the Instruction Bulletins that may be needed to apply or install this film.

### A. Pressure-Sensitive Adhesive

This film has a pressure-sensitive adhesive. It bonds to the surface even with light pressure and cannot be repositioned.

### B. Edge Sealing

If an application requires edge sealing, use edge sealer 3950.

## 9. Maintenance

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline.) See [Instruction Bulletin 6.5](#).

Chalking on unprinted colored film can be washed off with normal graphic cleaning methods.

## 10. Removal

Film series 3650 is not a removable film. Removal requires a solvent-based or mechanical remover system. It may be very time consuming and may damage the substrate.

## 11. Shelf Life, Storage and Shipping

### A. Shelf Life

**Total shelf life: 3 years** from the date of manufacture on the original box.

If you do process the film, do so within 2 years and apply within 1 year.

If you do not process the film, apply it within 3 years.

### B. Storage Conditions

- 40° to 80°F (4° to 27°C)
- Out of sunlight
- Clean dry area
- Original container
- Bring the film to print room temperature before using

### C. Shipping Finished Graphics

Flat (may be separated by paper), or rolled printed side out on 5 inch (13 cm) or larger core. This helps prevent the liner and, if used, the application tape from popping off.

## 12. Health and Safety



**CAUTION**

When handling any chemical products, read the manufacturers' container labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information. To obtain MSDS sheets for 3M products go to [3M.com/MSDS](http://3M.com/MSDS), or by mail or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501.

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

## 13. 3M Related Literature

**Before starting any job, be sure you have the most current Product and Instruction Bulletins.**

The information in 3M Product and Instruction Bulletins is subject to change. [Current Bulletins](#) are available at 3Mgraphics.com. The following applicable Bulletins provide information and processes you need to properly make the graphics described in this Bulletin. Additional Bulletins may be needed as indicated in the 3M Related Literature section of other 3M components you use.

Bulletin types: PB = Product Bulletin; PB-IB = Product & Instruction Bulletin; IB = Instruction Bulletin

Subject	Type	Bulletin No.
3M™ Screen Printing Ink Series 1900 and Overprint Clear V10402	PB	1900
- Screen printing with ink series 1900 - line color	IB	3.12
- Screen printing with ink series 1900 - 4-color	IB	3.11
3M™ Screen Printing UV Ink Series 9800	PB	9800
- Screen printing with UV ink series 9800 - line color	IB	3.20
- Screen printing with UV ink series 9800 4-color	IB	3.21
3M™ Screen Print UV Gloss Clear 9740i	PB-IB	UV Clears
Preparation for four color screen printing	IB	1.1
Design of graphics	IB	2.1
Using 3M application tapes; premasking and prespacing for films	IB	4.3
Application, substrate selection, preparation and substrate-specific application techniques	IB	5.1
Application, special applications and vehicles	IB	5.4
Application, general procedures for indoor and outdoor dry applications	IB	5.5
Storage, handling, maintenance, removal	IB	6.5

[3M Commercial Graphics Warranty Brochure](#)

*3M, MCS and Scotchcal are trademarks of 3M.*

*Sericol and Duracal are trademarks of FUJIFILM Corporation.*

*Knifeless is a trademark of Knifeless Technology Systems.*

## 14. Bulletin Change Summary

Corrected adhesive color to clear for black film 3650-12. Clear 9740i is a direct replacement for clears 9720i and 9720UV. Added flammability information on ASTM E84. This product complies with UL 969 - Standard for Marking and Labeling Systems. Added Knifeless tape as a recommended cutting method. Updated overall bulletin format including adding new Performance Overview section and revising the Warranty Information section. Warranted Durability is now referred to as Warranty Period.



### Commercial Graphics

3M Center, Building 220-12E-04  
St. Paul, MN 55144 USA  
General & Technical  
1-800-328-3908  
Fax 1-651-736-4233

[www.3Mgraphics.com](http://www.3Mgraphics.com)

### 3M Canada

PO Box 5757  
London, Ontario  
Canada N6A 4T1  
General 1-800-265-1840  
Fax 519-452-6245

### 3M México S.A. de C.V.

Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México D.F. 01210  
General 5255-5270-0400  
Fax 5255-5270-2277

### 3M Puerto Rico, Inc.

350 Chardon Avenue  
Suite 1100  
San Juan, PR 00918  
General 787-620-3000  
Fax 787-620-3018

Transportation Safety Division

# 3M™ Slipsheeting

Product Bulletin Slipsheeting  
January 2021

Initial Issue

## 1 Description

3M™ Slipsheeting (“Slipsheeting”) is a coated paper packaging product that helps protect sign faces from blocking, scuffing, and scratching during storage and transport. 3M Slipsheeting is a generic name for two different materials: our primary slipsheeting material, which is light green and glossy on one side, and an alternate slipsheeting material, which is white on both sides, glossy on only one.

## 2 Usage

All imaged sign faces produced using the 3M system of matched components should be protected by interleaving the sign faces with clean Slipsheeting. Interleaved Slipsheeting must be placed with its glossy side towards the sign face. Double faced signs must have the glossy side of a piece of Slipsheeting against each sign face. See [3M Information Folder 1.11](#) for usage details.

When the primary slipsheeting material is not available, we will supply you with an alternate slipsheeting material. 3M has evaluated the alternate slipsheeting material and determined that it can be used in the same way as the primary slipsheeting material with two exceptions:

- 1 It may not be used as slipsheeting for 3M™ Engineer Grade Reflective Sheeting Series 3200 (“3200”) and 3M™ Advanced Flexible Engineer Grade Reflective Sheeting Series 7300 (“7300”), unless digitally imaged and overlaminated with clear 3M™ ElectroCut™ Film Series 1170 (“1170C”); and
- 2 It may not be used as slipsheeting for signs screen printed using 3M™ Process Color Series 990 inks.

Table 1 indicates slipsheeting compatibility for each 3M reflective sheeting product and imaging method.

**Table 1.** Slipsheeting compatibilities based on 3M sheeting product and imaging method.

	Series 990 Inks	Series 880i, 880n, and 1130AQM Inks	Direct Applied Copy	Colored Series 1170 Films	Digitally Printed Sheeting with 1170C Film
Series 3430 Series 3830 Series 3930 Series 3940 Series 3990 Series 4000	●	● ○	● ○	● ○	● ○
Series 7300	●	●	●	●	● ○
Series 3200	●	●	●	●	● ○
●	Primary Slipsheeting			○	Alternate Slipsheeting

### 3 Storage

The Slipsheeting should be stored in a cool, clean, dry area, and used within two years of date of manufacture. Partially used rolls should be returned to their shipping cartons or suspended horizontally from rods or pipes through their cores. Cut sheets should be stored flat.

For details regarding sign processing, packaging and shipping, please refer to [3M Information Folder 1.11](#).

### 4 Health and Safety Information

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

### 5 Warranty Information

The Slipsheeting is made available to you in “AS IS” condition. 3M MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO 1) ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE; 2) WARRANTIES RELATED TO THE SLIPSHEETING’S EFFECTIVE LIFE OR ABILITY TO SURVIVE ANY TESTING; OR 3) WARRANTIES OF TITLE OR NON-INFRINGEMENT OF INTELLECTUAL PROPERTY. You are solely responsible for evaluating and determining whether the Slipsheeting is suitable and appropriate for your particular use and intended application, and for the safe handling of the Slipsheeting. You understand that the Slipsheeting performance and any finished materials incorporating the Slipsheeting depends upon a variety of factors including, but not limited to, preparation, application procedure, geographic area, exposure conditions, and maintenance. You assume the entire risk as to use, quality, and performance of Slipsheeting.

#### 5.1 Limitation of Liability

Except where prohibited by law, 3M will not be liable for any loss or damage arising from Slipsheeting 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.

## 6 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.3M.com/roadsafety>.

## 7 Literature References

<a href="#">3M IF 1.11</a>	3M™ Reflective Sheeting Sign Maintenance Management
<a href="#">3M PB 990</a>	3M™ Process Color Series 990
<a href="#">3M PB 1170</a>	3M™ ElectroCut™ Film Series 1170
<a href="#">3M PB 3200</a>	Engineer Grade and Utility Grade Reflective Sheeting Series 3200, 3260 and 5200
<a href="#">3M PB 7300</a>	3M™ Advanced Engineer Grade Reflective Sheeting Series 7300

## **For Information or Assistance**

**Call: 1-800-553-1380**

**In Canada Call:**

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

**Internet:**

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

3M, Science. Applied to Life., and ElectroCut are trademarks of 3M. Used under license in Canada.

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.

### **Important Notice**

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable at the time of this publication, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, special or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith. Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.



### **Transportation Safety Division**

3M Center, Building 0225-04-N-14  
St. Paul, MN 55144-1000 USA

Phone 1-800-553-1380

Web [3M.com/roadsafety](http://www.3M.com/roadsafety)

Please recycle. Printed in USA © 3M 2021.  
All rights reserved. Electronic Only



# 3M

# Process Color

## Series 880I

Product Bulletin 880I

April 2011

Replaces PB 880 dated July 2010

### Description

3M™ Process Color Series 880I is designed as part of the matched component system for application by screen processing. 3M process color series 880I can be screen processed on both applied and unapplied 3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430, 3M™ High Intensity Prismatic Reflective Sheeting Series 3930, 3M™ Diamond Grade™ VIP Reflective Sheeting Series 3990 and 3M™ Diamond Grade™ DG<sup>3</sup> Reflective Sheeting Series 4000. Please reference the appropriate product bulletin. Application to other grades or types of sheetings or surfaces is not recommended.

### Colors

Series 880I process color is intended for use in the production of traffic control signs. Signs made using these materials will have a similar appearance when viewed from a vehicle in daylight or at night.

The following 880I series process colors are applied by screen processing:

880I Toner	887I Brown
882I Traffic Sign Red	888I Green
883I Blue	891I Thinner
884I Yellow	893I Violet
885I Black (Opaque)	894I Lemon Yellow
886I Orange	895I Magenta

Series 880I process colors should not be blended with any other series process colors produced by 3M or any other manufacturer. 3M assumes no responsibility for premature failure of sign face legends that have been processed with non-3M process colors.

### Screen Processing

#### 1. Equipment and Set-up

Proper color and durability is achieved by using a high grade polyester, monofilament screen fabric mesh size P.E. 157. Other size screen fabric mesh sizes do not produce satisfactory color and durability and are not recommended. Screen processing should be accomplished using the off-contact screening method. Direct contact screen printing should not be used. Refer to Information Folder 1.8 for the proper techniques of off-contact screen processing. Be sure that screens, sheeting, plus screening and drying areas are dust, dirt, and lint free.

#### 2. Coverage

Transparent process colors screened through a P.E. 157 screen fabric will cover approximately 1200 sq. ft. per gallon. Coverage will be affected by the extent of thinning, equipment used, and application procedure.

#### 3. Mixing and Thinning

It is important that the colors and sheetings be brought to normal ambient room temperature and humidity of the screen processing area before processing. Thinning should not be necessary, except to replace solvents lost by evaporation during processing. Thin sparingly using 3M™ Thinner of the same series as the process colors. Do not use extenders, drying agents, or other materials as they will adversely affect performance life. Do not mix with any other series of process colors or clears produced by 3M or any other manufacturers. For detailed instructions, refer to Information Folder 1.8.

#### 4. Clear Coating

3M™ Process Color Series 880I transparent or opaque colors **need not** be clear coated.

#### Edge Sealing

Edge sealing is not recommended.

#### Air Drying

Processed sheeting for air drying must be placed on open racks to allow adequate air circulation. High volume fans must be directed through the racks. Drying times will be increased by high humidity, low temperature, poor air circulation, heavy color coat, and excessive thinning. Addition of drying agents is not recommended. Sheeting processed with Series 880I colors must be air dried for a minimum of 3 hours per color.

#### Oven Drying

Processed sheeting for oven dried must be placed on open racks individually with sufficient open space for unobstructed air flow.

	Flow Out Time (1)	Bake Each Color (2)	Bake Final Color (2)	Oven Temp. (3)
Series 880I	10 min. (with fans)	30 min.	30 min.	105° ± 5°F (41° ± 3°C)

1. Before placing in the oven, rack individually to permit proper flow out of color.
2. Excessive baking can deaden adhesive.
3. Oven must provide horizontal air flow.

#### Conveyor Drying

Signs to be dried must be placed to allow unobstructed air flow. The conveyor speed must be able to be adjusted to meet the requirements for flow-out times and heat. If immediate packaging is planned, a cooling zone capable of cooling the sign faces to room temperature of 65°-75°F (18°-24°C) is needed. Typically, the cooling zone should be the same length as the heating zone. The temperatures stated are at the sign face and not the oven temperatures. (See Table 1).

**Table 1**

Series 880N		
Flow-Out Time	Between Colors	Final Color
30 seconds	2 minutes @ 185°F (65°C)	2 minutes @ 185°F (65°C)

#### Slipsheeting and Packaging

3M™ screen processed signs must be protected with SCW 568 Slipsheet Paper. Place the glossy side of the slipsheeting against the sign face and pad the face with closed cell packaging foam. Double faced signs must have the glossy side of the slipsheet against each face of the sign.

Unmounted screened faces must be stored flat and interleaved with SCW 568 slipsheet, glossy side against the sign face. Packages of finished sign faces must include sufficient nylon washers for mounting.

#### Storage

Series 880I process color should be stored at general warehouse storage (16°C/60°F to 27°C/80°F). The color has a shelf life of 12 months from customer receipt.

#### Troubleshooting Tips

The following troubleshooting tips are suggestions to minimize the potential for cracking of sheeting after screening with Series 880I process colors:

1. Screen applied sheets rather than unapplied sheets.
2. Use piggy-back box fans to provide air flow through entire drying rack. Have these fans running from the time the first sheet or sign is racked until 3 hours after the last sheet or sign is racked.
3. When drying unapplied sheets, use a smooth cardboard underliner on the drying rack shelves.
4. Avoid flexing sheeting when color is wet.
5. Avoid adding excessive thinner to the color.
6. Use every other shelf on drying racks.
7. Avoid use of solvents when cleaning sheeting prior to screening. If necessary, use a tack cloth to clean sheeting.

#### Environmental, 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.

Consult federal, state and local air quality regulations that may regulate or restrict product use.

## General Performance Considerations

3M process colors series 880I which is processed according to 3M recommendations can be expected to provide durability for traffic sign uses comparable to that of the 3M sheeting on which they are applied, with the following exceptions: Process Color 886I Orange processed on white reflective sheeting will provide 3 year durability; 894I Lemon Yellow and 895I Magenta will provide 5 year durability; 893I Violet and 887I Brown will provide 7 year durability. Durability will be substantially reduced by toning the colors. The durability of sheeting or screen processed sheeting exposed in any position other than vertical or near vertical may be significantly reduced. The durability statements expressed herein do not apply for the use of sheeting for vehicle markings. Contact your 3M sales representative to clarify the durability of such applications. See sheeting product bulletins for specific warranty details.

## Special Color Formulation Warranty Statement

3M has developed specific colors within 3M™ Process Color Series 880I that have been evaluated for their durability (in terms of retained translucency and resistance to fade) based on actual outdoor weathering. Customers who purchase specially blended colors from 3M or who blend these colors themselves can expect that the blended colors will last as long as the component colors would last individually. Many blended process colors will be durable for periods up to 10 years. However, since blended formulations often contain individual component colors that have differing expected durability, users will experience color shifts over time. More rapid color shift will occur with special colors that contain a higher percentage of shorter durability colors. In addition, toners significantly reduce durability. For these reasons, 3M cannot make a specific durability statement for any special colors.

## Literature Reference

PB 3430	3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430
PB 3930	3M™ High Intensity Prismatic Reflective Sheeting
PB 3990	3M™ Diamond Grade™ VIP Reflective Sheeting Series 3990
PB 4000	3M™ Diamond Grade™ DG <sup>3</sup> Reflective Sheeting
IF 1.4	Instructions for Operation of Interstate Squeeze Roll Applicator
IF 1.5	Hand Application Instructions for 3M™ Reflective Sheeting and
IF 1.6	Hand Squeeze Roll Applicators
IF 1.7	Sign Base Surface Preparation for 3M™ Reflective Sheeting Application
IF 1.8	Application of 3M™ Process Color 700, 800 and 990 on 3M™ Reflective Sheatings
IF 1.11	Reflective Sheeting Sign Maintenance Management

**FOR INFORMATION OR ASSISTANCE**

**CALL:**

**1-800-553-1380**

**IN CANADA CALL:**

**1-800-265-1840**

**Internet:**

**[www.3M.com/tss](http://www.3M.com/tss)**

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.

**Important Notice**

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, special or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith. Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.

3M and Diamond Grade are trademarks of 3M. Used under license in Canada.



**Traffic Safety Systems Division**

3M Center, Building 235-3A-09  
St. Paul, MN 55144-1000  
1-800-553-1380  
[www.3M.com/tss](http://www.3M.com/tss)

**3M Canada Company**

P.O. Box 5757  
London, Ontario N6A 4T1  
1-800-3MHELPS

**3M México, S.A. de C.V.**

Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México, D.F. 01210

Please recycle.  
© 3M 2011. All rights reserved.  
Bolger 11040768  
Electronic Only



# Process Color

## Series 880N

Product Bulletin 880N

January 2013

Replaces PB 880N dated July 2010

### Description

3M™ Process Color Series 880N is designed as part of the matched component system for application by screen processing. 3M process color series 880N can be screen processed on both applied and unapplied 3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430, 3M™ High Intensity Prismatic Reflective Sheeting Series 3930, 3M™ Diamond Grade™ VIP Reflective Sheeting Series 3990 and 3M™ Diamond Grade™ DG<sup>3</sup> Reflective Sheeting Series 4400. Please reference the appropriate product bulletin. Application to other grades or types of sheetings or surfaces is not recommended.

### Colors

Signs made using these materials will have a similar appearance when viewed from a vehicle in daylight or at night. The following 880N series process colors are applied by screen processing:

880N Toner  
882N Traffic Sign Red Process Color  
883N Blue Process Color  
884N Yellow Process Color  
885N Black Process Color  
886N Orange Process Color  
887N Brown Process Color  
888N Green Process Color  
892 F low Additive  
711N Thinner

Series 880N process colors should not be blended with any other series process colors produced by 3M or any other manufacturer. 3M assumes no responsibility for premature failure of sign face legends that have been processed with non-3M process colors.

### Screen Processing

#### 1. Equipment and Set-up

Proper color and durability is achieved by using a high grade polyester, monofilament screen fabric mesh size P.E. 157. Other screen fabric mesh sizes do not produce satisfactory color or durability and are not recommended. Screen processing should be accomplished using the off-contact screening method. Direct contact screen printing should not be used. Refer to Information Folder 1.8 for the proper techniques of off-contact screen processing. Be sure that screens, sheeting, plus screening and drying areas are dust, dirt, and lint free.

#### 2. Coverage

Transparent process colors screened through a P.E. 157 screen fabric will cover approximately 1200 sq. ft. per gallon. Coverage will be affected by the extent of thinning, equipment used, and application procedure. **Do not reclaim any unused ink that remains in the screen. Dispose of appropriately.**

#### 3. Mixing

Process colors must be mixed prior to use. Shake for at least one minute by paint shaker or three minutes by hand. For best results, after shaking, mix mechanically for at least five minutes at 1000 - 2000 RPM with the equivalent of a 3 blade, 2 inch (5.1 cm) diameter propeller powered by an air-driven motor. Let stand for one hour. Cover as soon as possible after mixing and during use.

#### 4. Thinning and Flow Additive

Series 880N process colors are formulated to be at screening viscosity directly out of the can. If a lower viscosity process color is needed for screening, there are two choices for thinners. 3M™ 711N thinner is a general purpose thinner that will work in most applications. 3M™ CGS-80 thinner/retarder is a more specialized thinner that will slightly increase drying times and should be used if drying in the screen is a problem.

Thinners should be added sparingly and only to a point that results in a good quality screened image. Over-thinning may result in screening errors such as non-wets, or “fish” eyes. A good general rule is to add thinner until the color lifted with the stationary propeller “piles” just slightly, on the surface as it flows back into the container

892 Flow Additive can be used to improve flow characteristics. Refer to Information Folder 1.8.

**NOTE:** If at all possible, the mixing and thinning should be done the night before and then just before screening, hand mix with a spatula.

**CAUTION:** Do not retard drying (use CGS-80) on unmounted sheeting in cold weather (< 30°F) or dry humidity (< 30 % RH), as cracking may occur. Use 3M™ 711N thinner ONLY in these conditions.

### 5. Clear Coating

Series 880N transparent or opaque colors need not be clear coated.

### Edge Sealing

Edge sealing is not recommended.

### Air Drying

Air drying is best done at temperatures of 60-100°F (15-38°C) and relative humidity of 20-50%.

Drying rates may be slowed by high humidity, low temperature, poor air circulation, a too heavy coat of color, or excessive thinning. [Exhaust ventilation must also be provided in the screening or drying room to prevent a build up of solvent vapors which may affect drying or create a health or re hazard.] Addition of drying agents is not recommended since they adversely affect color adhesion and durability.

**NOTE:** If screen printed materials are not sufficiently dried, blocking, sticking or severe surface impressions of the screened images may occur when stored or packaged for shipment. If adequate drying is in question, the following steps are recommended to determine if the image has been sufficiently dried.

1. Press a dried screen printed area face to another dried screen printed face with moderate hand pressure.
2. Place the touched area close to your ear and separate by pulling apart. If the process color is dry, there will be a slightly discernible or no sound heard. If the color is not adequately dried a crackling sound will be heard. The louder the sound the more additional drying will be required.

It is imperative that the newly processed sheets be placed on racks with adequate air flow (approximately 125 lin. ft./min. minimum) through the racks while they are being filled, so as to rapidly remove any exhaust solvents. Follow these procedures:

1. Signs should be racked with unobstructed space for air flow between layers.
2. Fans should be placed 4-6 ft. in front of and air directed through all parts of the racks with horizontal air flow between the layers. Two fans per rack are required for most commercial racks.
3. Racks should not be placed in a corner or near a wall where the air flow or exhaust is restricted.

### Minimum Dry Times

Between Colors 2 hrs.  
Before Packaging 3 hrs.

### Oven Drying

Processed sheeting must be racked individually with sufficient unobstructed air flow space between layers and at the end of rack. Ovens must be designed to provide adequate horizontal air flow through the oven (125 lin. ft./min. minimum). The freshly screened processed sign must be allowed to flow-out (air dry with fans) before it is placed in the oven. (See Table 1).

**Table 1**

Diamond Grade™ and 3M™ High Intensity Grade Sheeting				
	Flow-Out Times (1)	Bake Each Color (2)	Bake Final Color (2)	Oven Temp
880N Series	10 min.	30 min.	30 min.	105°+ 5°F (41° + 3°C)
1. Before placing in oven, rack individually to permit flow-out of color.				
2. Excessive baking can deaden adhesive.				
3. Oven must be provided with horizontal air flow of adequate volume.				

### Conveyor Drying

Signs to be dried must be placed to allow unobstructed air flow. The conveyor speed must be able to be adjusted to meet the requirements for flow-out times and heat. If immediate packaging is planned, a cooling zone capable of cooling the sign faces to room temperature of 65°-75°F (18°-24°C) is needed. Typically, the cooling zone should be the same length as the heating zone. The temperatures stated are at the sign face and not the oven temperatures. (See Table 2).

**Table 2**

Series 880N		
Flow-Out Time	Between Colors	Final Color
30 seconds	2 minutes @ 185°F (65°C)	2 minutes @ 185°F (65°C)

### Slipsheeting and Packaging

Screen processed signs must be protected with SCW 568 slipsheet paper. Place the glossy side of the slipsheeting against the sign face and pad the face with closed cell packaging foam. Double faced signs must have the glossy side of the slipsheet against each face of the sign.

Unmounted screened faces must be stored at and interleaved with SCW 568 slipsheet, glossy side against the sign face. Packages of finished sign faces must include sufficient nylon washers for mounting: Avoid banding, crating, or stacking signs. Package for shipment in accordance with commercially accepted standards to prevent movement and Store sign packages indoors on edge.

Panels or finished signs must remain dry during shipment and storage. If packaged signs become wet, unpack immediately and allow signs to dry. See Information Folder 1.11 for instructions on packing for storage and shipment.

### Storage

3M™ Process Color Series 880N should be stored at general warehouse storage (16°C/60°F to 27°C/80° F). The color has a shelf life of 12 months from customer receipt.

### Environmental, 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.

Consult federal, state and local air quality regulations that may regulate or restrict product use.

### General Performance Considerations

3M process color series 880N which is processed according to 3M recommendations can be expected to provide durability for traffic sign uses comparable to that of 3M sheeting on which they are applied.

Application to other grades or types of sheeting or surfaces is not recommended. Please reference the appropriate product bulletin.

The durability of sheeting or screen processed sheeting exposed in any position other than vertical or near vertical may be significantly reduced. The durability statements expressed herein do not apply for the use of sheeting for vehicle markings. Contact your 3M sales representative to clarify the durability of such applications. See sheeting product bulletins for specific warranty details.

### 3M Literature Reference

PB 3430	3M™ Engineer Grade Prismatic Reflective Sheeting Series 3430
PB 3930	3M™ High Intensity Prismatic Reflective Sheeting Series 3930
PB 4000	3M™ Diamond Grade™ DG <sup>3</sup> Reflective Sheeting Series 4000
PB 3990	3M™ Diamond Grade™ VIP Reflective Sheeting Series 3990
IF 1.4	Instructions for Operation of Interstate Squeeze Roll Applicator
IF 1.5	Hand Application Instructions for 3M™ Reflective Sheeting and Scotchcal™ Films with Pressure-Sensitive Adhesive
IF 1.7	Sign Base Surface Preparation for 3M™ Reflective Sheeting Application
IF 1.8	Application of 3M™ Process Color 700, 880 and 990 on 3M™ Reflective Sheatings
IF 1.11	Sign Maintenance Management for 3M™ Reflective Sheeting

**FOR INFORMATION OR ASSISTANCE**

**CALL:  
1-877-777-3571**

**IN CANADA CALL:  
1-800-265-1840**

**Internet:  
[www.3M.com/roadwaysafety](http://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.

**Important Notice**

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, special or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith. Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.

3M is a trademark of 3M. Used under license in Canada.



**Traffic Safety & Security Division**

3M Center, Building 235-3A-09  
P.O. Box 33225  
St. Paul, MN 55133-3225  
[www.3M.com/roadwaysafety](http://www.3M.com/roadwaysafety)

**3M Canada Company**

P.O. Box 5757  
London, Ontario N6A 4T1  
1-800-3MHELPS

**3M México, S.A. de C.V.**

Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México, D.F. 01210

Please recycle.

© 3M 2013. All rights reserved.





# 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.

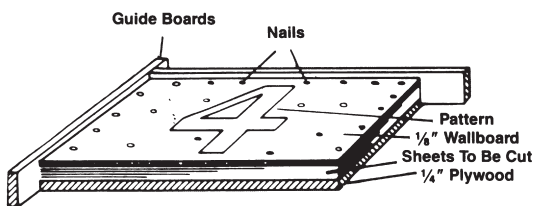


Figure 1

## 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.

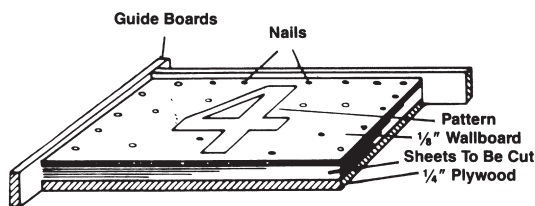


Figure 2

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.

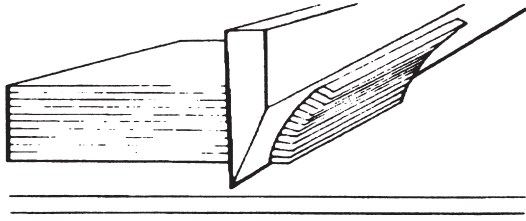


Figure 3

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).**

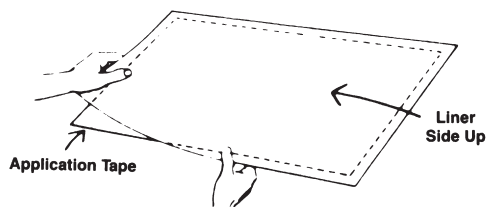


Figure 5

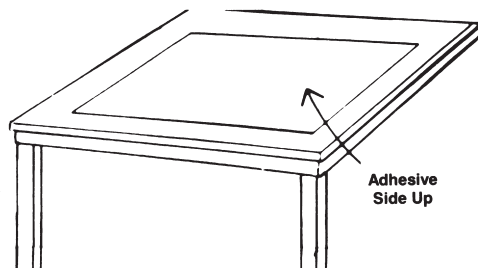


Figure 6

**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.

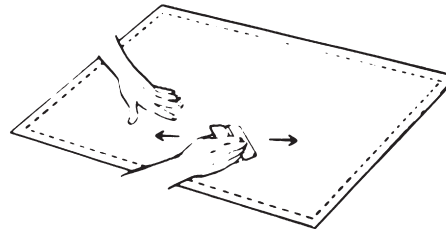


Figure 7

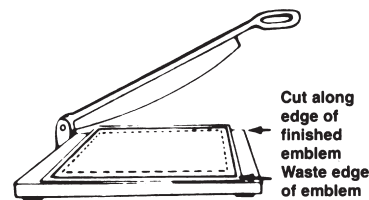


Figure 8

**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

## FOR INFORMATION OR ASSISTANCE

### CALL:

1-800-553-1380

### IN CANADA CALL:

1-800-265-1840

### Internet:

[www.3M.com/tss](http://www.3M.com/tss)

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.

### Important Notice

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, or conditions express or implied. Seller's and manufacturer's only obligation shall be to replace such quantity of the product proved to be defective. Neither seller nor manufacturer shall be liable for any injury, loss or damage, direct, special or consequential, arising out of the use of or the inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use, and user assumes all risk and liability whatsoever in connection therewith. Statements or recommendations not contained herein shall have no force or effect unless in an agreement signed by officers of seller and manufacturer.

3M is a trademark of 3M. Used under license in Canada.



#### Traffic Safety Systems Division

3M Center, Building 0235-03-A-09  
St. Paul, MN 55144-1000  
1-800-553-1380  
[www.3M.com/tss](http://www.3M.com/tss)

#### 3M Canada Company

P.O. Box 5757  
London, Ontario N6A 4T1  
1-800-3MHELPS

#### 3M México, S.A. de C.V.

Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México, D.F. 01210

Please recycle.  
© 3M 2010. All rights reserved.  
Bolger 10090095  
Electronic Only



Department of Administration  
 Purchasing Division  
 2019 Washington Street East  
 Post Office Box 50130  
 Charleston, WV 25305-0130

State of West Virginia  
 Centralized Request for Quote  
 Highways

<b>Proc Folder:</b> 879744			<b>Reason for Modification:</b>
<b>Doc Description:</b> REFLECTIVE SIGN SHEETING & ASSOCIATED MATERIALS			
<b>Proc Type:</b> Central Master Agreement			
<b>Date Issued</b>	<b>Solicitation Closes</b>	<b>Solicitation No</b>	<b>Version</b>
2021-07-01	2021-07-20 13:30	CRFQ 0803 DOT2100000167	1

**BID RECEIVING LOCATION**

BID CLERK  
 DEPARTMENT OF ADMINISTRATION  
 PURCHASING DIVISION  
 2019 WASHINGTON ST E  
 CHARLESTON WV 25305  
 US

**VENDOR**

**Vendor Customer Code:** Account 184020 (WVOasis)

**Vendor Name :** 3M Company

**Address :** 3M Center, Building 225  
**Street :** Mailcode: 225-4N-14  
**City :** Saint Paul  
**State :** Minnesota **Country :** U.S.A. **Zip :** 55144

**Principal Contact :** Leslie O'Hara

**Vendor Contact Phone:** 651-381-2677 **Extension:**

**FOR INFORMATION CONTACT THE BUYER**  
 John W Estep  
 304-558-2566  
 john.w.estep@wv.gov

**Vendor Signature X**  **FEIN#** 41-0417775 **DATE** 7/19/2021

All offers subject to all terms and conditions contained in this solicitation

**ADDITIONAL INFORMATION****REQUEST FOR QUOTATION:**

The West Virginia Purchasing Division is soliciting bids on behalf of West Virginia Division of Highways (WVDOH) to establish an open-end contract for Reflective Sign Sheeting & Associated Materials. Per the Bid Requirements, Specifications, Terms and Conditions attached to this Solicitation.

**INVOICE TO****SHIP TO**

VARIOUS AGENCY  
LOCATIONS  
AS INDICATED BY ORDER

STATE OF WEST VIRGINIA

VARIOUS LOCATIONS AS  
INDICATED BY ORDER

No City                      WV  
US

No City                      WV  
US

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	REFLECTIVE SIGN SHEETING & ASSOCIATED MATERIALS	1.00000	EA		\$291,205.07

Comm Code	Manufacturer	Specification	Model #
55121734			

**Extended Description:**

REFLECTIVE SIGN SHEETING & ASSOCIATED MATERIALS

**SCHEDULE OF EVENTS**

<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	Tech Questions due by 10:00am	2021-07-09

	Document Phase	Document Description	Page
DOT2100000167	Final	REFLECTIVE SIGN SHEETING & ASSOCIATED MATERIALS	3

**ADDITIONAL TERMS AND CONDITIONS**

See attached document(s) for additional Terms and Conditions