

GUANGDONG YOUNGUANG REFLECTIVE MATERIAL CO., LTD
NO.3 OF YIHE 2ND ROAD, LISHUI TOWN, NANHAI DISTRICT,
FOSHAN, GUANGDONG, CHINA

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

Sample Description : (A)M001-A102 High Reflective Polyester Farbic

Sample Color : (A)Grey

Composition : (A)30% Polyester 30% Coating 30% glass beads 10% others

Style No. : NA

Proposed Care Instruction : Max.Cleaning Cycles:25

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

Sample Receiving Date : May 06, 2021

Testing Period : May 06, 2021 - May 13, 2021

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 Testing Center

Sara Guo

Sara Guo (Account Executive)

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Test Result

Personal Protective Equipment - High-visibility clothing - Test methods and requirements

EN ISO 20471:2013+A1:2016

Clause 6.1 Retroreflection for Retroreflective Material

(EN ISO 20471:2013+A1: 2016 Clause 7.3)

Separate Performance Retroreflective Material

Entrance Angle	Observation Angle	Measured value (cd/(lx. m ²))		Orientation n Sensitive	Minimum Requirement (cd/(lx. m ²))			Result (Pass/Fail)
		0°	90°		Orientation Sensitive		Non-Orientation Sensitive	
5°	12'	442	438	No	330	247.5	330	Pass
	20'	280	274	No	250	187.5	250	Pass
	1°	46.2	44.9	No	25	18.75	25	Pass
	1°30'	10.08	10.03	No	10	7.5	10	Pass
20°	12'	462	447	No	290	217.5	290	Pass
	20'	287	277	No	200	150	200	Pass
	1°	49.2	47.9	No	15	11.25	15	Pass
	1°30'	7.05	7.01	No	7	5.25	7	Pass
30°	12'	466	450	No	180	135	180	Pass
	20'	289	279	No	170	127.5	170	Pass
	1°	49.3	48.5	No	12	9	12	Pass
	1°30'	6.85	6.66	No	5	3.75	5	Pass
40°	12'	445	430	No	65	48.75	65	Pass
	20'	281	272	No	60	45	60	Pass
	1°	46.9	44.9	No	10	7.5	10	Pass
	1°30'	6.68	6.46	No	4	3	4	Pass

(#)Remark:

- When measured at two rotation angles $\varepsilon = 0^\circ$ and $\varepsilon = 90^\circ$, 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.

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



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Clause 6.2 Retroreflection after Abrasion

(Clause 7.3&7.4.1, ISO 12947-2:2016, Martindale Wear & Abrasion Tester: 9kPa Pressure, 5000cycles)

Separate Performance Retroreflective Material

Entrance Angle	Observation Angle	Measured value (cd/(lx. m ²))		Orientation Sensitive	Minimum Requirement (cd/(lx. m ²))			Result (Pass/Fail)
		0°	90°		Orientation Sensitive		Non-orientation Sensitive	
5°	12'	420	416	No	100	75	100	Pass

Clause 6.2 Retroreflection after Flexing

(Clause 7.3&7.4.2, ISO 7854:1995, method A, 7500cycles)

Separate Performance Retroreflective Material

Entrance Angle	Observation Angle	Measured value (cd/(lx. m ²))		Orientation Sensitive	Minimum Requirement (cd/(lx. m ²))			Result (Pass/Fail)
		0°	90°		Orientation Sensitive		Non-orientation Sensitive	
5°	12'	427	423	No	100	75	100	Pass

Clause 6.2 Retroreflection after Folding at cold temperatures

(Clause 7.3&7.4.3, ISO 4675:2017, (-20±2) °C)

Separate Performance Retroreflective Material

Entrance Angle	Observation Angle	Measured value (cd/(lx. m ²))		Orientation Sensitive	Minimum Requirement (cd/(lx. m ²))			Result (Pass/Fail)
		0°	90°		Orientation Sensitive		Non-orientation Sensitive	
5°	12'	427	420	No	100	75	100	Pass

Clause 6.2 Retroreflection after Temperature Variation

(EN ISO 20471:2013+A1: 2016 Clause 7.3&7.4.4)

Separate Performance Retroreflective Material

Entrance Angle	Observation Angle	Measured value (cd/(lx. m ²))		Orientation Sensitive	Minimum Requirement (cd/(lx. m ²))		Result (Pass/Fail)
		0°	90°		Orientation Sensitive	Non-orientation Sensitive	
5°	12'	425	419	No	100	75 100	Pass

Clause 6.2 Retroreflection under the influence of rainfall

(EN ISO 20471:2013+A1: 2016 Clause 7.3&7.4.5&Annex C)

Separate Performance Retroreflective Material

Entrance Angle	Observation Angle	Measured value (cd/(lx. m ²))		Minimum Requirement (cd/(lx. m ²))	Result (Pass/Fail)
		0°	90°		
5°	12'	187	180	100	Pass



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Clause 6.2 Retroreflection after Washing

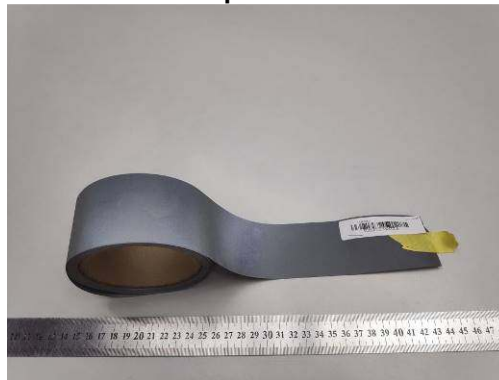
(Clause 7.3&7.5.2, ISO 6330:2012: Using horizontal axis, front-loading type machine; Procedure No.6N, Machine Wash At 60°C; with 2kg total dry mass (Type III (100% Polyester) Ballast+Specimen) and 'ECE(A)' detergent+ Sodium Perborate+ TAED, Tumble Dry Normal, Less Than 80°C.)

After 25 washes

Separate Performance Retroreflective Material

Entrance Angle	Observation Angle	Measured value (cd/(lx. m ²))		Orientation Sensitive	Minimum Requirement (cd/(lx. m ²))			Result (Pass/Fail)
		0°	90°		Orientation Sensitive		Non-orientation Sensitive	
5°	12'	340	337	No	100	75	100	Pass

Sample Photo



End of Report



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