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TEST REPORT



中国认可
国际互认
检测
TESTING
CNAS L0220

Number: GZHT91213656

Date: Sep 21, 2023

Applicant: NANJING MINGXIN REFLECTIVE MATERIALS CO.
,LTD.
2ND FLOOR, BUILDING 6, CHINA
OVERSEAS ZHIHUI PORT, NO. 1111,
FUYING ROAD, CHUNHUA STREET, JIANGNING
DISTRICT, NANJING CHINA
Attn: ZHANG QIANG

Sample Description:

One (1) piece of submitted sample said to be 5cm Reflective tape for sewing (polyester, cotton).

Standard : BS EN ISO 20471:2013+A1:2016
Colour : Gray
Style No./Name : MX-LTN03
Manufacturer : Nanjing Mingxin Reflective Materials. Co. Ltd.
Country Of Original : China
Date Received/Date Test Started: Sep 11, 2023
Date Final Information Confirmed/ --/--
Date Payment Received:

Test Result Please Refer To Attached Page(S).

Should you have any query on this report, you may contact at gzfootwear@intertek.com

Authorized By:
For Intertek Testing Services Shenzhen Ltd.
Guangzhou Branch

Guiliang Dong
Senior Lab Manager



Page 1 Of 10

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检验检测专用章

SHENZHEN BRANCH

(6)

1 Retroreflective Performance Of New Materials (Separate Performance Retroreflective Material)
(BS EN ISO 20471:2013+A1:2016, 6.1 & CIE 54.2:1982)

Coefficient Of Retroreflective Test Before Test Exposures:

x-Direction (Horizontal: $\varepsilon=0^\circ$)				
Observation Angle	Entrance Angle β_1 ($\beta_2=0$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
12'	5°	619 cd/(lx·m ²)	Min. 330 cd/(lx·m ²) (*)	Pass
12'	20°	625 cd/(lx·m ²)	Min. 290 cd/(lx·m ²) (*)	Pass
12'	30°	624 cd/(lx·m ²)	Min. 180 cd/(lx·m ²) (*)	Pass
12'	40°	559 cd/(lx·m ²)	Min. 65 cd/(lx·m ²) (*)	Pass
20'	5°	432 cd/(lx·m ²)	Min. 250 cd/(lx·m ²) (*)	Pass
20'	20°	458 cd/(lx·m ²)	Min. 200 cd/(lx·m ²) (*)	Pass
20'	30°	457 cd/(lx·m ²)	Min. 170 cd/(lx·m ²) (*)	Pass
20'	40°	428 cd/(lx·m ²)	Min. 60 cd/(lx·m ²) (*)	Pass
1°	5°	38.3 cd/(lx·m ²)	Min. 25 cd/(lx·m ²) (*)	Pass
1°	20°	40.9 cd/(lx·m ²)	Min. 15 cd/(lx·m ²) (*)	Pass
1°	30°	41.4 cd/(lx·m ²)	Min. 12 cd/(lx·m ²) (*)	Pass
1°	40°	37.4 cd/(lx·m ²)	Min. 10 cd/(lx·m ²) (*)	Pass
1° 30'	5°	34.7 cd/(lx·m ²)	Min. 10 cd/(lx·m ²) (*)	Pass
1° 30'	20°	32.6 cd/(lx·m ²)	Min. 7 cd/(lx·m ²) (*)	Pass
1° 30'	30°	26.7 cd/(lx·m ²)	Min. 5 cd/(lx·m ²) (*)	Pass
1° 30'	40°	33.3 cd/(lx·m ²)	Min. 4 cd/(lx·m ²) (*)	Pass

Retroreflective Performance Of New Materials (Separate Performance Retroreflective Material) (Cont)

y-Direction (Vertical: $\varepsilon=90^\circ$)				
Observation Angle	Entrance Angle β_1 ($\beta_2=0$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
12'	5°	614 cd/(lx·m ²)	Min. 330 cd/(lx·m ²) (*)	Pass
12'	20°	617 cd/(lx·m ²)	Min. 290 cd/(lx·m ²) (*)	Pass
12'	30°	618 cd/(lx·m ²)	Min. 180 cd/(lx·m ²) (*)	Pass
12'	40°	538 cd/(lx·m ²)	Min. 65 cd/(lx·m ²) (*)	Pass
20'	5°	432 cd/(lx·m ²)	Min. 250 cd/(lx·m ²) (*)	Pass
20'	20°	454 cd/(lx·m ²)	Min. 200 cd/(lx·m ²) (*)	Pass
20'	30°	455 cd/(lx·m ²)	Min. 170 cd/(lx·m ²) (*)	Pass
20'	40°	423 cd/(lx·m ²)	Min. 60 cd/(lx·m ²) (*)	Pass
1°	5°	37.6 cd/(lx·m ²)	Min. 25 cd/(lx·m ²) (*)	Pass
1°	20°	40.1 cd/(lx·m ²)	Min. 15 cd/(lx·m ²) (*)	Pass
1°	30°	41.7 cd/(lx·m ²)	Min. 12 cd/(lx·m ²) (*)	Pass
1°	40°	35.9 cd/(lx·m ²)	Min. 10 cd/(lx·m ²) (*)	Pass
1° 30'	5°	32.8 cd/(lx·m ²)	Min. 10 cd/(lx·m ²) (*)	Pass
1° 30'	20°	30.2 cd/(lx·m ²)	Min. 7 cd/(lx·m ²) (*)	Pass
1° 30'	30°	29.6 cd/(lx·m ²)	Min. 5 cd/(lx·m ²) (*)	Pass
1° 30'	40°	32.8 cd/(lx·m ²)	Min. 4 cd/(lx·m ²) (*)	Pass

Remark: * = If A Sample Is Defined As Orientation Sensitive In Orientation Sensitive Check Test, The Coefficient Of Retroflection Of This Material At One Of The Two Rotation Angles Shall Comply With The Minimum Requirement, The Coefficient Of Retroflection At The Other Rotation Angle Shall Comply With Not Less Than 75% Of The Minimum Requirement.

Orientation Sensitive Check Test (For Original Material)			
Sample Direction	Observation Angle	Entrance Angle 5°	Comment
x-Direction [Horizontal]	12'	619 cd/(lx·m ²)	If The Difference Between The X And Y Values Is Less Than 15% The Sample Is Not Considered Orientation Sensitive.
y-Direction [Vertical]	12'	614 cd/(lx·m ²)	
Difference Between x & y Direction	5 cd/(lx·m ²)		
Difference Expressed As A Percentage (%)	0.8%		Non-sensitive

- 2 Retroreflection After Abrasion (BS EN ISO 20471:2013+A1:2016, 7.3 & ISO 12947-2:1998/Cor.1:2002, Pressure: 9 kPa, 5000 Cycles)

Test Exposure	Test Method
Abrasion	ISO 12947-2:1998/Cor.1:2002, Pressure: 9 kPa, 5000 Cycles

x-Direction (Horizontal: $\epsilon=0^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	599 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

y-Direction (Vertical: $\epsilon=90^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	601 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

Remark:

* = If A Sample Is Defined As Orientation Sensitive In Orientation Sensitive Check Test, The Coefficient Of Retroreflection Of This Material At One Of The Two Rotation Angles Shall Comply With The Minimum Requirement, The Coefficient Of Retroreflection At The Other Rotation Angle Shall Comply With Not Less Than 75% Of The Minimum Requirement.

3 Retroreflection After Flexing (BS EN ISO 20471:2013+A1:2016, 6.2 & 7.3 & ISO 7854:1995)

Test Exposure	Test Method
Flexing	ISO 7854:1995, Method A, 7500 Cycles

x-Direction (Horizontal: $\epsilon=0^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	566 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

y-Direction (Vertical: $\epsilon=90^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	568 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

Remark:

* = If A Sample Is Defined As Orientation Sensitive In Orientation Sensitive Check Test, The Coefficient Of Retroreflection Of This Material At One Of The Two Rotation Angles Shall Comply With The Minimum Requirement, The Coefficient Of Retroreflection At The Other Rotation Angle Shall Comply With Not Less Than 75% Of The Minimum Requirement.

4 Retroreflection After Folding At Cold Temperatures (BS EN ISO 20471:2013+A1:2016, 6.2 & 7.3 & ISO 4675:1990, $(-20 \pm 2)^\circ\text{C}$)

Test Exposure	Test Method
Folding At Cold Temperatures	ISO 4675:1990, $-20 \pm 2^\circ\text{C}$

x-Direction (Horizontal: $\epsilon=0^\circ$)					
Material Type	Observation Angle	Entrance angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	584 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

y-Direction (Vertical: $\epsilon=90^\circ$)					
Material Type	Observation Angle	Entrance angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	575 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

Remark:

* = If A Sample Is Defined As Orientation Sensitive In Orientation Sensitive Check Test, The Coefficient Of Retroreflection Of This Material At One Of The Two Rotation Angles Shall Comply With The Minimum Requirement, The Coefficient Of Retroreflection At The Other Rotation Angle Shall Comply With Not Less Than 75% Of The Minimum Requirement.

5 Retroreflection After Exposure To Temperature Variation (BS EN ISO 20471:2013+A1:2016, 6.2 & 7.3 & 7.4.4)

Test Exposure	Test Method
Temperature Variation	a) For 12 H At $(50 \pm 2)^{\circ}\text{C}$; Immediately Followed By b) 20 H At $-(30 \pm 2)^{\circ}\text{C}$; Immediately Followed By c) For At Least 2 H At $(20 \pm 2)^{\circ}\text{C}$ And $(65 \pm 5)\%$ Relative Humidity

x-Direction (Horizontal: $\varepsilon=0^{\circ}$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^{\circ}$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	577 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

y-Direction (Vertical: $\varepsilon=90^{\circ}$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^{\circ}$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	586 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

Remark:

* = If A Sample Is Defined As Orientation Sensitive In Orientation Sensitive Check Test, The Coefficient Of Retroreflection Of This Material At One Of The Two Rotation Angles Shall Comply With The Minimum Requirement, The Coefficient Of Retroreflection At The Other Rotation Angle Shall Comply With Not Less Than 75% Of The Minimum Requirement.

- 6 Retroreflection After Washing & Dry-Cleaning (BS EN ISO 20471:2013+A1:2016, 6.2 & 7.3 & 7.5.2 (Washing) & 7.5.3 (Dry Cleaning))

Wash Condition:	
Washing Standard:	ISO 6330:2012
Machine:	Type A
Reagent:	Reference Detergent 3
Washing Procedure:	6N
Bleaching Procedure:	Do Not Bleach
Drying Procedure:	Tumble Drying Possible Normal Temperature; Exhaust Temperature Max. 80°C
Ironing Procedure:	Do Not Iron
Professional Textile Care Procedure:	-
Number Of Cycles:	50

x-Direction (Horizontal: $\epsilon=0^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	103 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

y-Direction (Vertical: $\epsilon=90^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	107 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

Retroreflection After Washing & Dry-Cleaning (Cont)

Dry-Cleaning	
Washing Standard	ISO 3175-2:2017
Machine	Realstar R310
Reagent	Tetrachloroethene
Professional Textile Care Procedure	Professional Dry Cleaning In Tetrachloroethene And All Solvents Listed For The Symbol F Normal Process
Number Of Cycles	30

x-Direction (Horizontal: $\epsilon=0^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	598 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

y-Direction (Vertical: $\epsilon=90^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	597 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

Remark:

* = If A Sample Is Defined As Orientation Sensitive In Orientation Sensitive Check Test, The Coefficient Of Retroreflection Of This Material At One Of The Two Rotation Angles Shall Comply With The Minimum Requirement, The Coefficient Of Retroreflection At The Other Rotation Angle Shall Comply With Not Less Than 75% Of The Minimum Requirement.

Dry-Cleaning Test In The Report Is Not Included In The CNAS Accreditation Schedule For Our Laboratory.

7 Retroreflection After Rainfall (BS EN ISO 20471:2013+A1:2016, 7.3 & 7.4.5)

Test Exposure	Test Method
Rainfall	BS EN ISO 20471:2013+A1:2016, Annex C

x-Direction (Horizontal: $\epsilon=0^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	409 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

y-Direction (Vertical: $\epsilon=90^\circ$)					
Material Type	Observation Angle	Entrance Angle β_1 ($\beta_2 = 0^\circ$)	Coefficient Of Retroreflection	Requirement	Pass/Fail
Retroreflective Material	12'	5°	416 cd/(lx·m ²)	Min. 100 cd/(lx·m ²) (*)	Pass

Remark:

* = If A Sample Is Defined As Orientation Sensitive In Orientation Sensitive Check Test, The Coefficient Of Retroreflection Of This Material At One Of The Two Rotation Angles Shall Comply With The Minimum Requirement, The Coefficient Of Retroreflection At The Other Rotation Angle Shall Comply With Not Less Than 75% Of The Minimum Requirement.



End Of Report

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Remark:

1. As Requested by the Applicant, For Details Refer to Attached Page (s).
2. All the tested item are tested under the standard condition.
3. The report is valid with commission test only for the test samples in the case of delivering samples by clients.