D3. Declaration of Conformity

Declaration of Conformity to ANSI/ISEA 107-2015, High-Visibility Safety Apparel

Certificate Number: S74022-2015

Company Name: Tingley Rubber Corporation

Address: 1551 S. Washington Ave Suite 403 Piscataway NJ 08854

Product Description: Class 2 Short Sleeve Polo Shirt, Fluorescent Yellow-Green

Model Number: S74022

Company declares that the above product meets all set requirements as stated in ANSI/ISEA 107-2015 as a compliant high-visibility safety item for Type R Performance Class 2. All relevant materials have been tested with documents referenced under this certificate number. This item meets all design requirements and has been measured for appropriate amount of visible reflective material and background materials for the smallest size offered for this product.

1. VISIBLE BACKGROUND MATERIAL:

- Amount of visible background material (smallest size offered): >.50m² (775 in.²)

Please list each material that contributes towards the amount **VISIBLE BACKGROUND MATERIAL** listed above.

Material 1 Test Data

Test Lab: Vartest Labs	Material Type: X Knitted ☐ Woven ☐ Other:
Report #: TINGLE.A091515A	Material Content (such as Polyester, Modacrylic, and others): 100% Polyester
Date: 9/28/15	Weight: 4.3 oz Color: Fl. Yellow-Green
Description: 100% Snag Resistant Knit Polyester	

Material 2 Test Data

Test Lab:	Material Type: ☐Knitted ☐ Woven ☐ Other:
Report #:	Material Content (such as Polyester, Modacrylic, and others):
Date:	Weight: Color:
Description:	

Material 3 Test Data

Test Lab:	Material Type: ☐Knitted ☐ Woven ☐ Other:
Report #:	Material Content (such as Polyester, Modacrylic, and others):
Date:	Weight: Color:
Description:	

**Use separate sheet for additional materials*

Declaration of Conformity (page 2 of 2)

2. VISIBLE RETROREFLECTIVE MATERIAL

- Amount of visible retroreflective material (smallest size offered) .13m² (201 in.²)

Please list each type of material that contributes towards **VISIBLE RETROREFLECTIVE MATERIAL** listed above.

Material 1 Test Data

Test Lab: Calcoast – Test Report# 150722-01A	
Date: 9/8/2015	Style #: CS-4006
Description: 50mm wide Sawtooth partially segmented heat seal silver reflective trim	

Material 2 Test Data

Test Lab:	
Date:	Style #:
Description:	

**Use separate sheet for additional materials*

The undersigned hereby warrants that he/she is authorized to legally bind the company identified above.

Signed: _____ Title: _____

Print Name: _____ Date: _____

Vartest Laboratories

Quality Assurance & Compliance Testing
Utilizing Textile & Related Technologies

19 West 36 Street, Tenth Floor
New York, NY 10018
tel: 212 947 8391 fax: 212 947 8719

www.vartest.com

Third Party Certification
(ANSI/ISEA 107-2010)
HIGH VISIBILITY COMPLIANCE CERTIFICATE

Submitted by: Tingley Rubber Corporation
Manufacturer: SF Vest
Name: Hi Vis Polo Shirt
Color Yellow

Date: September 28, 2015 Report #: TINGLE.A091515A

The submitted fabric **MEETS** the requirements of ANSI/ISEA 107– 2010 specification for the tests conducted in this report covering high visibility background material.

All of the above tests and evaluations were performed in accordance with ISO/IEC 17025 Quality Systems.

This certification applies to the background material only.

Certificate authorized by:

Adam R. Varley
Technical Director

ACCREDITED
Testing Cert #2180.01

Serial 60085091515A.TINGLE

*This certification applies to the particular sample tested and to the specific tests carried out as dated and detailed in the report referenced above. It does not signify any measure of approval, control, supervision, or surveillance by Vartest Laboratories Inc. to this or any related product.

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ISO/IEC 17025 Certified Third Party Test Report

DATE: September 22, 2015

FILE: TINGLE.A091515A
PO #: 17017

CLIENT: Tingley Rubber Corporation
1551 S Washington Ave Suite 403
Piscataway, NJ 08854

ATTN: Lucy Vargas

SAMPLE IDENTIFIED BY CLIENT AS:

Fabric Submitted
Per ANSI/ISEA 107-2010 Specification
Manufacturer: SF Vest
Name: Hi Vis Polo Shirt
Color Yellow

EXECUTIVE SUMMARY:

PASS	FAIL
X	

The submitted fabric **MEETS** the requirements of ANSI/ISEA 107-2010 Specification for the applicable tests conducted in this report covering high visibility background material.

REQUIRED TESTS:

Test/Method	Section	ANSI/ISEA 107 REQUIREMENTS	TEST RESULT	PASS/FAIL/NA
Determination of Color ASTM E1164-09 (Single layer) As Submitted After exposure to 40 xenon fading units per AATCC 16-2004 Opt 3	7.1.1 9.2 7.1.1 7.1.2 7.2.4	Test specimen must fulfill the colormetric require - ments of Table 2 for background material	As submitted: x = 0.382 y = 0.533 % Y = 91.56 After 40x Xenon x = 0.378 y = 0.506 % Y = 86.36	PASS PASS
Determination of Color ASTM E1164-09 (Two layers of the same material) As Submitted After exposure to 40 xenon fading units per AATCC 16-2004 Opt 3	7.1.1 9.2 7.1.1 7.1.2 7.2.4	Test specimen must fulfill the colormetric require - ments of Table 2 for background material	As submitted: x = y = % Y = After 40x Xenon x = y = % Y =	N/A N/A
Colorfastness Crocking AATCC 8-2007	7.2.1	Wet 3.0 Dry 3.0	Wet: 4.5 Dry: 4.5	PASS PASS
Colorfastness Perspiration AATCC 15-2007	7.2.2	Shade change 4.0 Staining 3.0	Shade Change: 4.5 Acetate: 4.0 Cotton: 4.5 Nylon: 4.0 Polyester: 4.5 Acrylic: 4.5 Wool: 4.5	PASS PASS

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ISO/IEC 17025 Certified Third Party Test Report

FILE: TINGLE.A091515A
PO #: 17017
SAMPLE IDENTIFIED BY CLIENT AS:
Fabric Submitted
Per ANSI/ISEA 107-2010 Specification
Manufacturer: SF Vest
Name: Hi Vis Polo Shirt
Color Yellow

REQUIRED TESTS (Cont.):

Test/Method	Section	ANSI/ISEA 107 REQUIREMENTS	TEST RESULT	PASS/FAIL/NA
Dimensional change Domestic AATCC 135-2004 MWW TDL Unrestored	7.3.1	Woven L +/- 4% W +/-2%	1st Cycle Length= Width = 5th Cycle Length= Width =	N/A N/A
		Knit L +/- 7% W +/-5%	1st Cycle Length= -0.8% Width = -0.1% 5th Cycle Length= -2.2% Width = -0.3%	PASS PASS
Ball Bursting Strength ASTM D3787-07 (Knitted)	7.4.1	267 N (60 lb) (27.2kg)	180.6 lbs average	PASS
Tear Resistance ASTM D1424-09 (Woven)	7.4.2	13 N (3 lb) (1.3kg) Avg. force machine Avg. force cross-machine		 N/A N/A
Breathability ASTM E96-05 Procedure B/BW	7.6	600g/m2/24 hr microporous 3600g/m2/24 hr hydrophilic		N/A N/A

TESTED AS CARE LABEL DICTATES:

Test/Method	Section	ANSI/ISEA 107 REQUIREMENTS	TEST RESULT	PASS/FAIL/NA
Colorfastness Domestic/Commercial Laundry AATCC 61-2007-2A 105°F Modified	7.2.3 Table 3	Shade Change 4.5 Staining 3.0	Shade Change: 4.5 Acetate: 4.0 Cotton: 4.5 Nylon: 3.5 Polyester: 5.0 Acrylic: 5.0 Wool: 4.5	PASS PASS
Colorfastness Domestic/Commercial Laundry AATCC 61-2007-3A 160°F	7.2.3 Table 3	Shade Change 4.5 Staining 3.0	Shade Change: Acetate: Cotton: Nylon: Polyester: Acrylic: Wool:	N/A

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ISO/IEC 17025 Certified Third Party Test Report

FILE: TINGLE.A091515A
PO #: 17017
SAMPLE IDENTIFIED BY CLIENT AS:
Fabric Submitted
Per ANSI/ISEA 107-2010 Specification
Manufacturer: SF Vest
Name: Hi Vis Polo Shirt
Color Yellow

TESTED AS CARE LABEL DICTATES (cont.):

Test/Method	Section	ANSI/ISEA 107 REQUIREMENTS	TEST RESULT	PASS/FAIL/NA
Colorfastness Domestic/Commercial Laundry AATCC 61-2007-5A 160°F Modified	7.2.3 Table 3	Shade Change 4.5 Staining 3.0	Shade Change: Acetate: Cotton: Nylon: Polyester: Acrylic: Wool:	N/A
Colorfastness Water AATCC 107-2007	7.2.3 Table 3	Shade Change 3.0 3.0	Shade Change: 4.5 Acetate: 4.5 Cotton: 4.5 Nylon: 4.5 Polyester: 4.5 Acrylic: 5.0 Wool: 5.0	PASS PASS
Colorfastness Hypochlorite Bleaching AATCC 61-2007-4A	7.2.3 Table 3	Fading 4.0		N/A
Colorfastness Hypochlorite Bleaching AATCC 61-2007-5A	7.2.3 Table 3	Fading 4.0		N/A
Colorfastness Hot-pressing AATCC 133-2004	7.2.3 Table 3	Shade Change: 4.5 Staining: 3.0	230°F Shade Change: 5.0 Staining: 5.0 300°F Shade Change: 5.0 Staining: 5.0 390°F Shade Change: 5.0 Staining: 5.0	 PASS PASS PASS
Colorfastness Dry Cleaning AATCC 132-2004-5A	7.2.3 Table 3	Shade Change 4.0		N/A

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ISO/IEC 17025 Certified Third Party Test Report

FILE: TINGLE.A091515A
PO #: 17017
SAMPLE IDENTIFIED BY CLIENT AS:
Fabric Submitted
Per ANSI/ISEA 107-2010 Specification
Manufacturer: SF Vest
Name: Hi Vis Polo Shirt
Color Yellow

TESTED AS CARE LABEL DICTATES (cont.):

Test/Method	Section	ANSI/ISEA 107 REQUIREMENTS	TEST RESULT	PASS/FAIL/NA
Dimensional change Domestic AATCC 96 IIIc-A and/or E@145°F	5.3.2	Woven L +/- 4% W +/-2%	1st Cycle Length= Width = 5th Cycle Length= Width=	N/A N/A
	5.3.3	Knit L +/- 7% W +/-5%	1st Cycle Length= Width = 5th Cycle Length= Width=	N/A N/A
Hydrostatic Pressure Testing AATCC 127	5.5.3	200cm (78.74in) Both Originally After 5X washings	Original: After 5x washing:	N/A N/A
Water Resistance AATCC 35	5.5.2	1 gm of water Penetration Level 1	As-Received: After 5X washings:	N/A N/A
Water Repellency AATCC 22	5.5.1	90 New 70 After 5X washings	New: After:	N/A N/A

Signed For The Company By

Adam R. Vanley
Technical Director

JG/09/359

Stacy Sadowy
Quality Assurance Supervisor

Vartest Laboratories

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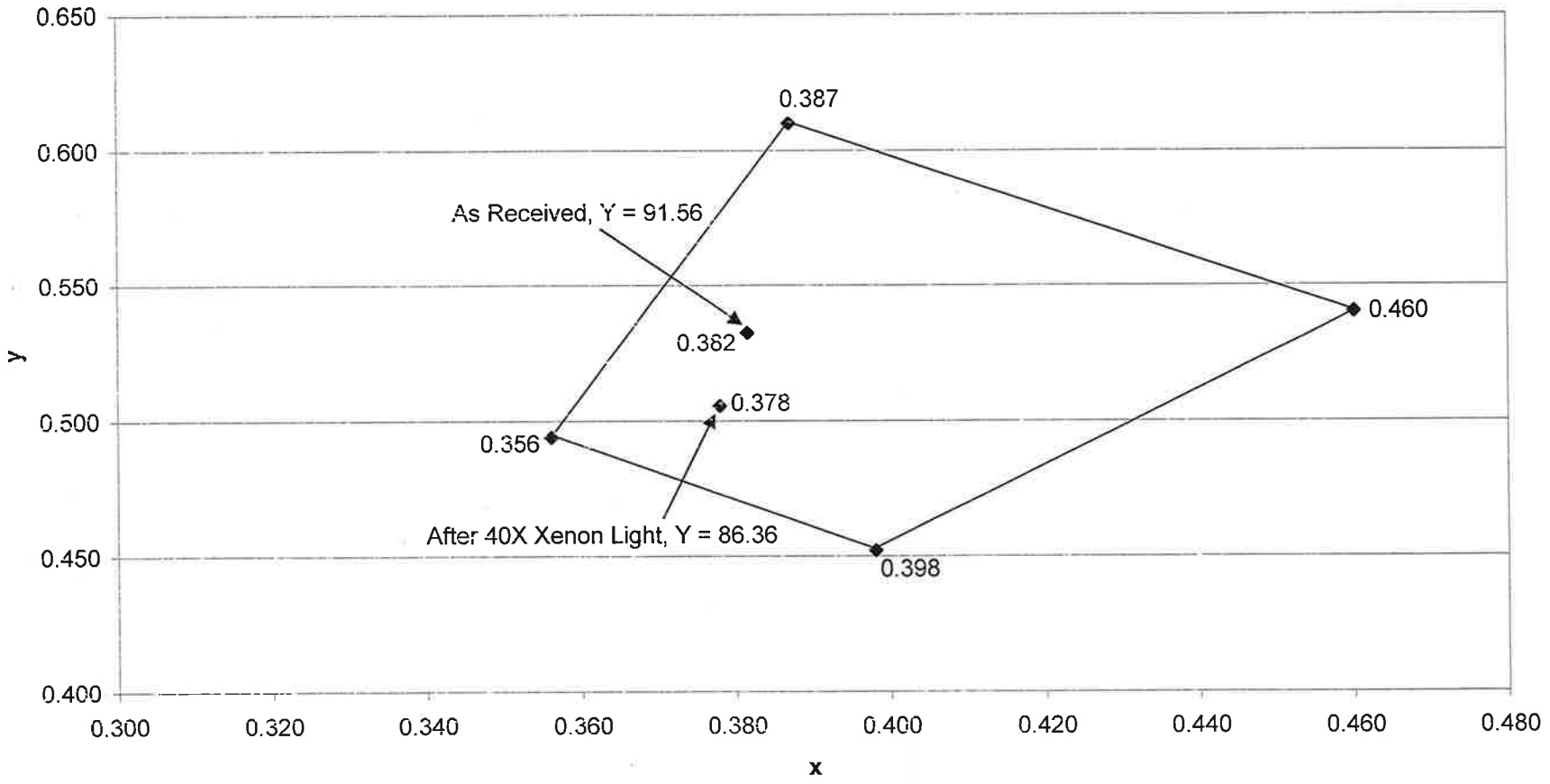
Chromaticity Coordinates
TINGLE.A.091515A
Fluorescent Yellow-Green
ANSI 107-2010 Requirement: Y ≥ 70



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TEST REPORT

Report Date: 08 September 2015
Revision Date: 20 September 2016

Project Name: Tingley CS-4006 N-FR Heat-Sealed Segmented Silver Retroreflective Trim [SER 2453] applied to Fl. Yellow/Green Background Fabric

Submitted by: Tingley Rubber Corporation
South Plainfield, NJ 07080

Test Laboratory: Calcoast - ITL
San Leandro, CA 94577

Product: 50 mm (2") wide segmented retroreflective trim applied to Fl. Yel/Grn Background Fabric, submitted 22 Jul 2015

SUMMARY

Specification: ANSI/ISEA 107-2010
American National Standard for High-Visibility Safety Apparel Retroreflective Material, Level 1 or 2

Color	
Prior to Exposure	Not Applicable
Colorfastness	Not Applicable
Photometric Performance, Initial	
Level 2	Passed
Level 1	Passed
Retroreflection after Test Exposure	
Abrasion	Passed
Flexing	Passed
Folding at Cold Temperatures	Passed
Exposure to Temperature Variation	Passed
Washing (25X)	Passed
Dry-cleaning (0X)	Not Tested
Retroreflective Performance in Rainfall	Passed
Flame Resistance	Not Applicable

Written by:
Douglas G. Cummins
Photometric Engineer

Approved by:
Mark A. Evans
Laboratory Director

Report No. 150722-01A Rev1

TEST DATA SHEET

Project Name: Tingley CS-4006 N-FR Heat-Sealed Segmented Silver Retroreflective Trim [SER 2453] applied to Fl. Yellow/Green Background Fabric

Retroreflective Performance, Initial

Requirement: ANSI/ISEA 107-2010 8.1 Table 5 (Level 1), Table 4 (Level 2)
Test Method: ASTM E808/E809

One (1) 200 mm x 200 mm retroreflective sample was created by cutting submitted material into 200 mm strips, removing excess background fabric, and mounting 4 strips side-by-side on a 200 mm x 200 mm black mounting surface. Measured sample at orientations of $\varepsilon_1 = 0°$ and $\varepsilon_2 = 90°$ where ε_1 mounting orientation is with the strips parallel to the projector/detector plane.

Sample Area: 0.0400 m²
Coefficient of Retroreflection, Candela/Lux/m²

Observation Angle	Entrance Angle	Minimum Requirement ($\varepsilon_1/\varepsilon_2$)		Measured	
		Level 2	Level 1	ε_1	ε_2
12' (0.20°)	5°	330 / 248	250 / 187.5	418.2	431.2
	20°	290 / 218	220 / 165	426.5	437.9
	30°	180 / 135	135 / 101.25	364.7	391.1
	40°	65 / 47	50 / 37.5	220.8	263.0
20' (0.33°)	5°	250 / 188	120 / 90	295.3	302.9
	20°	200 / 150	100 / 75	304.7	307.0
	30°	170 / 128	75 / 56.25	278.7	288.0
	40°	60 / 45	30 / 22.5	187.6	217.4
1.00°	5°	25 / 18.8	19 / 14.25	29.9	30.9
	20°	15 / 11.3	11 / 8.25	30.5	34.0
	30°	12 / 9	9 / 6.75	25.9	31.6
	40°	10 / 7.5	7 / 5.25	24.2	19.9
1°30' (1.50°)	5°	10 / 7.5	7 / 5.25	14.2	14.6
	20°	7 / 5.25	5 / 3.75	13.8	14.4
	30°	5 / 3.75	3 / 2.25	15.5	15.3
	40°	4 / 3	3 / 2.25	11.4	13.8

Sample meets requirements for Level 1 and Level 2 reflectivity.

Note: Coefficient of Retroreflection based on sample area, not retroreflective area. Sample area is based on the finished product dimensions which is trim width and length. The submitted segmented material includes areas of non-retroreflective background fabric (see photos).

Non-retroreflective Fluorescent Yellow/Green background material does not significantly increase the retroreflective measurements.

Report No. 150722-01A Rev1

TEST DATA SHEET

Project Name: Tingley CS-4006 N-FR Heat-Sealed Segmented Silver Retroreflective Trim [SER 2453] applied to Fl. Yellow/Green Background Fabric

Abrasion

Requirement: ANSI/ISEA 107-2010 8.2
Test Method: ANSI/ISEA 107-2010 9.4.1
EN 530:1995, Method 2 (Wool Abradent / 5000 Cycles / 9 kPa)

Sample Area: 0.005625 m²
Coefficient of Retroreflection, Candela/Lux/m²
12' (0.20°) Observation Angle / 5° Entrance Angle
Average of 3 samples

Sample	ε_1 = 0°		ε_2= 90°	
	Measured	Required	Measured	Required
A1	449.2	100	448.1	75
A2	446.0	100	447.6	75
A3	440.0	100	438.0	75
Average	445.1	100	444.6	75

Samples meet Abrasion requirements.

Flexing

Requirement: ANSI/ISEA 107-2010 8.2
Test Method: ANSI/ISEA 107-2010 9.4.2
ISO 7854:1997 Method A (7500 Cycles)

Sample Area: 0.0060 m²
Coefficient of Retroreflection, Candela/Lux/m²
12' (0.20°) Observation Angle / 5° Entrance Angle
Average of 3 samples

Sample	ε_1 = 0°		ε_2= 90°	
	Measured	Required	Measured	Required
FL1	419.8	100	417.6	75
FL2	429.2	100	427.7	75
FL3	427.4	100	424.8	75
Average	425.5	100	423.4	75

Samples meet Flexing requirements.

TEST DATA SHEET

Project Name: Tingley CS-4006 N-FR Heat-Sealed Segmented Silver Retroreflective Trim [SER 2453] applied to Fl. Yellow/Green Background Fabric

Folding at Cold Temperatures

Requirement: ANSI/ISEA 107-2010 8.2
Test Method: ANSI/ISEA 107-2010 9.4.3
ISO 4675:1990 (-20°C)

Sample Area: 0.0050 m²
Coefficient of Retroreflection, Candela/Lux/m²
12' (0.20°) Observation Angle / 5° Entrance Angle
Average of 3 samples

Sample	ε_1 = 0°		ε_2= 90°	
	Measured	Required	Measured	Required
FO1	422.8	100	420.8	75
FO2	447.4	100	444.6	75
FO3	437.1	100	435.6	75
Average	435.8	100	433.7	75

Samples meet Cold Folding requirements.

Exposure to Temperature Variation

Requirement: ANSI/ISEA 107-2010 8.2
Test Method: ANSI/ISEA 107-2010 9.4.4
12 Hours, 50°C / 20 Hours, -30°C / Minimum 2 Hours, 20°C

Sample Area: 0.0090 m²
Coefficient of Retroreflection, Candela/Lux/m²
12' (0.20°) Observation Angle / 5° Entrance Angle
Average of 3 samples

Sample	ε_1 = 0°		ε_2= 90°	
	Measured	Required	Measured	Required
T1	431.0	100	427.4	75
T2	449.6	100	447.7	75
T3	451.9	100	450.7	75
Average	444.2	100	441.9	75

Samples meet Temperature Variation Exposure requirements.

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TEST DATA SHEET

Project Name: Tingley CS-4006 N-FR Heat-Sealed Segmented Silver Retroreflective Trim [SER 2453] applied to Fl. Yellow/Green Background Fabric

Washing According to Care Label

Requirement: ANSI/ISEA 107-2010 8.2
Test Method: ANSI/ISEA 107-2010 9.4.5.2
ISO 6330:2000/Amd 1:2008 Method 2A

Number of Wash Cycles: 25
After the last wash cycle the samples were dried, stress free, at 50°C.

Sample Area: 0.0250 m²
Coefficient of Retroreflection, Candela/Lux/m²
12' (0.20°) Observation Angle / 5° Entrance Angle
Average of 3 samples

Sample	ε_1 = 0°		ε_2= 90°	
	Measured	Required	Measured	Required
W1	381.1	100	382.1	75
W2	392.9	100	394.8	75
W3	400.3	100	400.4	75
Average	391.4	100	392.4	75

Samples meet Washing requirements.

Dry-cleaning According to Care Label

Requirement: ANSI/ISEA 107-2010 8.2
Test Method: ANSI/ISEA 107-2010 9.4.5.3
ISO 3175:1998 Method 9.1

Number of Dry-cleaning Cycles: Not Tested

Coefficient of Retroreflection, Candela/Lux/m²
12' (0.20°) Observation Angle / 5° Entrance Angle
Average of 3 samples

Sample	ε_1 = 0°		ε_2= 90°	
	Measured	Required	Measured	Required
DC1	-	100	-	75
DC2	-	100	-	75
DC3	-	100	-	75
Average	-	100	-	75

No samples tested.

TEST DATA SHEET

Project Name: Tingley CS-4006 N-FR Heat-Sealed Segmented Silver Retroreflective Trim [SER 2453] applied to Fl. Yellow/Green Background Fabric

Retroreflective Performance in Rainfall

Requirement: ANSI/ISEA 107-2010 8.2
Test Method: ANSI/ISEA 107-2010 9.4.6, Appendix A

One (1) 200 mm x 200 mm retroreflective sample was created by cutting submitted material into 200 mm strips, removing excess background material, and mounting 4 strips side-by-side directly to test jig.

Retroreflection measured after a 2 minute water spray at a flow rate of 284 mm/hour.

Sample Area: 0.0400 m²
Coefficient of Retroreflection, Candela/Lux/m²
12' (0.20°) Observation Angle / 5° Entrance Angle

Sample	ε_1 = 0°		ε_2= 90°	
	Measured	Required	Measured	Required
R1	163.4	100	162.0	75

Sample meets Rainfall requirements.

Flame Resistance

Requirement: ANSI/ISEA 107-2010 8.2
Test Method: ANSI/ISEA 107-2010 9.5
NFPA 1971-2007 8.46.4.4 Convective Heat Exposure Test

Test is not applicable. Material is not designated flame resistant.

Sample Area: -
Coefficient of Retroreflection, Candela/Lux/m²
12' (0.20°) Observation Angle / 5° Entrance Angle
Average of 3 samples

Sample	ε_1 = 0°		ε_2= 90°	
	Measured	Required	Measured	Required
FR1	-	100	-	75
FR2	-	100	-	75
FR3	-	100	-	75
Average	-	100	-	75

No samples tested.

Report No. 150722-01A Rev1

PHOTOGRAPH SHEET

Project Name: Tingley CS-4006 N-FR Heat-Sealed Segmented Silver Retroreflective Trim [SER 2453] applied to Fl. Yellow/Green Background Fabric