



Quality Assurance & Compliance Testing
Utilizing Textile & Related Technologies

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Third Party Certificate of Test (ISO 20471:2013/A1:2016) RETROREFLECTIVE MATERIAL COMPLIANCE

Name: High Luster's Industrial Wash Heat Transfer Film
Style#: D001 GS
Color Silver

Date: November 30, 2022

Test Report #:

The submitted retroreflective trim **MEETS** all Separate Performance Retroreflective Material requirements of retroreflective material PRIOR to test exposure per ISO 20471:2013/A1:2016.

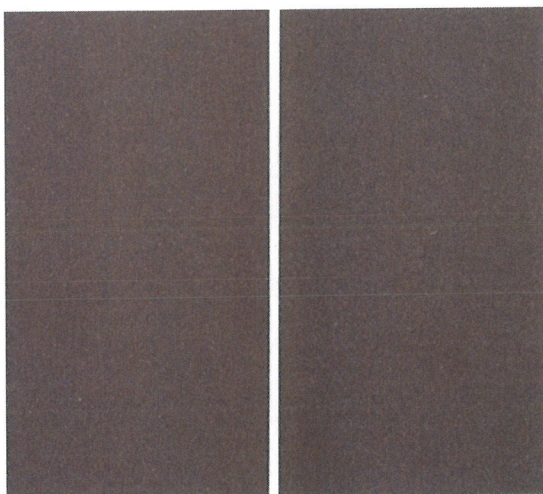
The submitted retroreflective trim **MEETS** all Separate Performance Retroreflective Material requirements of retroreflective material AFTER test exposure per ISO 20471:2013/A1:2016.

All of the above tests and evaluations were performed in accordance with ISO/IEC 17025 Quality Systems.

Certifications of background and other garment material characteristics are not implied by this certificate or by the original report.

Certificate authorized by:


Joseph Lin
Laboratory Manager



This certification applies to the particular sample tested and to the specific tests carried out as dated and detailed in the report referenced above. It does not signify any measure of approval, control, supervision, or surveillance by Vartest Laboratories Inc. to this or any related product. Unless otherwise specified, all compliance statements are simple acceptance.

ISO 20471:2013/A1:2016 Retroreflective Trim Test Results Summary

Name: High Luster's Industrial Wash Heat Transfer Film
Style#: D001 GS
Color Silver

Date: November 30, 2022

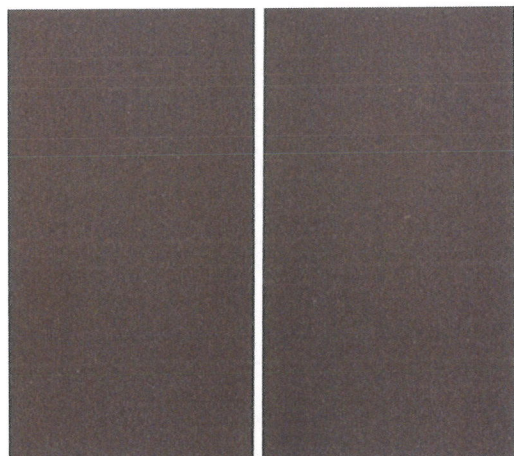
Test Report #:

The submitted material **MEETS** all **Separate Performance Retroreflective Material** photometric performance requirements prior to test exposure per ISO 20471:2013/A1:2016 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/A1:2016 section 6.2 for coefficient of retroreflection for retroreflective trim after abrasion, flexing, folding at cold temperatures, temperature variation, washing per ISO 6330 6N, F (Tumble Dry Normal) (50 cycles), washing per ISO 15797, Oven Dry @ 155°C (50 cycles), and rainfall.

Separate Performance Retroreflective Material

Retroreflective, Performance, Initial	Passed
Abrasion.....	Passed
Flexing	Passed
Folding at Cold Temperatures	Passed
Exposure to Temperature Variation.....	Passed
Washing Per ISO 6330 6N, F (Tumble Dry Normal) (50X)	Passed
Washing Per ISO 15797, Oven Dry @ 155°C (50X)	Passed
Retroreflective Performance in Rainfall	Passed



Signed For The Company By

Joseph Lin
Laboratory Manager

Third Party Test Report

DATE : November 30, 2022

FILE:

CLIENT:

ATTN:

SAMPLE IDENTIFIED BY CLIENT AS:

Reflective Tape Submitted
Per ISO 20471:2013/A1:2016 Specification
Manufacturer: YGM
Name: High Luster's Industrial Wash Heat Transfer Film
Style#: D001 GS
Color Silver

Separate Performance Retroreflective Material Testing Report

PHOTOMETRIC PERFORMANCE REQUIREMENTS:

Take Measurements at $\epsilon_1 = 0^\circ$ and $\epsilon_2 = 90^\circ$.					
Record maximum value on left side of test result column and the other value on right side of test result column.					
ISO 20471 REQUIREMENT Section 6.1, Table 4			Test Result cd/(lx.m ²)		Pass/Fail
Observation Angle	Entrance Angle	Min. ϵ_1 , Min. ϵ_2 cd/(lx.m ²)			
12' (0.2°)	5°	330 / 248	641	640	Pass
	20°	290 / 218	594	561	Pass
	30°	180 / 135	393	347	Pass
	40°	65 / 47	182	145	Pass
20' (0.33°)	5°	250 / 188	455	455	Pass
	20°	200 / 150	429	418	Pass
	30°	170 / 128	317	289	Pass
	40°	60 / 45	160	129	Pass
1.0°	5°	25 / 18.8	38.0	37.4	Pass
	20°	15 / 11.3	47.8	42.8	Pass
	30°	12 / 9	35.4	35.1	Pass
	40°	10 / 7.5	49.5	43.8	Pass
1.5°	5°	10 / 7.5	31.3	31.2	Pass
	20°	7 / 5.25	29.8	28.0	Pass
	30°	5 / 3.75	29.3	25.1	Pass
	40°	4 / 3	14.4	11.9	Pass

Third Party Test Report

FILE:

SAMPLE IDENTIFIED BY CLIENT AS:

Reflective Tape Submitted

Per ISO 20471:2013/A1:2016 Specification

Manufacturer: YGM

Name: High Luster's Industrial Wash Heat Transfer Film

Style#: D001 GS

Color Silver

Separate Performance Retroreflective Material Testing Report

PHYSICAL PERFORMANCE REQUIREMENTS:

Take Measurements at $\epsilon_1 = 0^\circ$ and $\epsilon_2 = 90^\circ$.					
Test	Section	ISO 20471 REQUIREMENT	Test Result		Pass/Fail
Retroreflection, after abrasion	6.2, 7.4.1	$R_A (0.2^\circ/5^\circ) > 100 \text{ cd}/(\text{lx.m}^2)$ at ϵ_1 $R_A (0.2^\circ/5^\circ) > 75 \text{ cd}/(\text{lx.m}^2)$ at ϵ_2	ϵ_1 :	578	Pass
			ϵ_2 :	578	Pass
Retroreflection, after flexing	6.2, 7.4.2	$R_A (0.2^\circ/5^\circ) > 100 \text{ cd}/(\text{lx.m}^2)$ at ϵ_1 $R_A (0.2^\circ/5^\circ) > 75 \text{ cd}/(\text{lx.m}^2)$ at ϵ_2	ϵ_1 :	582	Pass
			ϵ_2 :	582	Pass
Retroreflection, after folding at cold temperatures Observation: No cracks.	6.2, 7.4.3	$R_A (0.2^\circ/5^\circ) > 100 \text{ cd}/(\text{lx.m}^2)$ at ϵ_1 $R_A (0.2^\circ/5^\circ) > 75 \text{ cd}/(\text{lx.m}^2)$ at ϵ_2	ϵ_1 :	501	Pass
			ϵ_2 :	501	Pass
Retroreflection, after exposure to temperature variation	6.2, 7.4.4	$R_A (0.2^\circ/5^\circ) > 100 \text{ cd}/(\text{lx.m}^2)$ at ϵ_1 $R_A (0.2^\circ/5^\circ) > 75 \text{ cd}/(\text{lx.m}^2)$ at ϵ_2	ϵ_1 :	607	Pass
			ϵ_2 :	607	Pass
Retroreflection, in rainfall	6.2, 7.4.5	$R_A (0.2^\circ/5^\circ) > 100 \text{ cd}/(\text{lx.m}^2)$ at ϵ_1 $R_A (0.2^\circ/5^\circ) > 75 \text{ cd}/(\text{lx.m}^2)$ at ϵ_2	ϵ_1 :	444	Pass
			ϵ_2 :	377	Pass
Retroreflection, after washing ISO 6330-2012, 6N, F (Tumble Dry Normal), 50 cycles	6.2, 7.5.2	$R_A (0.2^\circ/5^\circ) > 100 \text{ cd}/(\text{lx.m}^2)$ at ϵ_1 $R_A (0.2^\circ/5^\circ) > 75 \text{ cd}/(\text{lx.m}^2)$ at ϵ_2	ϵ_1 :	162	Pass
			ϵ_2 :	161	Pass
Retroreflection, after washing ISO 15797, Oven Dry at 155°C, 50 cycles	6.2, 7.5.2	$R_A (0.2^\circ/5^\circ) > 100 \text{ cd}/(\text{lx.m}^2)$ at ϵ_1 $R_A (0.2^\circ/5^\circ) > 75 \text{ cd}/(\text{lx.m}^2)$ at ϵ_2	ϵ_1 :	360	Pass
			ϵ_2 :	359	Pass

Signed For The Company By


Joseph Lin
Laboratory Manager




Stacy Sadowy
Quality Assurance Manager

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