

Evaluation Table

PEP ID:	XXXXX
Manufacturer:	Name of Manufacturer
Product Name:	Name of Product

1007 – Retroreflective Sheeting
 1007 Type IX Retroreflective Sheeting
 ADOT Specification: 1007
 Additional Requirements: ASTM D4956
 Responsible Section: Traffic Group

Material Property	Specification/ Test Method	Requirement	Results	Pass / Fail
Coefficient of Retroreflection	ASTM D4956 Section 6.2	Shall meet or exceed the minimum requirements for the appropriate type of sheeting (see table 9 below)		
Daytime Color	ASTM D4956 Section 6.3	Shall conform to requirements of Tables 2 and 11 (see tables below)		
Accelerated Outdoor Weathering Requirements, Desert Climate	ASTM D4956 Section 6.4 1007-7	Shall be weather resistant and show no appreciable cracking, scaling, pitting, blistering, edge lifting, or curling, or more than 1/32-in. (0.8-mm) shrinkage or expansion		
Colorfastness	ASTM D4956 Section 6.5	After the specified outdoor weathering, the specimen shall conform to the requirements of Tables 2 and 11 (see tables below)		
Shrinkage	ASTM D4956 Section 6.6	Shall not shrink in any dimension more than 1/32" in 10 minutes or 1/8" in 24 hours		
Flexibility	ASTM D4956 Section 6.7	Sheeting shall be sufficiently flexible to show no cracking		
Liner Removal	ASTM D4956 Section 6.8	The liner, when provided, shall be easily removed without soaking in water or other solutions, and shall not break, tear, or remove adhesive from the sheeting		
Adhesion	ASTM D4956 Section 6.9 1007-6*	The adhesive backing of the retroreflective sheeting shall produce a bond that will support a 1 3/4-lb (0.79-kg) weight for adhesive class 1*		

Material Property	Specification/ Test Method	Requirement	Results	Pass / Fail
Impact Resistance	ASTM D4956 Section 6.10	Shall show no cracking or delamination outside of the actual area of impact		
Nighttime Color	ASTM D4956 Section 6.11	shall conform to the requirements of Table 13 (see table below)		

*Reflective sheeting and film adhesives shall be Class I as specified in ASTM D4956

Material Property: Minimum Coefficient of Retroreflection (R_A)
ASTM D4956 Section 6.2 - Table 9

Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue	Purple
0.20°	-4°	380	285	145	38	76	17	15
Results								
0.20°	+30°	215	162	82	22	43	10	8.6
Results								
0.50°	-4°	240	180	90	24	48	11	10
Results								
0.50°	+30°	135	100	50	14	27	6.0	5.4
Results								
1.00°	-4°	80	60	30	8.0	16	3.6	3.2
Results								
1.00°	+30°	45	34	17	4.5	9.0	2.0	1.8
Results								
Pass / Fail								
Observation Angle	Entrance Angle	Flourescent Yellow-Green		Flourescent Yellow		Flourescent Orange		
0.20°	-4°	300		230		115		
Results								
0.20°	+30°	170		130		65		
Results								
0.50°	-4°	190		145		72		
Results								
0.50°	+30°	110		81		41		
Results								
1.00°	-4°	64		48		24		
Results								
1.00°	+30°	36		27		14		
Results								
Pass / Fail								

Material Property: Daytime Luminance Factor (Y %)
ASTM D4956 Section 6.3 - Table 2

Color	White	Yellow	Orange	Green	Red	Blue	Purple	Brown
Minimum	27	15	10	3.0	2.5	1.0	2.0	1.0
Maximum	n/a	45	30	12	15	10	10	9.0
Result								
Pass / Fail								
	Flourescent Yellow-Green		Flourescent Yellow		Flourescent Orange		Flourescent Pink	
Minimum	60		40		20		25	
Maximum	n/a		n/a		n/a		n/a	
Result								
Pass / Fail								

Material Property: Daytime Color
ASTM D4956 Section 6.3 - Table 11

Color	Requirement	Results	Pass/Fail*
White	Meets Acceptable Chromaticity Box Boundaries?		
Yellow	Meets Acceptable Chromaticity Box Boundaries?		
Orange	Meets Acceptable Chromaticity Box Boundaries?		
Green*	Meets Acceptable Chromaticity Box Boundaries?		
Red	Meets Acceptable Chromaticity Box Boundaries?		
Blue*	Meets Acceptable Chromaticity Box Boundaries?		
Purple	Meets Acceptable Chromaticity Box Boundaries?		
Brown	Meets Acceptable Chromaticity Box Boundaries?		
Flourescent Yellow-Green	Meets Acceptable Chromaticity Box Boundaries?		
Flourescent Yellow	Meets Acceptable Chromaticity Box Boundaries?		
Flourescent Orange	Meets Acceptable Chromaticity Box Boundaries?		
Flourescent Pink	Meets Acceptable Chromaticity Box Boundaries?		

* The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colors.

Outdoor Weathering Photometric Requirements for All Climates (80% @ 36 months)*
Material Property: Minimum Coefficient of Retroreflection (R_A)
ASTM D4956 Section 6.4 - Table 12

Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue	Purple
0.20°	-4°	304	228	116	30.4	60.8	13.6	12
Results								
0.20°	+30°	172	129.6	65.6	17.6	34.4	8	6.9
Results								
Pass / Fail								
Observation Angle	Entrance Angle	Flourescent Yellow-Green		Flourescent Yellow		Flourescent Orange		
0.20°	-4°	240		184		92		
Results								
0.20°	+30°	136		104		52		
Results								
Pass / Fail								

*Testing at shorter intervals may be done to gather additional information. When sheeting is specified for construction work zone applications, the outdoor weathering shall be twelve months.

After Outdoor Weathering - Material Property: Daytime Luminance Factor (Y %)
ASTM D4956 Section 6.5 - Table 2

Color	White	Yellow	Orange	Green	Red	Blue	Purple	Brown
Minimum	27	15	10	3.0	2.5	1.0	2.0	1.0
Maximum	n/a	45	30	12	15	10	10	9.0
Result								
Pass / Fail								
	Flourescent Yellow-Green		Flourescent Yellow		Flourescent Orange		Flourescent Pink	
Minimum	60		40		20		25	
Maximum	n/a		n/a		n/a		n/a	
Result								
Pass / Fail								

After Outdoor Weathering - Material Property: Daytime Color
ASTM D4956 Section 6.5 - Table 11

Color	Requirement	Results	Pass/Fail*
White	Meets Acceptable Chromaticity Box Boundaries?		
Yellow	Meets Acceptable Chromaticity Box Boundaries?		
Orange	Meets Acceptable Chromaticity Box Boundaries?		
Green*	Meets Acceptable Chromaticity Box Boundaries?		
Red	Meets Acceptable Chromaticity Box Boundaries?		
Blue*	Meets Acceptable Chromaticity Box Boundaries?		
Purple	Meets Acceptable Chromaticity Box Boundaries?		
Brown	Meets Acceptable Chromaticity Box Boundaries?		
Fluorescent Yellow-Green	Meets Acceptable Chromaticity Box Boundaries?		
Fluorescent Yellow	Meets Acceptable Chromaticity Box Boundaries?		
Fluorescent Orange	Meets Acceptable Chromaticity Box Boundaries?		
Fluorescent Pink	Meets Acceptable Chromaticity Box Boundaries?		

* The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colors.

Material Property: Nighttime Color
ASTM D4956 Section 6.11 - Table 13

Color	Requirement	Results	Pass/Fail*
White	Meets Acceptable Chromaticity Box Boundaries?		
Yellow	Meets Acceptable Chromaticity Box Boundaries?		
Orange	Meets Acceptable Chromaticity Box Boundaries?		
Green	Meets Acceptable Chromaticity Box Boundaries?		
Red	Meets Acceptable Chromaticity Box Boundaries?		
Blue	Meets Acceptable Chromaticity Box Boundaries?		
Purple	Meets Acceptable Chromaticity Box Boundaries?		
Brown	Meets Acceptable Chromaticity Box Boundaries?		
Fluorescent Yellow-Green	Meets Acceptable Chromaticity Box Boundaries?		
Fluorescent Yellow	Meets Acceptable Chromaticity Box Boundaries?		
Fluorescent Orange	Meets Acceptable Chromaticity Box Boundaries?		

* The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colors.

Material Property: Weather Testing and Durability Requirements
ADOT Specification 1007-7, 1007-8

ASTM Sheeting Type	Color	Required Durability Rating, Years	Result Durability Rating, Years	Pass / Fail
IX	Flourescent Orange	3		
IX	All Other Colors	10		