



160001071969



中国认可
检测
TESTING
CNAS L4566



交通GJC交工2020-004

检测报告

TEST REPORT

报告编号 (No. of Report): 2025WFG0029

样品名称

Sample Name

道路交通反光膜

委托单位

Client

福建三昊科技有限公司

检测类别

Test Category

委托检测

签发日期

Date of Issue

2025年01月09日



交科院检测技术(北京)有限公司
CATS Testing Technology (Beijing) Co., Ltd.

CMA
160001071969

CNAS
Testing CNAS L4566

Transport
GJC Jiaogong 2020-004

TEST REPORT

(Reference translation of the original Chinese / English report)

Report No.: 2025WFG0029

Sample Name

Road Traffic Retroreflective Sheeting

Client

Fujian Sanhao Technology Co., Ltd. (福建三昊科技有限公司)

Test Category

Commissioned Test

Date of Issue

January 9, 2025

[Official test seal in the original document]

CATS Testing Technology (Beijing) Co., Ltd.

交科院检测技术(北京)有限公司

声 明

1. 本报告仅对本次送检样品负责。
2. 本报告须加盖公司检验检测专用章方为有效。
3. 报告部分复印、涂改无效。
4. 如对本报告有异议，请在收到报告15日内向公司书面提出，逾期不予受理。
5. 公司对所有原始记录及相关资料的保管和保密负责。

通讯地址：北京市东城区和平里东街10号院7层

邮政编码：100013

咨询电话：010-58278927/58278928

传 真：010-58278927

电子邮箱：catstest@sina.com

开户银行：中国建设银行北京樱花支行

银行帐号：11001045400053006287

纳税人识别号：91110105769393181K

网 址：<http://www.catstestc.com>

公 众 号：



STATEMENT

1. This report is responsible only for the sample submitted for this test.
2. This report is valid only when it bears the company's official inspection and testing seal.
3. Partial copies or alterations of this report are invalid.
4. If there is any objection to this report, it must be submitted to the company in writing within 15 days of receipt; objections raised after this period will not be accepted.
5. The company is responsible for the custody and confidentiality of all original records and related materials.

Mailing Address: 7th Floor, Building No. 10, Hepingli Dongjie, Dongcheng District, Beijing

Postal Code: 100013

Contact Phone: 010-58278927 / 58278928

Fax: 010-58278927

Email: catstest@sina.com

Bank: China Construction Bank, Beijing Yinghua Branch

Bank Account Number: 11001045400053006287

Taxpayer ID Number: 91110105769393181K

Website: <http://www.catstestc.com>

Official Account (WeChat): [QR code in the original document]

交科院检测技术（北京）有限公司检测报告
CATS Testing Technology (Beijing) Co., Ltd. Test Report



报告编号(No. of Report):2025WFG0029

第 1 页 共 8 页 (Page 1 of 8)

样品名称 (Sample Name)	道路交通反光膜		
规格型号 (Specification & Model)	III类无金属镀层, 白色	样品编号 (Sample Number)	2025WFG0029-1
	III类无金属镀层, 黄色		2025WFG0029-2
	III类无金属镀层, 红色		2025WFG0029-3
	III类无金属镀层, 绿色		2025WFG0029-4
	III类无金属镀层, 蓝色		2025WFG0029-5
样品状态 (Sample Status)	表面无破损无划痕		
委托单位 (Client)	福建三昊科技有限公司	联络信息 (Contact Information)	赖工, 13960305101
生产单位 (Manufacturer)	福建三昊科技有限公司 (由委托单位提供)	检测类别 (Detection Category)	委托检测
来样方式 (Sample Arrival Method)	寄样	样品数量 (Number Of Samples)	(1.22×1)m/卷, 各 1 卷
到样日期 (Receiving Date)	2024/12/19	检测日期 (Test Date)	2024/12/19~01/09
检测地点 (Test Location)	顺义实验室	仪器设备 (Test Equipment)	见第 2 页
检测项目 (Test Item)	1. 外观质量 2. 光度性能(逆反射系数) 3. 色度性能(表面色) 4. 耐盐雾腐蚀性能 5. 抗冲击性能 6. 耐弯曲性能 7. 附着性能 8. 收缩性能 9. 防粘纸可剥离性能 10. 耐溶剂性能 11. 耐高低温性能		
检测依据 (Test Basis)	GB/T 18833-2012 《道路交通反光膜》		
判定依据 (Judgement Basis)	GB/T 18833-2012 《道路交通反光膜》		
检测结论 (Test Results)	经实验室检测, 福建三昊科技有限公司委托的 5 种颜色 (见规格型号) 道路交通反光膜样品, 所检项目符合 GB/T 18833-2012 《道路交通反光膜》标准中III类无金属镀层相关颜色的技术指标要求。 签发日期: 2025 年 01 月 09 日 (盖章)		
备 注 (Comments)	—		
报 告 Reported by	吴雷	审 核 Audited by	于佳介
		批 准 Approved by	吴雷

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 1 of 8

Sample Name	Road Traffic Retroreflective Sheeting		
Specification & Model	Type III unmetallized, white	Sample Number	2025WFG0029-1
	Type III unmetallized, yellow		2025WFG0029-2
	Type III unmetallized, red		2025WFG0029-3
	Type III unmetallized, green		2025WFG0029-4
	Type III unmetallized, blue		2025WFG0029-5
Sample Status	Surface free of damage or scratches		
Client	Fujian Sanhao Technology Co., Ltd.	Contact Information	Eng. Lai, 13960305101
Manufacturer	Fujian Sanhao Technology Co., Ltd. (provided by the client)	Test Category	Commissioned Test
Sample Arrival Method	Sent by courier	Number of Samples	(1.22×1) m/roll, 1 roll of each color
Receiving Date	2024/12/19	Test Date	2024/12/19 ~ 2025/01/09
Test Location	Shunyi Laboratory	Test Equipment	See page 2
Test Item	1. Appearance Quality 2. Photometric Performance (Coefficient of Retroreflection) 3. Chromaticity Performance (Surface Color) 4. Salt Spray Corrosion Resistance 5. Impact Resistance 6. Bending Resistance 7. Adhesion Performance 8. Shrinkage Performance 9. Release Liner Peelability 10. Solvent Resistance 11. High and Low Temperature Resistance		
Test Basis	GB/T 18833-2012 "Retroreflective Sheeting for Road Traffic Control"		
Judgement Basis	GB/T 18833-2012 "Retroreflective Sheeting for Road Traffic Control"		
Test Results	Based on laboratory testing, the 5-color (see Specification & Model) road traffic retroreflective sheeting samples submitted by Fujian Sanhao Technology Co., Ltd. meet, in all items tested, the technical requirements for the respective colors of Type III unmetallized sheeting specified in GB/T 18833-2012 "Retroreflective Sheeting for Road Traffic Control".		
Comments	— —		

Reported by		Audited by		Approved by	
-------------	--	------------	--	-------------	--

(Handwritten signatures and official test seal dated 2025/01/09 in the original document.)

交科院检测技术（北京）有限公司检测报告
CATS Testing Technology (Beijing) Co., Ltd. Test Report

报告编号(No. of Report):2025WFG0029

第 2 页 共 8 页 (Page 2 of 8)

检测主要仪器设备 (Main equipment of test)			
序号 (Number)	仪器设备名称 (Equipment)	规格型号 (Specification Model)	设备管理编号 (Equipment ID)
1	全自动 落锤冲击试验机	ZCJ1302-A	JGZ-050
2	反光膜弯曲试验装置	Φ 3.2mm	JA-060
3	可编程 高低温湿热试验箱	HUT812P	JGZ-004
4	盐雾试验箱	SFT080	JG-188
5	高低温试验箱	HLT706P	JG-254
6	数显游标卡尺	(0-300)mm/0.01mm	JD-064
7	反光膜 附着性试验装置	——	JA-006
8	数显游标卡尺	(0-150)mm/0.01mm	JD-179
9	分光测色仪	CM-2500C	JGZ-035
10	逆反射测试仪	933	JG-160

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 2 of 8

Main Equipment Used in the Test			
No.	Equipment	Specification Model	Equipment ID
1	Fully automatic drop-weight impact tester	ZCJ1302-A	JGZ-050
2	Retroreflective sheeting bending test apparatus	Φ 3.2 mm	JA-060
3	Programmable high/low temperature and humidity chamber	HUT812P	JGZ-004
4	Salt spray test chamber	SFT080	JG-188
5	High/low temperature chamber	HLT706P	JG-254
6	Digital vernier caliper	(0-300) mm / 0.01 mm	JD-064
7	Retroreflective sheeting adhesion test apparatus	— —	JA-006
8	Digital vernier caliper	(0-150) mm / 0.01 mm	JD-179
9	Spectrophotometer / colorimeter	CM-2500C	JGZ-035
10	Retroreflectometer	933	JG-160

(Translator's note: this page appears duplicated in the original document; the same page-numbering sequence is preserved here.)

交科院检测技术（北京）有限公司检测报告
CATS Testing Technology (Beijing) Co., Ltd. Test Report

报告编号(No. of Report):2025WFG0029

第 2 页 共 8 页 (Page 2 of 8)

检测主要仪器设备 (Main equipment of test)			
序号 (Number)	仪器设备名称 (Equipment)	规格型号 (Specification Model)	设备管理编号 (Equipment ID)
1	全自动 落锤冲击试验机	ZCJ1302-A	JGZ-050
2	反光膜弯曲试验装置	Φ 3.2mm	JA-060
3	可编程 高低温湿热试验箱	HUT812P	JGZ-004
4	盐雾试验箱	SFT080	JG-188
5	高低温试验箱	HLT706P	JG-254
6	数显游标卡尺	(0-300)mm/0.01mm	JD-064
7	反光膜 附着性试验装置	——	JA-006
8	数显游标卡尺	(0-150)mm/0.01mm	JD-179
9	分光测色仪	CM-2500C	JGZ-035
10	逆反射测试仪	933	JG-160

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 2 of 8

Main Equipment Used in the Test			
No.	Equipment	Specification Model	Equipment ID
1	Fully automatic drop-weight impact tester	ZCJ1302-A	JGZ-050
2	Retroreflective sheeting bending test apparatus	Φ 3.2 mm	JA-060
3	Programmable high/low temperature and humidity chamber	HUT812P	JGZ-004
4	Salt spray test chamber	SFT080	JG-188
5	High/low temperature chamber	HLT706P	JG-254
6	Digital vernier caliper	(0-300) mm / 0.01 mm	JD-064
7	Retroreflective sheeting adhesion test apparatus	— —	JA-006
8	Digital vernier caliper	(0-150) mm / 0.01 mm	JD-179
9	Spectrophotometer / colorimeter	CM-2500C	JGZ-035
10	Retroreflectometer	933	JG-160

(Translator's note: this page appears duplicated in the original document; the same page-numbering sequence is preserved here.)

交科院检测技术（北京）有限公司检测报告

CATS Testing Technology (Beijing) Co., Ltd. Test Report

报告编号(No. of Report):2025WFG0029

第 3 页 共 8 页 (Page 3 of 8)

样品名称 (Sample Name)	道路交通反光膜				样品编号 (Sample Number)	2025WFG0029-1
规格型号 (Specification & Model)	III类无金属镀层, 白色					
检测环境 (Ambient Condition)	(23±2)℃/(50±10)%RH				检测地点 (Test Location)	顺义实验室
检测项目	技术要求 (III类无金属镀层, 白色)				检测结果	单项判定
外观质量	反光膜应有平滑、洁净的外表面, 不应有明显的划痕、条纹、气泡、颜色及逆反射不均匀等缺陷, 其防粘纸不应有气泡、皱折、污点或杂物等缺陷				符合要求	合格
光度性能 ^a (逆反射系数 R_A), $\text{cd} \cdot \text{lx}^{-1} \cdot \text{m}^{-2}$	观测角: 0.2°	入射角: -4°, $R_A \geq 250$			522	合格
		入射角: 15°, $R_A \geq 210$			424	
		入射角: 30°, $R_A \geq 175$			298	
	观测角: 0.5°	入射角: -4°, $R_A \geq 95$			325	
		入射角: 15°, $R_A \geq 90$			312	
		入射角: 30°, $R_A \geq 70$			178	
	观测角: 1°	入射角: -4°, $R_A \geq 10$			76	
		入射角: 15°, $R_A \geq 10$			69	
		入射角: 30°, $R_A \geq 9.0$			51.8	
色度性能 (表面色)	色品坐标 ^b	1	2	3	4	合格
	x	0.350	0.305	0.295	0.340	
	y	0.360	0.315	0.325	0.370	
	亮度因数	≥ 0.27 (无金属镀层)				0.49
耐盐雾腐蚀性能	在 35℃±2℃ 温度下, 用 (5.0±0.1)%NaCl 溶液进行盐雾试验 120h 后, 反光膜表面不应有变色、渗漏、起泡或被侵蚀等损坏				符合要求	合格
备注	^a 沿委托单位标记方向测试 ^b 光源: 标准照明体 D ₆₅ , 几何条件 45° a: 0°, 2° 视场角。3 个检测点检测数据应在以上四点组成的图形范围内, 取 3 个检测点检测数据的平均值作为检测结果					

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 3 of 8

Sample Name	Road Traffic Retroreflective Sheeting		Sample Number	2025WFG0029-1
Specification & Model	Type III unmetallized, white		Test Location	Shunyi Laboratory
Ambient Condition	(23±2)°C / (50±10)% RH			
Test Item	Technical Requirement (Type III unmetallized, white)			Result
Appearance Quality	The retroreflective sheeting must have a smooth, clean outer surface, free of obvious defects such as scratches, streaks, bubbles, non-uniform color or retroreflection; its release liner must be free of bubbles, wrinkles, stains, or debris.			Meets requirements Pass
Photometric Performance (Coefficient of Retroreflection R_A), $\text{cd}\cdot\text{lx}^{-1}\cdot\text{m}^{-2}$	Observation Angle: 0.2°	Entrance Angle: -4°, $R_A\geq 250$	522	
		Entrance Angle: 15°, $R_A\geq 210$	424	
		Entrance Angle: 30°, $R_A\geq 175$	298	
	Observation Angle: 0.5°	Entrance Angle: -4°, $R_A\geq 95$	325	
		Entrance Angle: 15°, $R_A\geq 90$	312	
		Entrance Angle: 30°, $R_A\geq 70$	178	
	Observation Angle: 1°	Entrance Angle: -4°, $R_A\geq 10$	76	
		Entrance Angle: 15°, $R_A\geq 10$	69	
		Entrance Angle: 30°, $R_A\geq 9.0$	51.8	
Pass (all measured values exceed the minimum required)				
Chromaticity Performance (Surface Color)	Chromaticity coordinates (point)	1 2 3 4		
	x	0.350 0.305 0.295 0.340 → measured: x = 0.309		
	y	0.360 0.315 0.325 0.370 → measured: y = 0.326		
	Luminance Factor	≥ 0.27 (unmetallized)		0.49 — Pass
Salt Spray Corrosion Resistance	After a 120 h salt spray test at 35°C±2°C with a (5.0±0.1)% NaCl solution, the surface of the retroreflective sheeting must show no discoloration, leakage, blistering, or corrosion.			Meets requirements Pass

a Tested in the direction marked by the client.

b Light source: standard illuminant D65; geometric condition 45°a:0°, 2° field of view. The data of the 3 measurement points must fall within the area formed by the four reference points above; the result is the average of the 3 measured points.

交科院检测技术（北京）有限公司检测报告

CATS Testing Technology (Beijing) Co., Ltd. Test Report

报告编号(No. of Report):2025WFG0029

第 4 页 共 8 页 (Page 4 of 8)

样品名称 (Sample Name)	道路交通反光膜				样品编号 (Sample Number)	2025WFG0029-2	
规格型号 (Specification & Model)	III类无金属镀层, 黄色						
检测环境 (Ambient Condition)	(23±2)℃/(50±10)%RH				检测地点 (Test Location)	顺义实验室	
检测项目	技术要求 (III类无金属镀层, 黄色)				检测结果	单项判定	
外观质量	反光膜应有平滑、洁净的外表面, 不应有明显的划痕、条纹、气泡、颜色及逆反射不均匀等缺陷, 其防粘纸不应有气泡、皱折、污点或杂物等缺陷				符合要求	合格	
光度性能 ^a (逆反射系数 R_A), $cd \cdot lx^{-1} \cdot m^{-2}$	观测角: 0.2°	入射角: -4°, $R_A \geq 175$			502	合格	
		入射角: 15°, $R_A \geq 145$			410		
		入射角: 30°, $R_A \geq 120$			292		
	观测角: 0.5°	入射角: -4°, $R_A \geq 66$			282		
		入射角: 15°, $R_A \geq 62$			264		
		入射角: 30°, $R_A \geq 50$			154		
	观测角: 1°	入射角: -4°, $R_A \geq 7.0$			51.0		
		入射角: 15°, $R_A \geq 7.0$			51.4		
		入射角: 30°, $R_A \geq 6.0$			39.5		
色度性能 (表面色)	色品坐标 ^b	1	2	3	4	合格	
	x	0.545	0.494	0.444	0.481		x=0.527 y=0.463
	y	0.454	0.426	0.476	0.518		
	亮度因数	0.15~0.45 (无金属镀层)					0.32
耐盐雾腐蚀性能	在 35℃±2℃温度下, 用 (5.0±0.1)%NaCl 溶液进行盐雾试验 120h 后, 反光膜表面不应有变色、渗漏、起泡或被侵蚀等损坏				符合要求	合格	
备注	^a 沿委托单位标记方向测试 ^b 光源: 标准照明体 D ₆₅ , 几何条件 45° a: 0°, 2° 视场角。3 个检测点检测数据应在以上四点组成的图形范围内, 取 3 个检测点检测数据的平均值作为检测结果						

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 4 of 8

Sample Name	Road Traffic Retroreflective Sheeting		Sample Number	2025WFG0029-2
Specification & Model	Type III unmetallized, yellow		Test Location	Shunyi Laboratory
Ambient Condition	(23±2)°C / (50±10)% RH			
Test Item	Technical Requirement (Type III unmetallized, yellow)			Result
Appearance Quality	The retroreflective sheeting must have a smooth, clean outer surface, free of obvious defects such as scratches, streaks, bubbles, non-uniform color or retroreflection; its release liner must be free of bubbles, wrinkles, stains, or debris.			Meets requirements Pass
Photometric Performance (Coefficient of Retroreflection R_A), $cd \cdot lx^{-1} \cdot m^{-2}$	Observation Angle: 0.2°	Entrance Angle: -4°, $R_A \geq 175$	502	
		Entrance Angle: 15°, $R_A \geq 145$	410	
		Entrance Angle: 30°, $R_A \geq 120$	292	
	Observation Angle: 0.5°	Entrance Angle: -4°, $R_A \geq 66$	282	
		Entrance Angle: 15°, $R_A \geq 62$	264	
		Entrance Angle: 30°, $R_A \geq 50$	154	
	Observation Angle: 1°	Entrance Angle: -4°, $R_A \geq 7.0$	51.0	
		Entrance Angle: 15°, $R_A \geq 7.0$	51.4	
		Entrance Angle: 30°, $R_A \geq 6.0$	39.5	
Pass (all measured values exceed the minimum required)				
Chromaticity Performance (Surface Color)	Chromaticity coordinates (point)	1 2 3 4		
	x	0.545 0.494 0.444 0.481 → measured: x = 0.527		
	y	0.454 0.426 0.476 0.518 → measured: y = 0.463		
	Luminance Factor	0.15 ~ 0.45 (unmetallized)	0.32 — Pass	
Salt Spray Corrosion Resistance	After a 120 h salt spray test at 35°C±2°C with a (5.0±0.1)% NaCl solution, the surface of the retroreflective sheeting must show no discoloration, leakage, blistering, or corrosion.			Meets requirements Pass

a Tested in the direction marked by the client.

b Light source: standard illuminant D65; geometric condition 45°a:0°, 2° field of view. The data of the 3 measurement points must fall within the area formed by the four reference points above; the result is the average of the 3 measured points.

交科院检测技术（北京）有限公司检测报告

CATS Testing Technology (Beijing) Co., Ltd. Test Report

报告编号(No. of Report):2025WFG0029

第 5 页 共 8 页 (Page 5 of 8)

样品名称 (Sample Name)	道路交通反光膜				样品编号 (Sample Number)	2025WFG0029-3	
规格型号 (Specification & Model)	III类无金属镀层, 红色						
检测环境 (Ambient Condition)	(23±2)℃/(50±10)%RH				检测地点 (Test Location)	顺义实验室	
检测项目	技术要求 (III类无金属镀层, 红色)				检测结果	单项判定	
外观质量	反光膜应有平滑、洁净的外表面, 不应有明显的划痕、条纹、气泡、颜色及逆反射不均匀等缺陷, 其防粘纸不应有气泡、皱折、污点或杂物等缺陷				符合要求	合格	
光度性能 ^a (逆反射系数 R_A), $cd \cdot lx^{-1} \cdot m^{-2}$	观测角: 0.2°	入射角: -4°, $R_A \geq 50$			189	合格	
		入射角: 15°, $R_A \geq 42$			159		
		入射角: 30°, $R_A \geq 35$			126		
	观测角: 0.5°	入射角: -4°, $R_A \geq 19$			110		
		入射角: 15°, $R_A \geq 18$			104		
		入射角: 30°, $R_A \geq 14$			51.6		
	观测角: 1°	入射角: -4°, $R_A \geq 3.0$			21.1		
		入射角: 15°, $R_A \geq 2.0$			17.5		
		入射角: 30°, $R_A \geq 1.0$			13.1		
色度性能 (表面色)	色品坐标 ^a	1	2	3	4	合格	
	x	0.735	0.681	0.579	0.655		
	y	0.265	0.239	0.341	0.345		
	亮度因数	0.02~0.15 (无金属镀层)			0.05		
耐盐雾腐蚀性能	在 35℃±2℃ 温度下, 用 (5.0±0.1)%NaCl 溶液进行盐雾试验 120h 后, 反光膜表面不应有变色、渗漏、起泡或被侵蚀等损坏				符合要求	合格	
备注	^a 沿委托单位标记方向测试 ^b 光源:标准照明体 D ₆₅ , 几何条件 45° a:0°, 2° 视场角。3 个检测点检测数据应在以上四点组成的图形范围内, 取 3 个检测点检测数据的平均值作为检测结果						

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 5 of 8

Sample Name	Road Traffic Retroreflective Sheeting	Sample Number	2025WFG0029-3
Specification & Model	Type III unmetallized, red	Test Location	Shunyi Laboratory
Ambient Condition	(23±2)°C / (50±10)% RH		
Test Item	Technical Requirement (Type III unmetallized, red)		Result
Appearance Quality	The retroreflective sheeting must have a smooth, clean outer surface, free of obvious defects such as scratches, streaks, bubbles, non-uniform color or retroreflection; its release liner must be free of bubbles, wrinkles, stains, or debris.		Meets requirements Pass
Photometric Performance (Coefficient of Retroreflection R_A), $cd \cdot lx^{-1} \cdot m^{-2}$	Observation Angle: 0.2°	Entrance Angle: -4°, $R_A \geq 50$	189
		Entrance Angle: 15°, $R_A \geq 42$	159
		Entrance Angle: 30°, $R_A \geq 35$	126
	Observation Angle: 0.5°	Entrance Angle: -4°, $R_A \geq 19$	110
		Entrance Angle: 15°, $R_A \geq 18$	104
		Entrance Angle: 30°, $R_A \geq 14$	51.6
	Observation Angle: 1°	Entrance Angle: -4°, $R_A \geq 3.0$	21.1
		Entrance Angle: 15°, $R_A \geq 2.0$	17.5
		Entrance Angle: 30°, $R_A \geq 1.0$	13.1
Pass (all measured values exceed the minimum required)			
Chromaticity Performance (Surface Color)	Chromaticity coordinates (point)	1 2 3 4	
	x	0.735 0.681 0.579 0.655 → measured: x = 0.657	
	y	0.265 0.239 0.341 0.345 → measured: y = 0.322	
	Luminance Factor	0.02 ~ 0.15 (unmetallized)	0.05 — Pass
Salt Spray Corrosion Resistance	After a 120 h salt spray test at 35°C±2°C with a (5.0±0.1)% NaCl solution, the surface of the retroreflective sheeting must show no discoloration, leakage, blistering, or corrosion.		Meets requirements Pass

a Tested in the direction marked by the client.

b Light source: standard illuminant D65; geometric condition 45°a:0°, 2° field of view. The data of the 3 measurement points must fall within the area formed by the four reference points above; the result is the average of the 3 measured points.

交科院检测技术（北京）有限公司检测报告

CATS Testing Technology (Beijing) Co., Ltd. Test Report

报告编号(No. of Report):2025WFG0029

第 6 页 共 8 页 (Page 6 of 8)

样品名称 (Sample Name)	道路交通反光膜				样品编号 (Sample Number)	2025WFG0029-4			
规格型号 (Specification & Model)	III类无金属镀层, 绿色								
检测环境 (Ambient Condition)	(23±2)℃/(50±10)%RH				检测地点 (Test Location)	顺义实验室			
检测项目	技术要求 (III类无金属镀层, 绿色)				检测结果	单项判定			
外观质量	反光膜应有平滑、洁净的外表面, 不应有明显的划痕、条纹、气泡、颜色及逆反射不均匀等缺陷, 其防粘纸不应有气泡、皱折、污点或杂物等缺陷				符合要求	合格			
光度性能 ^a (逆反射系数 R_A), $cd \cdot lx^{-1} \cdot m^{-2}$	观测角: 0.2°	入射角: -4°, $R_A \geq 45$			84	合格			
		入射角: 15°, $R_A \geq 35$			65				
		入射角: 30°, $R_A \geq 25$			39				
	观测角: 0.5°	入射角: -4°, $R_A \geq 15$			44				
		入射角: 15°, $R_A \geq 13$			40				
		入射角: 30°, $R_A \geq 10$			26				
	观测角: 1°	入射角: -4°, $R_A \geq 3.0$			10.8				
		入射角: 15°, $R_A \geq 2.0$			8.9				
		入射角: 30°, $R_A \geq 1.0$			6.8				
	色度性能 (表面色)	色品坐标 ^b	1	2	3		4	合格	
		x	0.201	0.285	0.170		0.026		x=0.138 y=0.460
		y	0.776	0.441	0.364		0.399		
亮度因数		0.03~0.12 (无金属镀层)				0.07			
耐盐雾腐蚀性能	在 35℃±2℃ 温度下, 用 (5.0±0.1)%NaCl 溶液进行盐雾试验 120h 后, 反光膜表面不应有变色、渗漏、起泡或被侵蚀等损坏				符合要求	合格			
备注	^a 沿委托单位标记方向测试 ^b 光源:标准照明体 D ₆₅ , 几何条件 45° a:0°, 2° 视场角。3 个检测点检测数据应在以上四点组成的图形范围内, 取 3 个检测点检测数据的平均值作为检测结果								

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 6 of 8

Sample Name	Road Traffic Retroreflective Sheeting		Sample Number	2025WFG0029-4
Specification & Model	Type III unmetallized, green		Test Location	Shunyi Laboratory
Ambient Condition	(23±2)°C / (50±10)% RH			
Test Item	Technical Requirement (Type III unmetallized, green)			Result
Appearance Quality	The retroreflective sheeting must have a smooth, clean outer surface, free of obvious defects such as scratches, streaks, bubbles, non-uniform color or retroreflection; its release liner must be free of bubbles, wrinkles, stains, or debris.			Meets requirements Pass
Photometric Performance (Coefficient of Retroreflection R_A), $cd \cdot lx^{-1} \cdot m^{-2}$	Observation Angle: 0.2°	Entrance Angle: -4°, $R_A \geq 45$	84	
		Entrance Angle: 15°, $R_A \geq 35$	65	
		Entrance Angle: 30°, $R_A \geq 25$	39	
	Observation Angle: 0.5°	Entrance Angle: -4°, $R_A \geq 15$	44	
		Entrance Angle: 15°, $R_A \geq 13$	40	
		Entrance Angle: 30°, $R_A \geq 10$	26	
	Observation Angle: 1°	Entrance Angle: -4°, $R_A \geq 3.0$	10.8	
		Entrance Angle: 15°, $R_A \geq 2.0$	8.9	
		Entrance Angle: 30°, $R_A \geq 1.0$	6.8	
Pass (all measured values exceed the minimum required)				
Chromaticity Performance (Surface Color)	Chromaticity coordinates (point)	1 2 3 4		
	x	0.201 0.285 0.170 0.026 → measured: x = 0.138		
	y	0.776 0.441 0.364 0.399 → measured: y = 0.460		
	Luminance Factor	0.03 ~ 0.12 (unmetallized)	0.07 — Pass	
Salt Spray Corrosion Resistance	After a 120 h salt spray test at 35°C±2°C with a (5.0±0.1)% NaCl solution, the surface of the retroreflective sheeting must show no discoloration, leakage, blistering, or corrosion.			Meets requirements Pass

a Tested in the direction marked by the client.

b Light source: standard illuminant D65; geometric condition 45°a:0°, 2° field of view. The data of the 3 measurement points must fall within the area formed by the four reference points above; the result is the average of the 3 measured points.

交科院检测技术（北京）有限公司检测报告

CATS Testing Technology (Beijing) Co., Ltd. Test Report

报告编号(No. of Report):2025WFG0029

第 7 页 共 8 页 (Page 7 of 8)

样品名称 (Sample Name)	道路交通反光膜				样品编号 (Sample Number)	2025WFG0029-5
规格型号 (Specification & Model)	III类无金属镀层, 蓝色					
检测环境 (Ambient Condition)	(23±2)℃/(50±10)%RH				检测地点 (Test Location)	顺义实验室
检测项目	技术要求 (III类无金属镀层, 蓝色)				检测结果	单项判定
外观质量	反光膜应有平滑、洁净的外表面, 不应有明显的划痕、条纹、气泡、颜色及逆反射不均匀等缺陷, 其防粘纸不应有气泡、皱折、污点或杂物等缺陷				符合要求	合格
光度性能 ^a (逆反射系数 R_A), $cd \cdot lx^{-1} \cdot m^{-2}$	观测角: 0.2°	入射角: -4° , $R_A \geq 20$			61	合格
		入射角: 15° , $R_A \geq 16$			46	
		入射角: 30° , $R_A \geq 11$			28	
	观测角: 0.5°	入射角: -4° , $R_A \geq 7.5$			28.5	
		入射角: 15° , $R_A \geq 6.3$			27.7	
		入射角: 30° , $R_A \geq 5.0$			16.2	
	观测角: 1°	入射角: -4° , $R_A \geq 1.0$			5.8	
		入射角: 15° , $R_A \geq 0.7$			5.5	
		入射角: 30° , $R_A \geq 0.4$			3.9	
色度性能 (表面色)	色品坐标 ^b	1	2	3	4	合格
	x	0.049	0.172	0.210	0.137	
	y	0.125	0.198	0.160	0.038	
	亮度因数	0.01~0.10 (无金属镀层)			0.04	
耐盐雾腐蚀性能	在 35℃±2℃温度下, 用 (5.0±0.1)%NaCl 溶液进行盐雾试验 120h 后, 反光膜表面不应有变色、渗漏、起泡或被侵蚀等损坏				符合要求	合格
备注	^a 沿委托单位标记方向测试 ^b 光源: 标准照明体 D ₆₅ , 几何条件 45° a: 0° , 2° 视场角。3 个检测点检测数据应在以上四点组成的图形范围内, 取 3 个检测点检测数据的平均值作为检测结果					

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 7 of 8

Sample Name	Road Traffic Retroreflective Sheeting		Sample Number	2025WFG0029-5
Specification & Model	Type III unmetallized, blue		Test Location	Shunyi Laboratory
Ambient Condition	(23±2)°C / (50±10)% RH			
Test Item	Technical Requirement (Type III unmetallized, blue)			Result
Appearance Quality	The retroreflective sheeting must have a smooth, clean outer surface, free of obvious defects such as scratches, streaks, bubbles, non-uniform color or retroreflection; its release liner must be free of bubbles, wrinkles, stains, or debris.			Meets requirements Pass
Photometric Performance (Coefficient of Retroreflection R_A), $\text{cd}\cdot\text{lx}^{-1}\cdot\text{m}^{-2}$	Observation Angle: 0.2°	Entrance Angle: -4°, $R_A\geq 20$	61	
		Entrance Angle: 15°, $R_A\geq 16$	46	
		Entrance Angle: 30°, $R_A\geq 11$	28	
	Observation Angle: 0.5°	Entrance Angle: -4°, $R_A\geq 7.5$	28.5	
		Entrance Angle: 15°, $R_A\geq 6.3$	27.7	
		Entrance Angle: 30°, $R_A\geq 5.0$	16.2	
	Observation Angle: 1°	Entrance Angle: -4°, $R_A\geq 1.0$	5.8	
		Entrance Angle: 15°, $R_A\geq 0.7$	5.5	
		Entrance Angle: 30°, $R_A\geq 0.4$	3.9	
Pass (all measured values exceed the minimum required)				
Chromaticity Performance (Surface Color)	Chromaticity coordinates (point)	1 2 3 4		
	x	0.049 0.172 0.210 0.137 → measured: x = 0.144		
	y	0.125 0.198 0.160 0.038 → measured: y = 0.107		
	Luminance Factor	0.01 ~ 0.10 (unmetallized)	0.04 — Pass	
Salt Spray Corrosion Resistance	After a 120 h salt spray test at 35°C±2°C with a (5.0±0.1)% NaCl solution, the surface of the retroreflective sheeting must show no discoloration, leakage, blistering, or corrosion.			Meets requirements Pass

a Tested in the direction marked by the client.

b Light source: standard illuminant D65; geometric condition 45°a:0°, 2° field of view. The data of the 3 measurement points must fall within the area formed by the four reference points above; the result is the average of the 3 measured points.

交科院检测技术（北京）有限公司检测报告
CATS Testing Technology (Beijing) Co., Ltd. Test Report

报告编号(No. of Report):2025WFG0029

第 8 页 共 8 页 (Page 8 of 8)

样品名称 (Sample Name)		道路交通反光膜	样品编号 (Sample Number)	2025WFG0029-1	
规格型号 (Specification & Model)		III类无金属镀层, 白色			
检测环境 (Ambient Condition)		(23±2)℃/(50±10)%RH	检测地点 (Test Location)		顺义实验室
检测项目		技术要求 (III类无金属镀层, 白色)	检测结果		单项判定
抗冲击性能		试样反光面朝上, 用 450.0g±4.5g 的实心铁球从 250mm 自由落下, 冲击试样中心部位, 在受到冲击的试样表面以外, 不应出现裂缝、层间脱离或其他损坏	符合要求		合格
耐弯曲性能		将试样防粘纸朝里, 在 1s 内沿长度方向绕直径 3.20mm±0.05mm 的圆棒进行对折弯曲后, 表面不应出现裂缝、剥落或层间分离等损坏	符合要求		合格
附着性能		试样在 800g±4g 重力作用下进行 90° 剥离, 5min 后的剥离长度不应大于 20mm	6mm		合格
收缩性能, mm	10min	≤0.8	0.03		合格
	24h	≤3.2	0.1		
防粘纸可剥离性能		试样在 (70±2)℃, 经 6600g±33g (17.2kPa) 重压 4h 后, 冷却至室温, 反光膜无需用水或其他溶剂浸湿, 防粘纸即可方便地手工剥下, 且无破损、撕裂或从反光膜上带下粘合剂等损坏出现	符合要求		合格
耐溶剂性能	汽油 (92#) 10min	经溶剂浸泡规定时间后, 反光膜表面不应出现软化、皱纹、渗漏、起泡、开裂或被溶解等损坏	符合要求		合格
	乙醇 (95%) 1min		符合要求		
耐高低温性能		试样经高低温试验 (-40℃±3℃保持 72h, 70℃±2℃保持 24h) 后, 反光膜表面不应出现裂缝、软化、剥落、皱纹、起泡、翘曲或外观不均匀等损坏	符合要求		合格
备注		本页检测项目参数性能与反光膜颜色无相关性, 委托单位要求选择 2021WFG0029-1 号样品进行检测			

以下空白

CATS Testing Technology (Beijing) Co., Ltd. — Test Report

Report No.: 2025WFG0029

Page 8 of 8

Sample Name	Road Traffic Retroreflective Sheeting		Sample Number	2025WFG0029-1
Specification & Model	Type III unmetallized, white		Test Location	Shunyi Laboratory
Ambient Condition	(23±2)°C / (50±10)% RH			
Test Item	Technical Requirement (Type III unmetallized, white)			Result
Impact Resistance	With the reflective face of the sample facing up, a solid steel ball of 450.0 g ± 4.5 g is dropped freely from a height of 250 mm, striking the center of the sample; outside the impacted area, the surface must show no cracks, delamination, or other damage.			Meets requirements Pass
Bending Resistance	With the release liner of the sample facing inward, the sample is folded within 1 s along its length around a rod of 3.20 mm ± 0.05 mm diameter; after folding, the surface must show no cracks, flaking, or delamination.			Meets requirements Pass
Adhesion Performance	Under a force of 800 g ± 4 g, a 90° peel test is performed on the sample; after 5 min, the peeled length must not exceed 20 mm.			6 mm Pass
Shrinkage Performance, mm	10 min: ≤ 0.8			0.03
	24 h: ≤ 3.2			0.1 — Pass
Release Liner Peelability	The sample is subjected to a pressure of 6600 g ± 33 g (17.2 kPa) for 4 h at (70±2)°C; after cooling to room temperature, the release liner must be easily peelable by hand without water or other solvents, with no tearing, ripping, or adhesive residue left on the retroreflective sheeting.			Meets requirements Pass
Solvent Resistance	Gasoline (92#), 10 min	After immersion in the solvent for the specified time, the surface of the retroreflective sheeting must show no softening, wrinkling, leakage, blistering, cracking, or dissolving.		Meets requirements
	Ethanol (95%), 1 min			Meets requirements Pass
High and Low Temperature Resistance	After the high/low temperature test (-40°C±3°C for 72 h; 70°C±2°C for 24 h), the surface of the retroreflective sheeting must show no cracks, softening, flaking, wrinkling, blistering, warping, or non-uniform appearance.			Meets requirements Pass
Comments	The test item parameters on this page are not related to the color of the retroreflective sheeting; the client requested that sample No. 2025WFG0029-1 be used for this test. (Translator's note: the original document shows "2021WFG0029-1"; likely a typo in the original.)			

— Rest of page intentionally blank —