



INDUSTRIAL TESTING LABORATORY

Report No. 170426-03I2

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TEST REPORT

Report Date: 15 May 2017

Project Name: Aura® 196 Prismatic Fl. Yellow/Green
Retroreflective Sheeting
Batch # 30P78-1Submitted by: Aura Optical Systems
Ft. Worth, TX 76118Test Laboratory: Calcoast - ITL
San Leandro, CA 94577

Products Tested: Three (3) 8.0" x 8.0" panels premade by Aura

SUMMARY

Above samples were submitted for measurement of Coefficient of Retroreflection and Daytime Color and Luminance per ASTM D4956.

Coefficient of Retroreflection measured at entrance angles of -4° and $+30^\circ$ and observation angles of 0.2° , 0.5° , and 1.0° without comparison to any sheeting class or reflectivity table.

Daytime Color and Luminance compared to ASTM D4956-16b Tables 2 and 11 non-Type V requirements.

Written by:

A blue ink signature of Douglas G. Cummins, written in a cursive style.

Douglas G. Cummins
Photometric Engineer

Approved by:

A blue ink signature of Mark A. Evans, written in a cursive style.

Mark A. Evans
Laboratory Director

TEST DATA SHEET

Project Name: Aura® 196 Prismatic Fl. Yellow/Green
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6.2 Coefficient of Retroreflection

Requirement: none
 Test Method: ASTM E810 - Test Distance 100 feet (30.5 m)
 Entrance angle = β_1 . $\beta_2 = 0$. Observation Angle = α
 Projector: Hoffman GPS-102 (Illuminant A, 1.0 fc, 30" diameter)
 Sample Area: 8.0 in. x 8.0 in, 0.444 ft²

Coefficient of Retroreflection (R_A) determined by measuring three (3) aluminum panels at two rotation angles ($\epsilon=0^\circ$ and $\epsilon=90^\circ$) and averaging. $\epsilon=0^\circ$ arbitrarily defined as orientation with roll direction as indicated on label parallel to projector/detector half-plane (see photos).

Unknown if sampling in accordance with D4956 Section 9.1

Units: Candela per footcandle per square foot (Candela per Lux per square meter)

0.2° Observation Angle

Entrance Angle:		-4°				+30°			
Sample		0°	90°	Avg (R_A)	Min R_A	0°	90°	Avg (R_A)	Min R_A
196 Fl. Y/G	#1	416.1	358.6	387.3		176.4	188.2	182.3	
	#2	454.7	389.5	422.1		203.2	210.1	206.6	
	#3	428.6	369.5	399.1		187.8	196.9	192.3	
	Average	433.1	372.5	402.8	-	189.1	198.4	193.7	-

0.5° Observation Angle

Entrance Angle:		-4°				+30°			
Sample		0°	90°	Avg (R_A)	Min R_A	0°	90°	Avg (R_A)	Min R_A
196 Fl. Y/G	#1	188.3	230.1	209.2		114.0	105.8	109.9	
	#2	201.8	248.1	224.9		122.4	118.0	120.2	
	#3	202.5	242.1	222.3		116.2	112.6	114.4	
	Average	197.5	240.1	218.8	-	117.5	112.1	114.8	-

1.0° Observation Angle

Entrance Angle:		-4°				+30°			
Sample		0°	90°	Avg (R_A)	Min R_A	0°	90°	Avg (R_A)	Min R_A
196 Fl. Y/G	#1	59.1	53.7	56.4		34.6	34.5	34.6	
	#2	53.6	53.2	53.4		34.4	32.7	33.6	
	#3	52.8	53.4	53.1		31.9	32.6	32.3	
	Average	55.2	53.4	54.3	-	33.7	33.3	33.5	-

TEST DATA SHEET

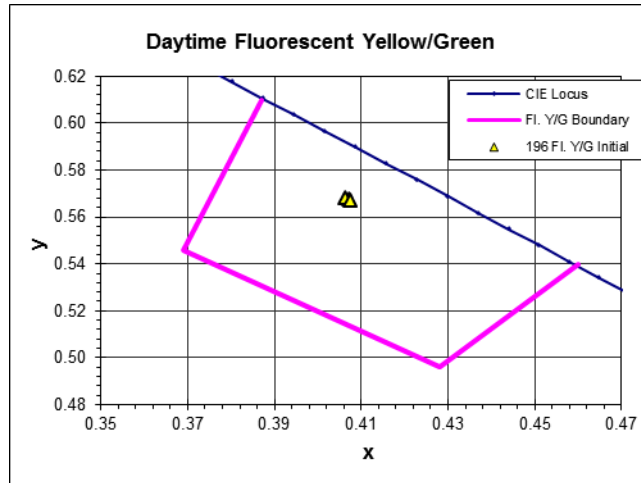
Project Name: Aura® 196 Prismatic Fl. Yellow/Green
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6.3 Daytime Color and Luminance

Requirement: ASTM D4956 Tables 2 and 11 (non-Type V Sheeting)
 Test Method: ASTM E308, E1347, E1349, E991, E1164
 (Illuminant D65, 2° Observer, Annular 45/0 Geometry)
 Average of 8 reads, each read oriented 45° apart
 Instrument: Hunterlab Colorflex A60 Spectrocolorimeter (No SCF available)

Product		x	y	Y		
				Measured	Minimum	Maximum
196 Fl. Y/G	#1	0.4073	0.5673	96.69	60	-
	#2	0.4065	0.5680	95.18		
	#3	0.4074	0.5671	96.05		

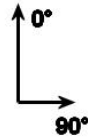
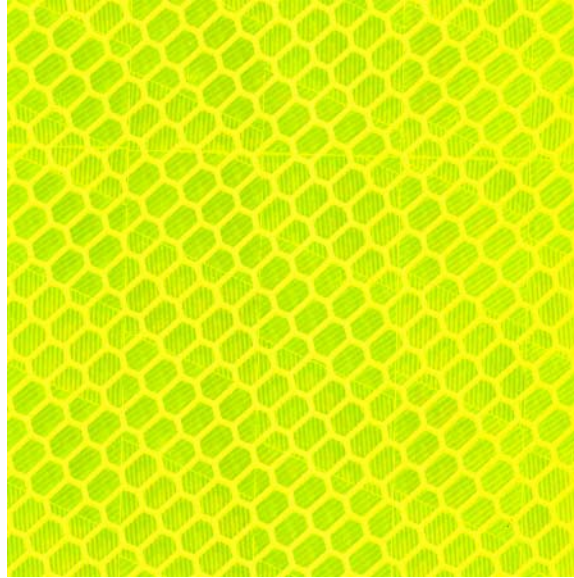
Samples meet Daytime Color and Luminance requirements.



TEST DATA SHEET

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Photographs



Sheeting Orientation