

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample Description : Poly/Cotton Tape
Color : Silver grey

Proposed Care Instruction : -

Test Performed : Selected test(s) as requested by applicant
* * * * *

Sample Receiving Date : Feb 26, 2019
Testing Period : Mar 04, 2019 - Mar 14, 2019
Test Result(s) : Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. For further details, please refer to the following page(s).

Signed for and on behalf of
SGS-CSTC Standards Technical Services (Shanghai) Co. Ltd



Hattie Chen
Account Executive

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Test Result

High-visibility clothing – Test methods and requirements

(EN ISO 20471: 2013+A1: 2016)

Sections 6.1 and 7.3 Retroreflection for New Separate Performance Retroreflective Material

<u>Entrance Angle</u>	<u>Observation Angle</u>	<u>Measured value (cd/(lx. m²))</u>	<u>Orientation Sensitive</u>	<u>Minimum Requirement (cd/(lx. m²))</u>	<u>Result (Pass/Fail)</u>
5°	12° ↙	479	No	330	Pass
	20° ↙	346	No	250	Pass
	1°	55.3	No	25	Pass
	1°30' ↙	30.1	No	10	Pass
20°	12° ↙	507	No	290	Pass
	20° ↙	366	No	200	Pass
	1°	56.2	No	15	Pass
	1°30' ↙	28.4	No	7	Pass
30°	12° ↙	529	No	180	Pass
	20° ↙	379	No	170	Pass
	1°	58.2	No	12	Pass
	1°30' ↙	30.1	No	5	Pass
40°	12° ↙	484	No	65	Pass
	20° ↙	361	No	60	Pass
	1°	50.7	No	10	Pass
	1°30' ↙	31.9	No	4	Pass

(#)Remark:

- When measured at two rotation angles $\epsilon = 0^\circ$ and $\epsilon = 90^\circ$, materials having coefficients of retroreflection that differ by more than 15% are defined as orientation sensitive.
- Orientation-sensitive material shall comply with the minimum requirements for the coefficient of retroreflection stated in Table 4 of EN ISO 20471 at one of the two rotation angles. The coefficient of retroreflection shall be not less than 75% of the values stated in Table 4 (Minimum coefficient of retroreflection for separate performance retroreflective material) at the other rotation angle.



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Table 4 – Minimum coefficient of retroreflection in cd/(lx.m²) for separate performance retroreflective material

Observation angle	Entrance angle β_1 ($\beta_2 = 0$)			
	5°	20°	30°	40°
12'	330	290	180	65
20'	250	200	170	60
1°	25	15	12	10
1°30'	10	7	5	4

Retroreflection of Separate Performance Retroreflective Materials
Sections 6.2, 7.3 and 7.4.1 Retroreflection after Abrasion

Entrance Angle	Observation Angle	Measured value (cd/(lx.m ²))	Orientation-Sensitive	Minimum Requirement (cd/(lx.m ²))	Result
5°	12'	485	No	100	Pass

Sections 6.2, 7.3 and 7.4.2 Retroreflection after Flexing

Entrance Angle	Observation Angle	Measured value (cd/(lx.m ²))	Orientation-Sensitive	Minimum Requirement (cd/(lx.m ²))	Result
5°	12'	476	No	100	Pass

Sections 6.2, 7.3 and 7.4.3 Retroreflection after Folding at cold temperatures

Entrance Angle	Observation Angle	Measured value (cd/(lx.m ²))	Orientation-Sensitive	Minimum Requirement (cd/(lx.m ²))	Result
5°	12'	508	No	100	Pass

Sections 6.2, 7.3 and 7.4.4 Retroreflection after Temperature Variation

Entrance Angle	Observation Angle	Measured value (cd/(lx.m ²))	Orientation-Sensitive	Minimum Requirement (cd/(lx.m ²))	Result
5°	12'	481	No	100	Pass

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Sections 6.2, 7.3 and 7.4.5 Retroreflection under the influence of rainfall

<u>Entrance Angle</u>	<u>Observation Angle</u>	<u>Measured value (cd/(lx.m²))</u>	<u>Orientation-Sensitive</u>	<u>Minimum Requirement (cd/(lx.m²))</u>	<u>Result</u>
5°	12'	232	No	100	Pass

Sections 6.2, 7.3 and 7.5.2 Retroreflection after Washing

After 50 washes

Wash procedure:(EU) ISO 6330: 2012; Washing program No. 6N; Using horizontal axis, front-loading type machine: Machine wash at 60 degree C, with 2kg total dry mass (type III (100% polyester) ballast+ specimen) and 'ECE(A)' detergent+ Sodium Perborate+ TAED, line dry.

<u>Entrance Angle</u>	<u>Observation Angle</u>	<u>Measured value (cd/(lx.m²))</u>	<u>Orientation-Sensitive</u>	<u>Minimum Requirement (cd/(lx.m²))</u>	<u>Result</u>
5°	12'	281	No	100	Pass

Sections 6.2, 7.3 and 7.5.3 Retroreflection after Dry cleaning

After 5 dry cleaning

Dry cleaning procedure in accordance with ISO 3175-2:2010: Normal materials.

<u>Entrance Angle</u>	<u>Observation Angle</u>	<u>Measured value (cd/(lx.m²))</u>	<u>Orientation-Sensitive</u>	<u>Minimum Requirement (cd/(lx.m²))</u>	<u>Result</u>
5°	12'	439	No	100	Pass

*** End of Report ***



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