ANSI® Reflective Material

PATENTED PRODUCT

Hi-Shun

佛山市凯舜防护用品有限公司
FOSHAN HI-SHUN PROTECTIVE PRODUCTS CO.,LTD.
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ANSI® Reflective Material

SINCE 2008

About compliance of ANS' Reflective Material

Why ANS' heat transfer reflective trim meets EN ISO 20471 & ANSI/ISEA 107?

ANS' heat transfer reflective trim is converted from self developed high performance reflective materials. It is formed of a plurality of separate but closely spaced trim segments in a generally repetitive pattern continuous for the length of the trim. The trim segments are formed of a retroreflective material that has a retroreflective coefficient or index value(Ra).

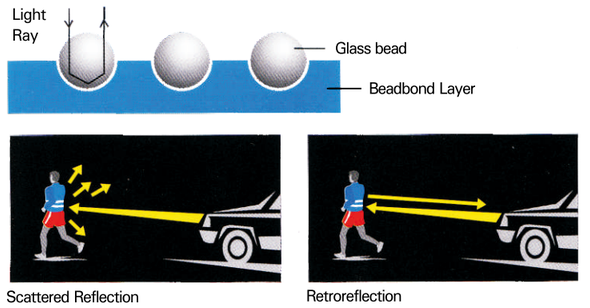
The trim consisting of the combined retroreflective segment and non-segment areas has a composite retroreflective index(Rb) that is less than that of the retroreflective materials alone(Ra), the reduction relationship is linear. For example, if the retroreflective segment area of the trim constitutes 75% of total trim area, the retroreflectivity of the trim will be 75% of that of the retroreflective materials, Rb = Ra x 75%. if Rb meets the minimum retroreflectivity criteria listed in the EN ISO 20471 or ANSI/ISEA 107 standard, then the trim pass the standards also if the retroreflective materials pass.

When measured at 0° orientation, 5° entrance angle and 0.2° observation angle, the retroreflectivity Ra of reflective materials used on ANS' is more than 500 cd/lux/m^2 , the space cut out on ANS' trim is less than 20% and remains more than 80% segment retroreflective materials. Therefore, the retroreflectivity Rb of ANS' heat transfer reflective trim will be more than 400 cd/lux/m^2 (500x80%), which pass the minimum retroreflectivity criteria of 330 cd/lux/m^2 in both EN ISO 20471 or ANSI/ISEA 107.

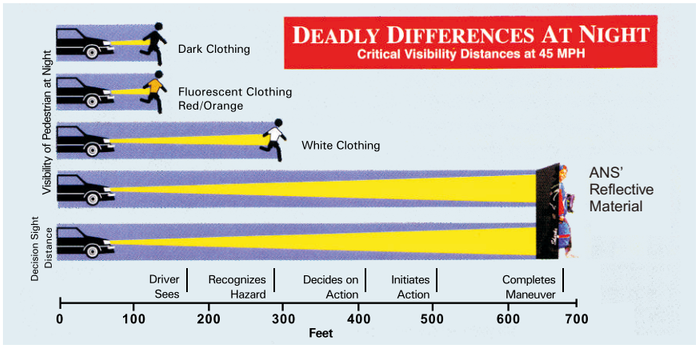
- A material helps your products bright to deliver visibility and safety advantages to wearers.
- A range of products provides versatile material choices to fit your different needs.
- A variety of conversion possibilities allow creative design opportunities ideal for adding image, fashion and stylish to your products.

How does it work?

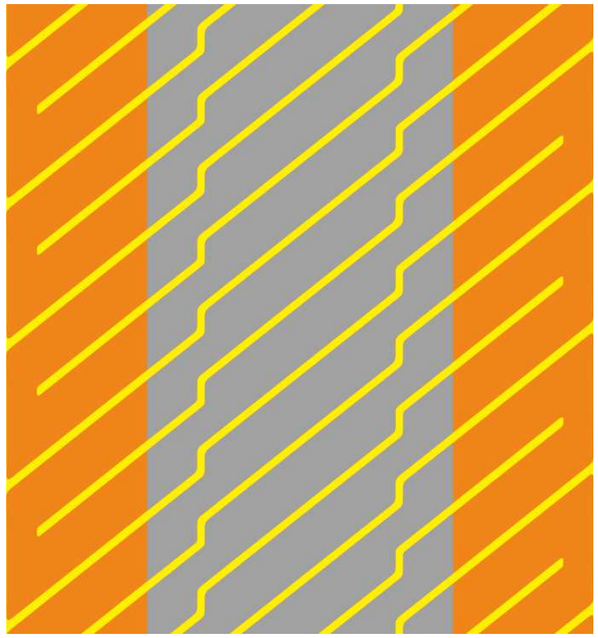
The basic to ANS' reflective material is its reflective feature. ANS' reflective material uses retroreflective technology. It consists of tiny but highly retroreflective glass beads, distributed on a plastic beadbond layer. When light hits on the glass beads, it is first refracted through the surface, then reflected from the back surface of the bead, and returns directly to the light source. Since very little light is scattered, this retroreflection process makes reflective material appears bright to an observer located near light source. In nighttime or in low light conditions, the effect is particularly significant to enhance visibility.

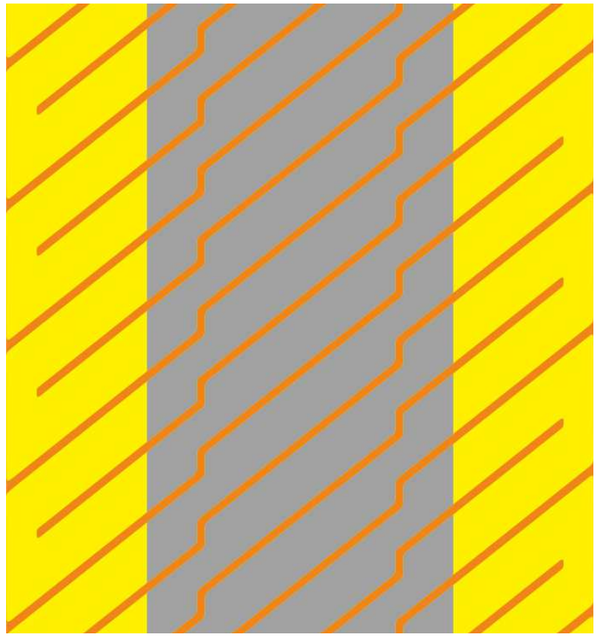


Extensive field trials and experiments have shown that ANS' reflective material is an effective visibility enhancing component that can be seen from a distance. Its reflective function remains high in wet or in rain, and even after repeated laundries.



Individuals wearing apparel, footwear or accessories incorporating with ANS' reflective material will benefit from being noticed easily. Manufacturers putting ANS' reflective material mean adding quality, image and performance values to its products.



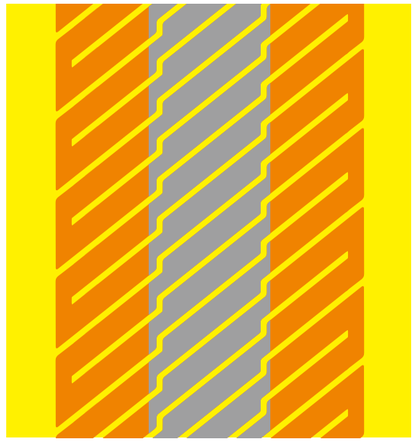


Model	UL-804
Typical Brightness R A *	440
Recommended for	Vest Shirt Softshell
Care Instructions	Home wash 25X
Patent No.	201130120937.X

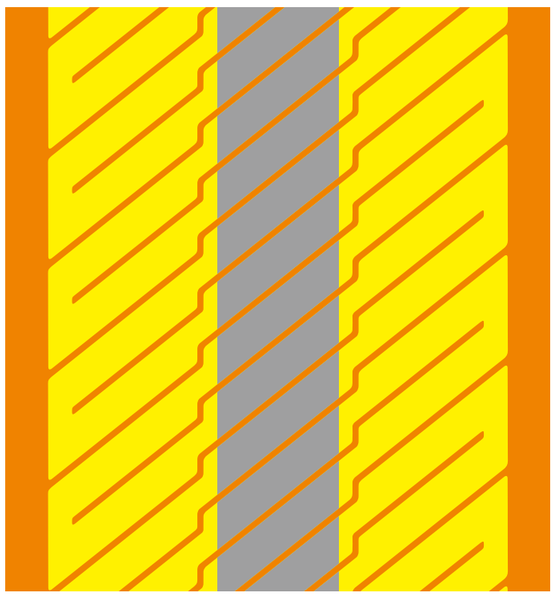
* Measured at 5.0° entrance and 0.2°observation angles

ANS' Breathable Trims

Contrast Color series



Model	UL-804FR-A
Typical Brightness R A *	440
Recommended for	FR Workwear
Care Instructions	Home wash 50X
Patent No.	201130120937.X

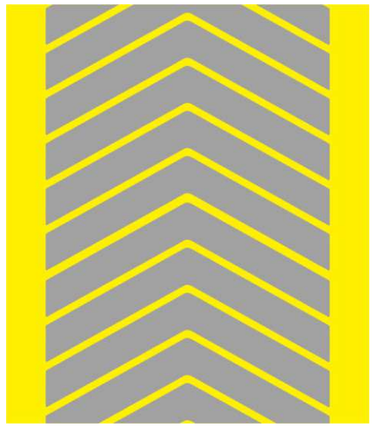


Model	UL-804FR-B
Typical Brightness R A *	440
Recommended for	FR Workwear
Care Instructions	Home wash 50X
Patent No.	201130120937.X

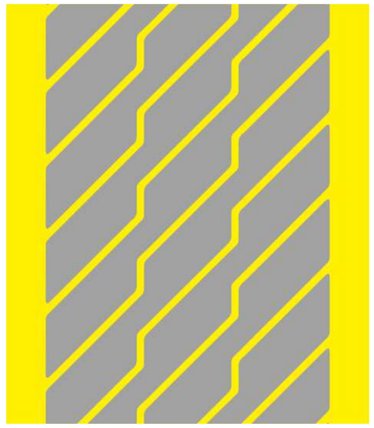
* Measured at 5.0° entrance and 0.2°observation angles

ANS' Breathable Trims

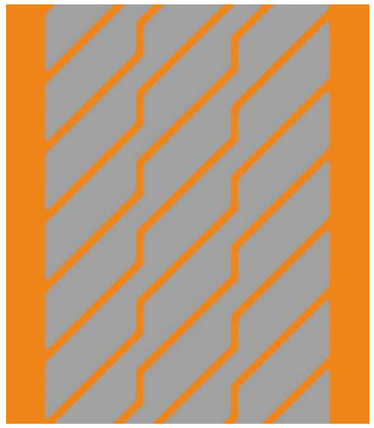
Premium series



Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-201	440	Vest Shirt Softshell Jacket	Home wash 50X	201130084071.1



Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-204	440	Vest Shirt Softshell Jacket	Home wash 50X	201130120937.X



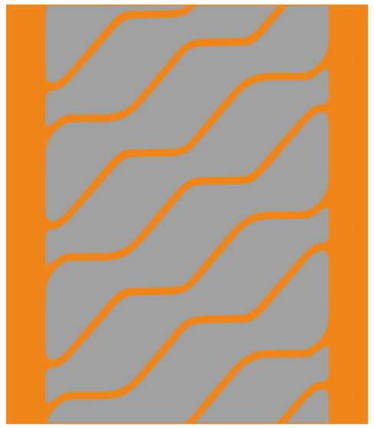
ID

Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-204ID	>400	Workwear	Industrial wash 50X	201130120937.X

* Measured at 5.0° entrance and 0.2°observation angles

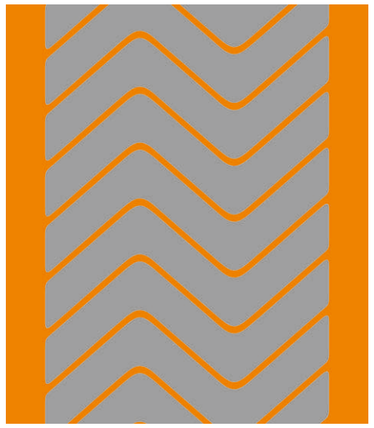
ANS' Breathable Trims

Premium series



Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-208	>400	Vest Shirt Softshell Jacket	Home wash 50X	201130187864.6

Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-209	440	Vest Shirt Softshell Jacket	Home wash 50X	201230423272.4



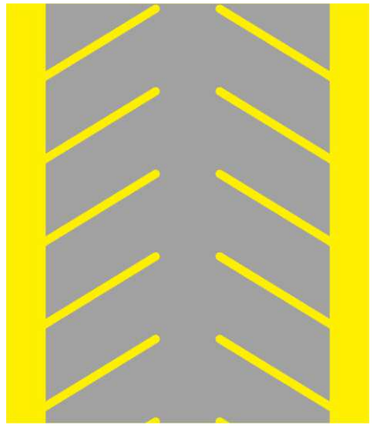
FR

Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-209FR	440	FR Workwear	Home wash 50X	201230423272.4

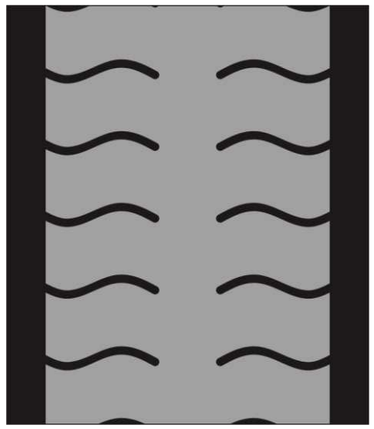
* Measured at 5.0° entrance and 0.2°observation angles

ANS' Breathable Trims

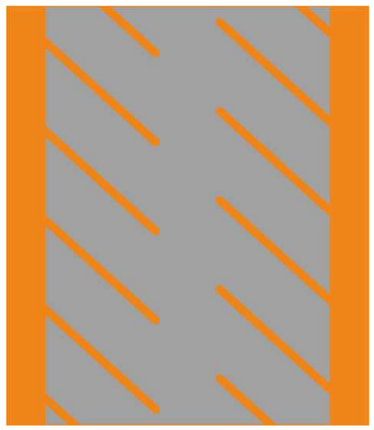
Regular series



Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-301	440	Vest Shirt Softshell	Home wash 25X	200930071743.8



Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-302	440	Vest Shirt Softshell	Home wash 25X	200930071742.3

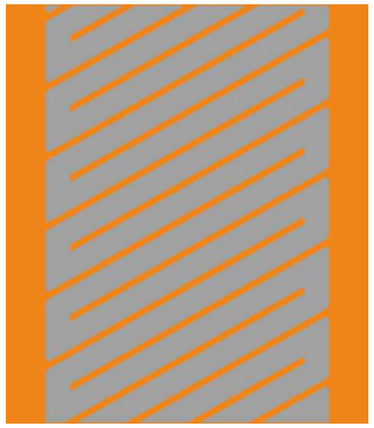


Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-303	440	Vest Shirt Softshell	Home wash 25X	200930186358.8

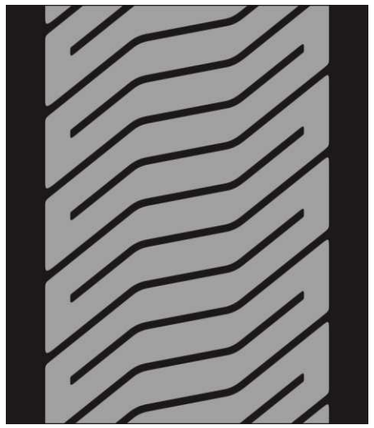
* Measured at 5.0° entrance and 0.2°observation angles

ANS' Breathable Trims

Regular series



Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-321	>400	Vest Shirt Softshell	Home wash 25X	201030110197.7

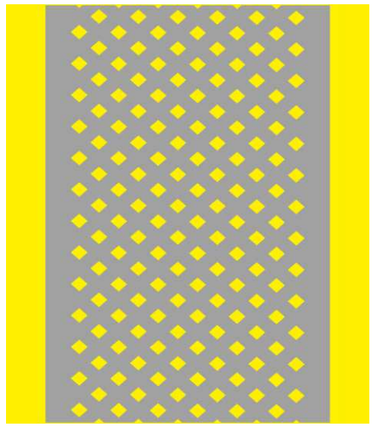


Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-322	>400	Vest Shirt Softshell	Home wash 25X	201030110197.7

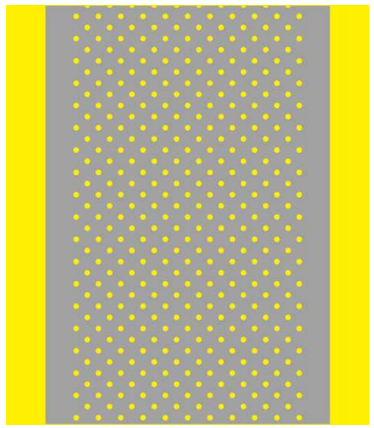
Model	Typical Brightness R A *	Recommended for	Care Instructions	Patent No.
UL-200L/ 300L *	>400	Vest Shirt Softshell	Home wash 25X	201030110197.7

*Series with customized logo

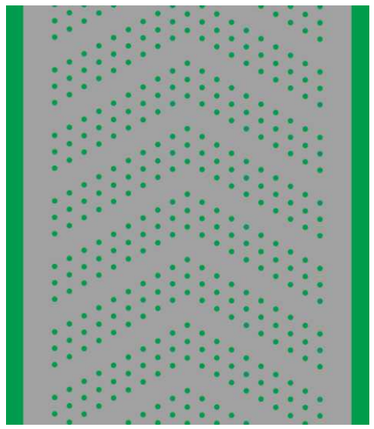
* Measured at 5.0° entrance and 0.2°observation angles



Model	Typical Brightness R A *	Recommended for	Care Instructions
UL-901	>400	Vest Shirt Softshell	Home wash 25X



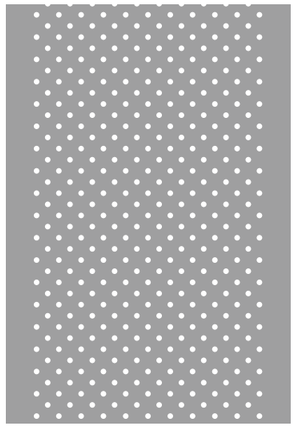
Model	Typical Brightness R A *	Recommended for	Care Instructions
UL-903	>400	Vest Shirt Softshell	Home wash 25X



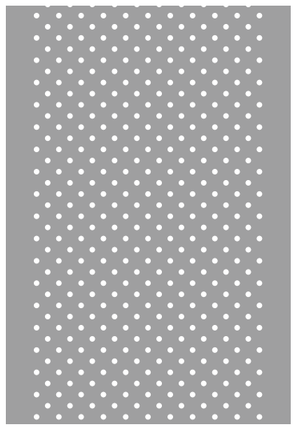
Model	Typical Brightness R A *	Recommended for	Care Instructions
UL-903LV	>400	Vest Shirt Softshell	Home wash 25X

* Measured at 5.0° entrance and 0.2°observation angles

ANS' Breathable Trims
Perforated Series



Model	Typical Brightness R A *	Recommended for	Care Instructions
UL-951	>400	Light weight Workwear Workshirt	Home wash 50X



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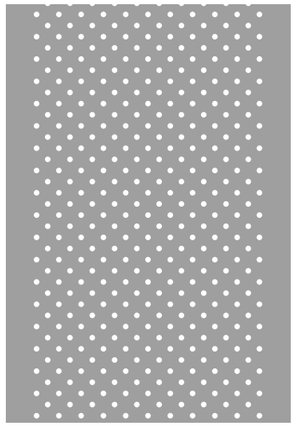
Model	Typical Brightness R A *	Recommended for	Care Instructions
UL-951I	>400	Medium-Heavy weight Workwear Workshirt	Industrial wash 50X



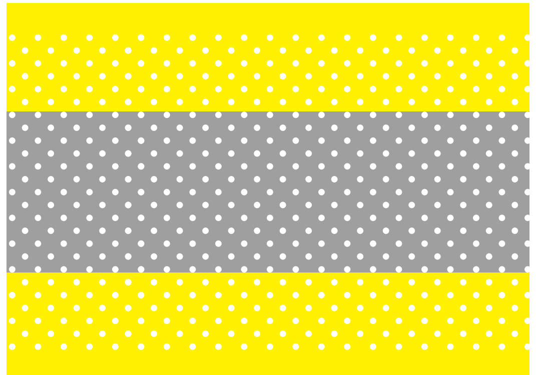
ID FR

Model	Typical Brightness R A *	Recommended for	Care Instructions
UL-951IFR	>400	Flame retardant Workwear Workshirt	Industrial wash 50X

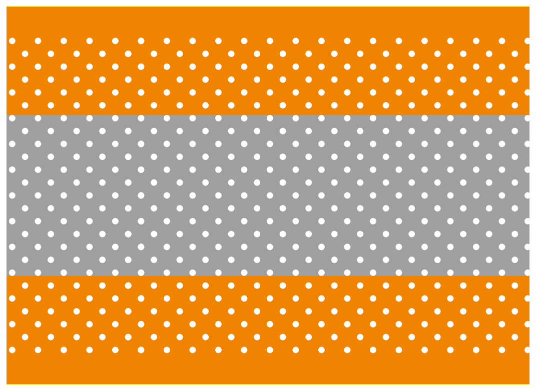
* Measured at 5.0° entrance and 0.2°observation angles

ANS' Breathable Trims

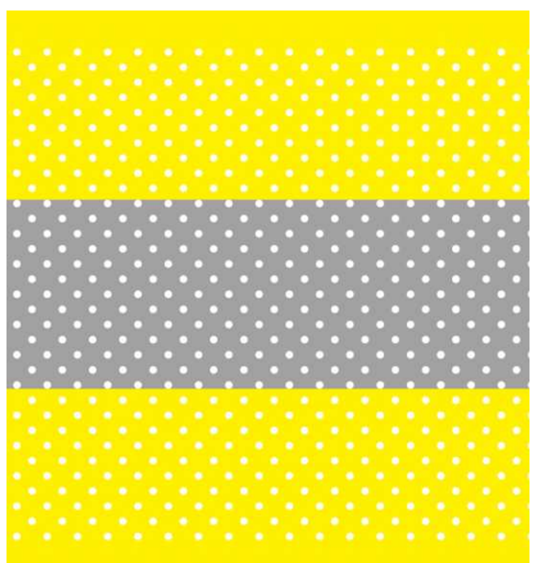
Contrast Color series



Model	Typical Brightness R_A *	Recommended for	Care Instructions
UL-961FR (Nomex)	>400	Workwear	Home wash 25X

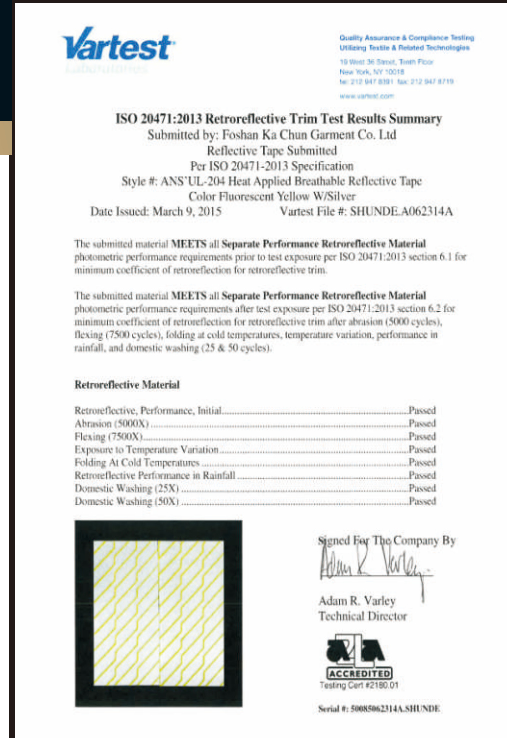


Model	Typical Brightness R_A *	Recommended for	Care Instructions
UL-962FR (Cotton)	>400	Workwear	Home wash 25X



Model	Typical Brightness R_A *	Recommended for	Care Instructions
UL-962FR (Cotton)	>400	Workwear	Home wash 25X

* Measured at 5.0° entrance and 0.2°observation angles



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

ISO 20471:2013 Retroreflective Trim Test Results Summary
Submitted by: Foshan Ka Chun Garment Co. Ltd
Reflective Tape Submitted
Per ISO 20471-2013 Specification
Style #: ANS'UL-204 Heat Applied Breathable Reflective Tape
Color Fluorescent Yellow W/Silver
Date Issued: March 9, 2015 Vartest File #: SHUNDE.A062314A

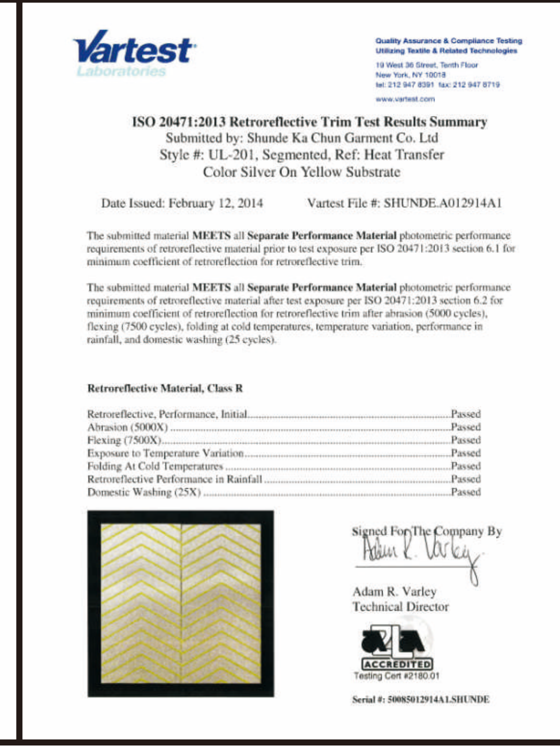
The submitted material **MEETS** all **Separate Performance Retroreflective Material** photometric performance requirements prior to test exposure per ISO 20471:2013 section 6.1 for minimum coefficient of retroreflection for retroreflective trim.

The submitted material **MEETS** all **Separate Performance Retroreflective Material** photometric performance requirements after test exposure per ISO 20471:2013 section 6.2 for minimum coefficient of retroreflection for retroreflective trim after abrasion (5000 cycles), flexing (7500 cycles), folding at cold temperatures, temperature variation, performance in rainfall, and domestic washing (25 & 50 cycles).

Retroreflective Material

Retroreflective, Performance, Initial .... Passed
Abrasion (5000X) .... Passed
Flexing (7500X) .... Passed
Exposure to Temperature Variation .... Passed
Folding At Cold Temperatures .... Passed
Retroreflective Performance in Rainfall .... Passed
Domestic Washing (25X) .... Passed
Domestic Washing (50X) .... Passed

Signed For The Company By
Adam R. Varley
Technical Director
ACCREDITED
Testing Cert #2180.01
Serial #: 50085062314A.SHUNDE



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www.vartest.com

ISO 20471:2013 Retroreflective Trim Test Results Summary
Submitted by: Shunde Ka Chun Garment Co. Ltd
Style #: UL-201, Segmented, Ref: Heat Transfer
Color Silver On Yellow Substrate
Date Issued: February 12, 2014 Vartest File #: SHUNDE.A012914A1

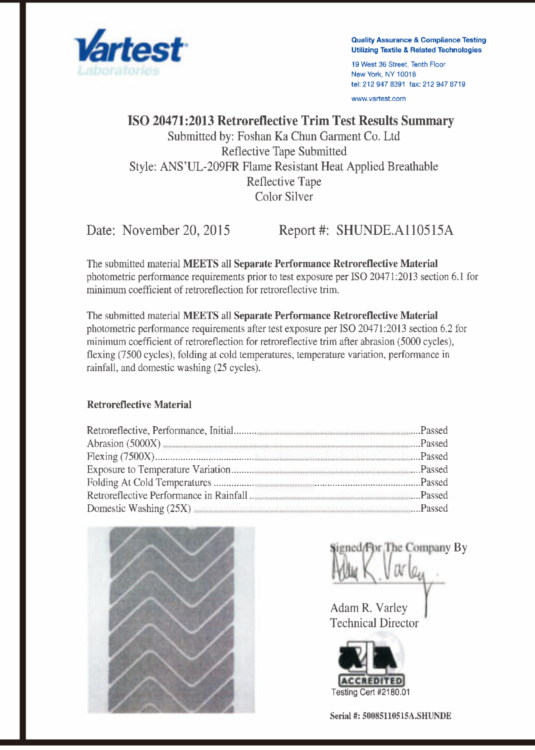
The submitted material **MEETS** all **Separate Performance Material** photometric performance requirements of retroreflective material prior to test exposure per ISO 20471:2013 section 6.1 for minimum coefficient of retroreflection for retroreflective trim.

The submitted material **MEETS** all **Separate Performance Material** photometric performance requirements of retroreflective material after test exposure per ISO 20471:2013 section 6.2 for minimum coefficient of retroreflection for retroreflective trim after abrasion (5000 cycles), flexing (7500 cycles), folding at cold temperatures, temperature variation, performance in rainfall, and domestic washing (25 cycles).

Retroreflective Material, Class R

Retroreflective, Performance, Initial .... Passed
Abrasion (5000X) .... Passed
Flexing (7500X) .... Passed
Exposure to Temperature Variation .... Passed
Folding At Cold Temperatures .... Passed
Retroreflective Performance in Rainfall .... Passed
Domestic Washing (25X) .... Passed

Signed For The Company By
Adam R. Varley
Technical Director
ACCREDITED
Testing Cert #2180.01
Serial #: 50085012914A1.SHUNDE



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New York, NY 10018
tel: 212 947 8391 fax: 212 947 8719
www.vartest.com

ISO 20471:2013 Retroreflective Trim Test Results Summary
Submitted by: Foshan Ka Chun Garment Co. Ltd
Reflective Tape Submitted
Style: ANS'UL-209FR Flame Resistant Heat Applied Breathable
Reflective Tape
Color Silver
Date: November 20, 2015 Report #: SHUNDE.A110515A

The submitted material **MEETS** all **Separate Performance Retroreflective Material** photometric performance requirements prior to test exposure per ISO 20471:2013 section 6.1 for minimum coefficient of retroreflection for retroreflective trim.

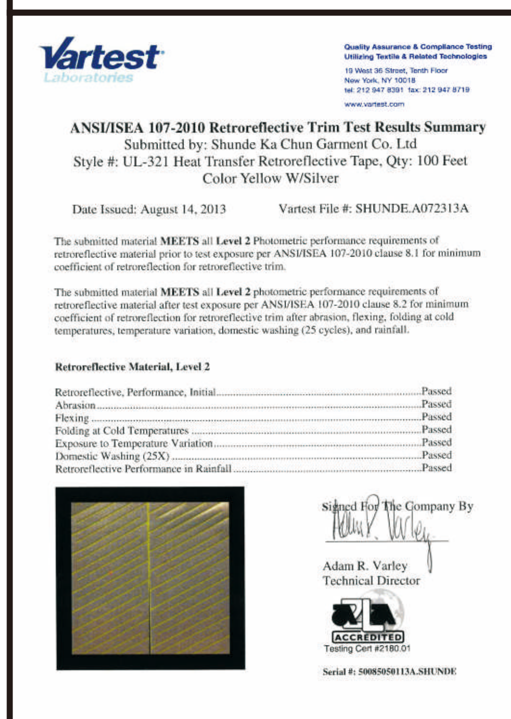
The submitted material **MEETS** all **Separate Performance Retroreflective Material** photometric performance requirements after test exposure per ISO 20471:2013 section 6.2 for minimum coefficient of retroreflection for retroreflective trim after abrasion (5000 cycles), flexing (7500 cycles), folding at cold temperatures, temperature variation, performance in rainfall, and domestic washing (25 cycles).

Retroreflective Material

Retroreflective, Performance, Initial .... Passed
Abrasion (5000X) .... Passed
Flexing (7500X) .... Passed
Exposure to Temperature Variation .... Passed
Folding At Cold Temperatures .... Passed
Retroreflective Performance in Rainfall .... Passed
Domestic Washing (25X) .... Passed

Signed For The Company By
Adam R. Varley
Technical Director
ACCREDITED
Testing Cert #2180.01
Serial #: 50085110515A.SHUNDE

ANS® Patented Technology



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

ANSI/ISEA 107-2010 Retroreflective Trim Test Results Summary
Submitted by: Shunde Ka Chun Garment Co. Ltd
Style #: UL-321 Heat Transfer Retroreflective Tape, Qty: 100 Feet
Color Yellow W/Silver
Date Issued: August 14, 2013 Vartest File #: SHUNDE.A072313A

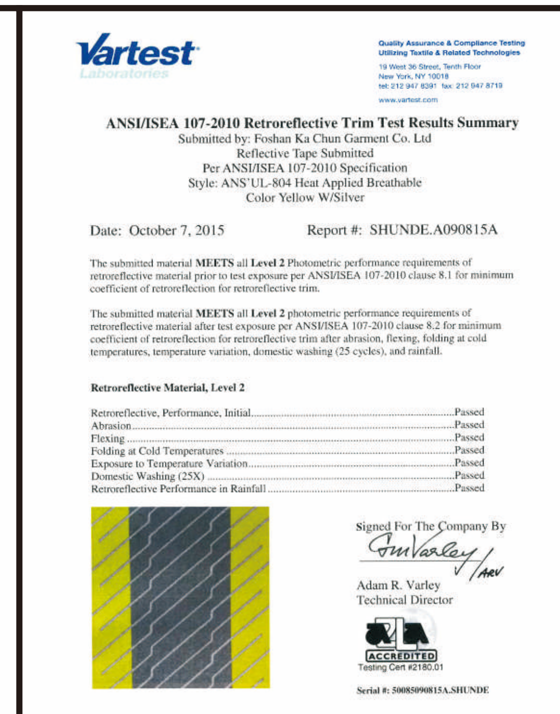
The submitted material **MEETS** all **Level 2** Photometric performance requirements of retroreflective material prior to test exposure per ANSI/ISEA 107-2010 clause 8.1 for minimum coefficient of retroreflection for retroreflective trim.

The submitted material **MEETS** all **Level 2** photometric performance requirements of retroreflective material after test exposure per ANSI/ISEA 107-2010 clause 8.2 for minimum coefficient of retroreflection for retroreflective trim after abrasion, flexing, folding at cold temperatures, temperature variation, domestic washing (25 cycles), and rainfall.

Retroreflective Material, Level 2

Retroreflective, Performance, Initial .... Passed
Abrasion .... Passed
Flexing .... Passed
Folding at Cold Temperatures .... Passed
Exposure to Temperature Variation .... Passed
Domestic Washing (25X) .... Passed
Retroreflective Performance in Rainfall .... Passed

Signed For The Company By
Adam R. Varley
Technical Director
ACCREDITED
Testing Cert #2180.01
Serial #: 50085050113A.SHUNDE



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

ANSI/ISEA 107-2010 Retroreflective Trim Test Results Summary
Submitted by: Foshan Ka Chun Garment Co. Ltd
Reflective Tape Submitted
Per ANSI/ISEA 107-2010 Specification
Style: ANS'UL-804 Heat Applied Breathable
Color Yellow W/Silver
Date: October 7, 2015 Report #: SHUNDE.A090815A

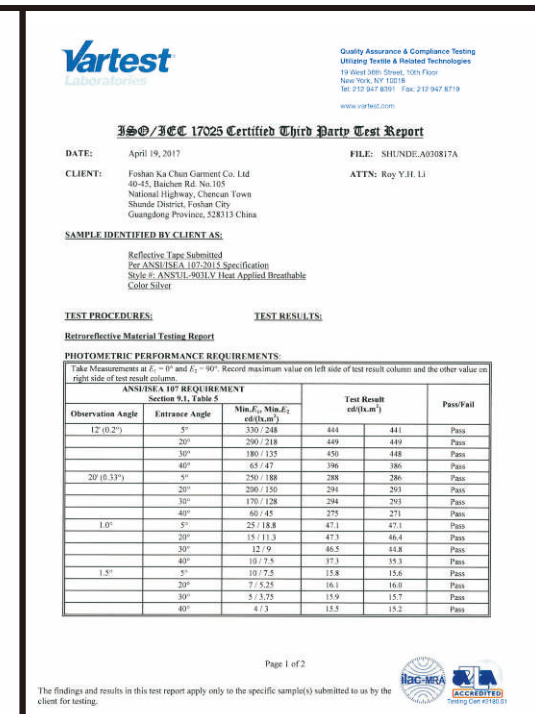
The submitted material **MEETS** all **Level 2** Photometric performance requirements of retroreflective material prior to test exposure per ANSI/ISEA 107-2010 clause 8.1 for minimum coefficient of retroreflection for retroreflective trim.

The submitted material **MEETS** all **Level 2** photometric performance requirements of retroreflective material after test exposure per ANSI/ISEA 107-2010 clause 8.2 for minimum coefficient of retroreflection for retroreflective trim after abrasion, flexing, folding at cold temperatures, temperature variation, domestic washing (25 cycles), and rainfall.

Retroreflective Material, Level 2

Retroreflective, Performance, Initial .... Passed
Abrasion .... Passed
Flexing .... Passed
Folding at Cold Temperatures .... Passed
Exposure to Temperature Variation .... Passed
Domestic Washing (25X) .... Passed
Retroreflective Performance in Rainfall .... Passed

Signed For The Company By
Adam R. Varley
Technical Director
ACCREDITED
Testing Cert #2180.01
Serial #: 50085090815A.SHUNDE



Vartest Laboratories

Quality Assurance & Compliance Testing Utilizing Textile & Related Technologies
19 West 36th Street, 10th Floor
New York, NY 10018
Tel: 212 947 8391 Fax: 212 947 8719
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ISO/IEC 17025 Certified Third Party Test Report

DATE: April 19, 2017 **FILE:** SHUNDE.A030817A

CLIENT: Foshan Ka Chun Garment Co. Ltd
40-45, Baichen Rd. No.105
National Highway, Chencun Town
Shunde District, Foshan City
Guangdong Province, 528313 China
ATTN: Roy Y.H. Li

SAMPLE IDENTIFIED BY CLIENT AS:

Reflective Tape Submitted
Per ANSI/ISEA 107-2015 Specification
Style #: ANS'UL-903LV Heat Applied Breathable
Color Silver

TEST PROCEDURES: **TEST RESULTS:**

Retroreflective Material Testing Report

PHOTOMETRIC PERFORMANCE REQUIREMENTS:

Take Measurements at $E_1 = 0°$ and $E_2 = 90°$. Record maximum value on left side of test result column and the other value on right side of test result column.

ANSI/ISEA 107 REQUIREMENT Section 9.1, Table 5			Test Result cd/(lx.m²)		Pass/Fail
Observation Angle	Entrance Angle	Min. E_1, Min. E_2 cd/(lx.m²)			
12' (0.2°)	5°	330 / 248	444	441	Pass
	20°	290 / 218	449	449	Pass
	30°	180 / 135	450	448	Pass
	40°	65 / 47	396	386	Pass
20' (0.33°)	5°	250 / 188	288	286	Pass
	20°	200 / 150	294	293	Pass
	30°	170 / 128	294	293	Pass
	40°	60 / 45	275	271	Pass
1.0°	5°	25 / 18.8	47.1	47.1	Pass
	20°	15 / 11.3	47.3	46.4	Pass
	30°	12 / 9	46.5	44.8	Pass
	40°	10 / 7.5	37.3	35.3	Pass
1.5°	5°	10 / 7.5	15.8	15.6	Pass
	20°	7 / 5.25	16.1	16.0	Pass
	30°	5 / 3.75	15.9	15.7	Pass
	40°	4 / 3	15.5	15.2	Pass

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The findings and results in this test report apply only to the specific sample(s) submitted to us by the client for testing.

ilac-MRA ACCREDITED Testing Cert #2180.01