

# ANSI/ISEA 107-2004 Apparel and Headwear Compliance Certificate

**GCC# 1176**

(Company name) M.L. Kishigo Manufacturing certifies that Model 1176 meets all set requirements as stated in ANSI/ISEA 107-2004 as a compliant High-Visibility safety item for Performance Class 2. All relevant materials have been third-party certified with documents referenced under this certificate number. Manufacturer certifies that this item meets all design requirements and has been measured for the appropriate amount of visible reflective material and background material for the smallest size offered for this product.

Amount of visible background material (smallest size offered) 830 SQ. IN. (Medium).

Amount of visible retroreflective material (smallest size offered) 222 SQ. IN..

Company Name M.L. Kishigo Manufacturing Model # 1176

Address 2901 South Daimler Street Class # 2

City, State, Zip Santa Ana, CA 92705.

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

Signed  Title Vice-President / General Manager



3202 34th Street, Valley, AL 36854 Telephone: 334-768-1262 or 1-800-554-7424 Fax: 334-768-1255

TextTest Report: 1151836  
Date: 6/24/05  
Page: 1 of 5

Material Description: <b>APS-HB-HB-TEXTURE MESH</b>
Fabric <input checked="" type="checkbox"/> Non-Fabric _____ (check one)
Lot #:
Manufacturer:
Color: <b>Orange</b>

COMMENT:

We certify that the sample identified above was tested in accordance with the specification and complies with the requirements for background materials of ANSI/ISEA 107-2004,

Certification Authorized By:  
Alan Lightholder  
Director

**ANSI/SEA 107-2004 Background Material Testing Report**

Material Description: <b>APS-HB-HB-TEXTURE MESH</b>	Test Lab(s): <b>TEXT</b> Report #1151836
Fabric <input checked="" type="checkbox"/> Non-Fabric _____ (check one)	Address: 3202 34th Street Valley, AL 36854
Lot #:	Contact Person: Alan Lightholder
Manufacturer:	Date Tested: 6/24/09
Color: Orange	

REQUIRED TESTS				
Test/Method	Section	ANSI/SEA 107 Requirement	Test Result	Pass/ Fail/ NA
Determination of Color ASTM E1164-02 (Single layer)	7.1.1	Test specimen must fulfill the colorimetric requirements of Table 2 for background material	As submitted:	
	9.2		x = y = %Y =	NA NA NA
Determination of Color ASTM E1164-94 (Two layers of the same material)	7.1.1	Test specimen must fulfill the colorimetric requirements of Table 2 for background material	As submitted:	
	9.2		x = 0.584 y = 0.362 %Y = 48.5	Pass Pass Pass
Colorfastness Crocking AATCC 8-2001	7.2.1	Wet 3.0	4.5	Pass
		Dry 3.0	4.5	Pass
Colorfastness Fingerprint AATCC 15-2002	7.2.2	Color Change 4.0		Pass
		Staining 3.0		Pass
		Acetate:	5.0	Pass
		Cotton:	5.0	Pass
		Nylon:	5.0	Pass
		Polyester:	5.0	Pass
Dimensional change Domestic AATCC 135-2000 (3) IIIA(II) @ 105°F	7.3.1	Woven L +/- 4% W +/- 2%	1st Cycle Length = Width =	NA NA
		Knit L +/- 7% W +/- 5%	5th Cycle Length = Width =	NA NA
			1st Cycle Length = Width =	NA NA
	5th Cycle Length = Width =		-4.3 -2.9	Pass Pass

Source: ANSI/SEA 107-2004 American National Standard for High-Visibility Safety Apparel and Headwear, Appendix D1.

**ANSI/ISEA 107-2004 Background Material Testing Report**

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Material Description: <b>APS-HB-HB-TEXTURE MESH</b>	Test Lab(s): <b>TEXT</b> Report #1151836
Fabric <input checked="" type="checkbox"/> Non-Fabric _____ (check one)	Address: 3202 34th Street Valley, AL 36854
Lot #:	Contact Person: Alan Lightholder
Manufacturer:	Date Tested: 6/24/05
Color: Orange	

REQUIRED TESTS (cont)				
Test/Method	Section	ANSI/ISEA 107 Requirement	Test Result	Pass/ Fail/ NA
Bursting Strength (Knitted) ASTM D 3787-01	7.4.1	267 N (60 lb) (27.2 kg)	110 lb.	PASS
Tear Resistance (Woven) ASTM D 1424-96	7.4.2	13 N (3 lb) (1.3 kg) Average force machine Average force cross-machine		NA NA
Breathability ASTM E96-00 Procedure B ASTM E96-00 Procedure BW	7.6	600g/m <sup>2</sup> /24 hr microporous 3600g/m <sup>2</sup> /24 hr hydrophilic		NA NA

TESTED AS CARE LABEL DICTATES				
Test/Method	Section	ANSI/ISEA 107 Requirement	Test Result	Pass/ Fail/ NA
Colorfastness Domestic Laundry AATCC 61-2001-2A 120° F	7.2.3 Table 4	Color change 4.5 Staining 3.0	Acetate: Cotton: Nylon: Polyester: Acrylic: Wool:	NA NA NA NA NA NA
Colorfastness Commercial Laundry AATCC 61-2001-3A 160° F	7.2.3 Table 4	Color change 4.5 Staining 3.0	Acetate: Cotton: Nylon: Polyester: Acrylic: Wool:	NA NA NA NA NA NA
Colorfastness Domestic Laundry AATCC 61-2001-2A 105° F	7.2.3 Table 4	Color change 4.5 Staining 3.0	Acetate: 5.0 Cotton: 5.0 Nylon: 4.5 Polyester: 4.0 Acrylic: 4.5 Wool: 4.0	PASS PASS PASS PASS PASS PASS

**ANSI/ISEA 107-2004 Background Material Testing Report**

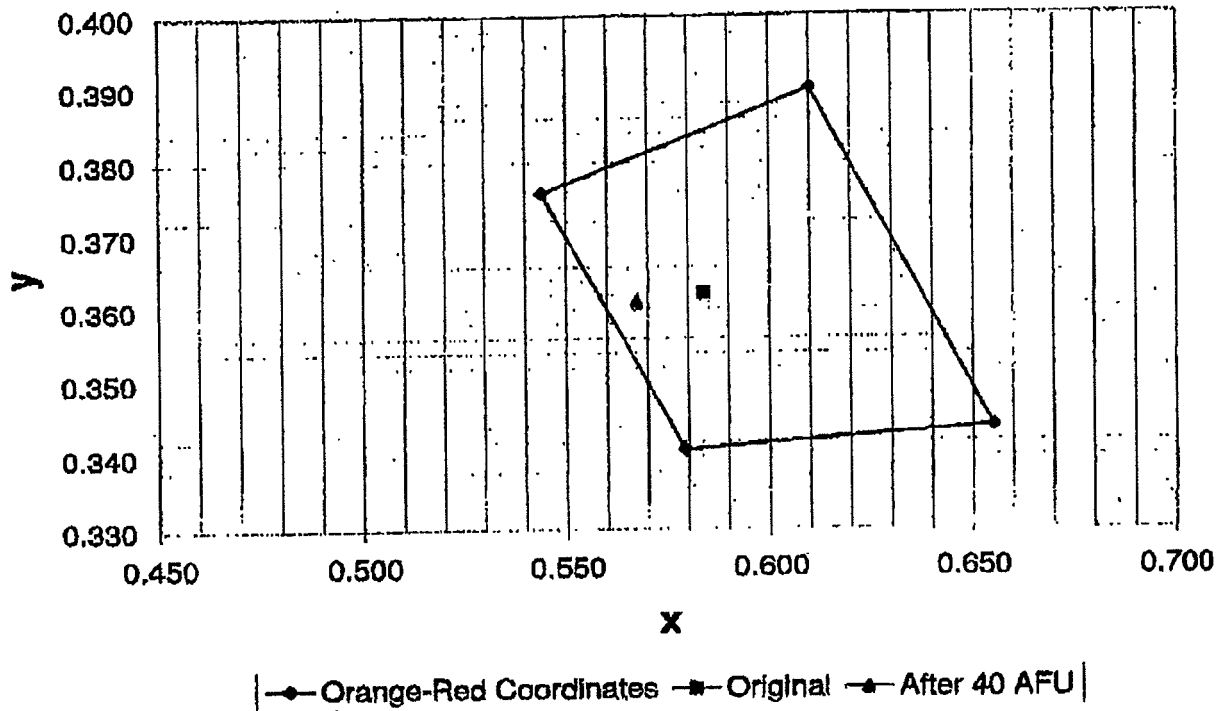
Material Description: APS-HB-HB-TEXTURE MESH	Test Lab(s): <b>TEST</b> Report #1151836
Fabric <input checked="" type="checkbox"/> Non-Fabric _____ (check one)	Address: 3202 34th Street Valley, AL 36854
Lot #:	Contact Person: Alan Lightholder
Manufacturer:	Date Tested: 6/24/05
Color: Orange	

TESTED AS CARE LABEL DICTATES (cont)				
Test/Method	Section	ANSI/ISEA 107 Requirement	Test Result	Pass/ Fail/ NA
Colorfastness Water AATCC 107-2002	7.2.3 Table 4	Color change 3.0 Staining 3.0	Acetate: 5.0 Cotton: 5.0 Nylon: 5.0 Polyester: 5.0 Acrylic: 5.0 Wool: 5.0	Pass Pass Pass Pass Pass Pass
Colorfastness Hypochlorite Bleaching AATCC 61-2001-4A	7.2.3 Table 4	Fading 4.0		NA
Colorfastness Hypochlorite Bleaching AATCC 61-2001-5A	7.2.3 Table 4	Fading 4.0	5.0	Pass
Colorfastness Hot-pressing AATCC 133-1999	7.2.3 Table 4	Color change 4.5 Staining 3.0	3.0 5.0	Pass Pass
Colorfastness Dry cleaning AATCC 132-2001	7.2.3 Table 4	Color change 4.0		NA
Dimensional change Commercial AATCC 96-1999 Type-A and/or E @ 145° F	7.3.1	Woven L +/- 4% W +/- 2%	1st Cycle Length = Width =	NA NA
		Knit L +/- 7% W +/- 5%	5th Cycle Length = Width =	NA NA
Water Resistance AATCC 95-2000	7.5	1 gram of water penetration Level 1		NA
Water Resistance AATCC 127-1998	7.5	200 cm Min. now		NA
		200 cm Min. after 5 washings		NA
Water Repellence AATCC 22-2001	7.5.1	90 now		NA
		70 after 5 washings		NA

ANSI/ISEA 107-2004 Background Material Testing Report

Material Description: APS-HB-HB-TEXTURE MESH	Test Lab(s): <b>TEST</b> Report #151836
Fabric <input checked="" type="checkbox"/> Non-Fabric <input type="checkbox"/> (check one)	Address: 3202 34th Street Valley, AL 36854
Lot #:	Contact Person: Alan Lightholder
Manufacturer:	Date Tested: 6/24/05
Color: Orange	

CIE 1931 (x,y) Chromaticity Diagram





# Certificate of Test

*We hereby declare that the item described below has been tested by the Merchandise Testing Laboratories (U.K.) Ltd. And complies with the requirements of*

**ANSI/SEA 107:2004 Clause 8.1 Performance requirement of retroreflective material prior to test exposure - Level 2 and Clause 8.2 Performance requirement of retroreflective after test exposure - after exposure to abrasion, flexing, folding at cold temperatures, temperature variation, washing (25 cycles) and influence of rainfall**

*The full details of the tests and the results are given in our reports*

TR2300/05799

Dated: 02/08/04

**Description of item tested:**

Vizite 100N Silver Retroreflective Tape

**Submitted by:**

Zhejiang Fangyuan Yeshili Reflective Material Co Ltd,  
No 292 Donghai Street, Economic Development Zone,  
Taizhou City, Zhejiang, China.

Certificate authorised by:

*J. Moore*

Title: J. Moore - Textile Technologist

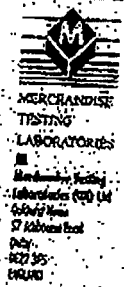
Date: 15<sup>th</sup> April 2005

Accredited to the ISO/IEC Guide 17025: through UKAS system Laboratory Number 0421

# Test Report

TR2300/05799

ANSI/ISEA 107-2004 Retroreflective Material Testing Report, Level 2 (page 2 of 2)



## PHOTOMETRIC PERFORMANCE REQUIREMENTS

Test	Section	ANSI/ISEA 107 Requirement	Test Result	Pass/Fail
Retroreflection, after abrasion	8.2 9.4.1	$R_A(0.2^\circ/5^\circ) > 100 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_1$ $R_A(0.2^\circ/5^\circ) > 75 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_2$	$e_1$ : 384 $e_2$ : N/A	Pass
Retroreflection, after flexing	8.2 9.4.2	$R_s(0.2^\circ/5^\circ) > 400 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_1$ $R_A(0.2^\circ/5^\circ) > 75 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_2$	$e_1$ : 404 $e_2$ : N/A	Pass
Retroreflection, after folding at cold temperatures	8.2 9.4.3	$R_A(0.2^\circ/5^\circ) > 100 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_1$ $R_A(0.2^\circ/5^\circ) > 75 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_2$	$e_1$ : 460 $e_2$ : N/A	Pass
Retroreflection, after exposure to temperature variation	8.2 9.4.4	$R_A(0.2^\circ/5^\circ) > 100 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_1$ $R_A(0.2^\circ/5^\circ) > 75 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_2$	$e_1$ : 494 $e_2$ : N/A	Pass
Retroreflection, after washing (25 Cycles)	8.2 9.4.5 9.4.6	$R_A(0.2^\circ/5^\circ) > 100 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_1$ $R_A(0.2^\circ/5^\circ) > 75 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_2$	$e_1$ : 209 $e_2$ : N/A	Pass
Retroreflection, after dry cleaning	8.2 9.4.5 9.4.7	$R_A(0.2^\circ/5^\circ) > 100 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_1$ $R_A(0.2^\circ/5^\circ) > 75 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_2$	$e_1$ : N/A $e_2$ : N/A	N/A
Retroreflection in rainfall	8.2 9.4.8	$R_A(0.2^\circ/5^\circ) > 100 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_1$ $R_A(0.2^\circ/5^\circ) > 75 \text{ cd/(lx}\cdot\text{m}^2)$ at $e_2$	$e_1$ : 283 $e_2$ : N/A	Pass

Tested on report TR2300/71461

Authorised by

*J Moore*  
Miss J. Moore C Text A TL  
Technical Textile  
Testing Manager

*SJC Welden*  
Mrs. S.J.C. Welden B.Sc. (Hons)  
Deputy Technical Textile  
Testing Manager

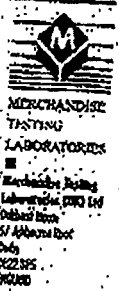
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Accredited to the ISO/IEC Guide 17025: through UKAS system Laboratory Number 0421

# Test Report

TR2300/05799

ANSI/ISEA 407-2004 Retroreflective Material Testing Report Level 2



<b>Material Description:</b> Vistite 100N Retro Reflective Material	<b>Test Lab(s):</b> Merchandise Test Laboratories
<b>Manufacturer:</b> Zhejiang Fanyuan Yeshi Reflective Material Ltd No 292 Donghai St, Economic Development Zone, Taizhou City, Zhejiang, China	<b>Address:</b> Oakhurst House 57 Ashbourne Road Derby DE22 4FS
<b>Colour:</b> Silver	<b>Date Tested:</b> 27 August 2004

## Photometric Performance Requirements

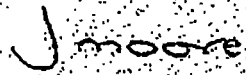
The coefficient of reflection  $R^r$  shall be determined in accordance with the procedure defined in CIE publication No. 54:1982. The measured focal length of photometer = 1016 mm.

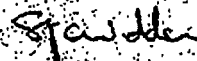
This material is defined as not orientation sensitive.

ANSI/ISEA 107 Requirement Section 8.1, Table 5			Test Result cd/(lx.m <sup>2</sup> )	Pass/ Fail
Observation Angle	Entrance Angle	Minimum cd/(lx.m <sup>2</sup> ) <i>E<sub>1</sub> / E<sub>2</sub></i>	<i>E<sub>1</sub></i>	
12° (0.2°)	5°	330 / 248	490	N/A
	20°	290 / 218	508	N/A
	30°	180 / 135	529	N/A
	40°	65 / 47	587	N/A
20° (0.33°)	5°	250 / 188	366	N/A
	20°	200 / 150	353	N/A
	30°	170 / 128	346	N/A
	40°	60 / 45	395	N/A
1.0°	5°	25 / 18.8	34.0	N/A
	20°	15 / 11.3	35.2	N/A
	30°	12 / 9	39.8	N/A
	40°	10 / 7.5	44.2	N/A
1.5°	5°	10 / 7.5	25.8	N/A
	20°	7 / 5.25	23.3	N/A
	30°	5 / 3.75	28.4	N/A
	40°	4 / 3	25.5	N/A

Tested on report TR2300/71461

Authorised by

  
 Miss J. Moore C. Text A.T.I.  
 Technical Textile  
 Testing Manager

  
 Mrs. S.J.C. Welden B.Sc. (Hons)  
 Deputy Technical Textile  
 Testing Manager

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