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CUSTOMER NAME: BEIJING PU-RIVER BROTHERS. TECHNOLOGY CO., LTD. CHINA ADDRESS: NO.18, KEYUAN ROAD, DAXING DISTRICT, BEIJING, CHINA 102600

Following information and sample(s) was/were submitted and confirmed by the client. SGS, however, assumes no responsibility to verify the accuracy, adequacy and completeness of the sample information provided by client:

Sample Name : PARMOR®SHIELD CAR COLOR CHANGE FILM

Part No. : PWF series

Product Specification : Color Change film

Material and Mark : PARMOR®

Manufacturer : Beijing Pu-river Brothers. Technology Co., Ltd. China

Manufacturer Address : No.18, Keyuan Road, Daxing District, Beijing, China 102600

Other Information : Sample Model:PWF

SGS Ref No. : TJAT2203003643NM

Date of Receipt : Mar 11, 2022
Testing Start Date : Mar 11, 2022
Testing End Date : Mar 23, 2022

Test Result(s) : For further details, please refer to the following page(s)

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

Jane Deng

Technical Supervisor





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Report Declaration:

The test samples were provided and confirmed by the customer in this report, the results contained in this test report are only responsible for the test samples, and do not relate to other samples of the same product. The manufacturer should ensure that all products manufactured are in conformity with the product sample in this report.

In the territory of the People's Republic of China, the test report without CMA logo expresses the test report shall only be used for client scientific research, teaching, internal quality control, product research and development, etc., and just for client internal reference.

Manufacture Declaration or Comment:

None

Summary of Result(s):

No.	Test Item	Test Method	Conclusion
1.	180° Peel Strength	ASTM D1000-17 Section 46~53	Pass
2.	Light Ageing Test-Xenon-arc Exposure	ISO 4892-2:2013 Cycle1	Pass
3.	Low Temperature Resistance Test	Provided by Client	Pass
4.	Elongation at Break	GB/T 1040.1-2018 & GB/T 1040.3-2006	Pass
5.	Stone Chip Test	SAE J400-2002(R2012) Method C	Pass

Note: Pass: Meet the requirements;

Fail: Does not meet the requirements;

N/A: Not apply to the judgment or Not applicable





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1. Test Item: 180° Peel Strength Sample Description: Plastic film

Test Method: ASTM D1000-17 Section 46~53

Test Condition:

Specimen width: 25 mm

Condition 1: Affix the specimen to the test panel \rightarrow (23±2)°C, (50±5)%RH, 30min Condition 2: Affix the specimen to the test panel \rightarrow (23±2)°C, (50±5)%RH, 24h

Testing speed: 300 mm/min

Lab Environmental Condition: (23±2)°C, (50±5)%RH

Test Result:

Test Item	Test Result		Requirement	Conclusion
180° Peel Strength	Condition 1	3.0 N/10mm See Table 1	≥1.9	Pass
	Condition 2	2.6 N/10mm See Table 1	N/10mm	Pass

Note: Test specimens were cut from the sample.

Table 1

Specimen No.	1	2	3
Condition 1, N/10mm	3.43	2.52	3.17
Condition 2, N/10mm	2.42	2.38	3.02



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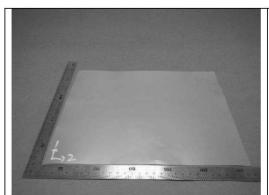


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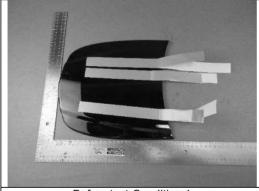
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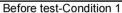
Test Photo:

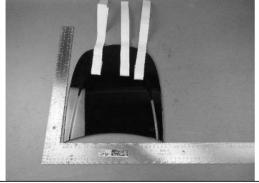


Original Sample

During test







After test-Condition 1

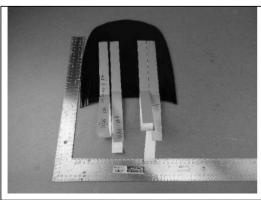


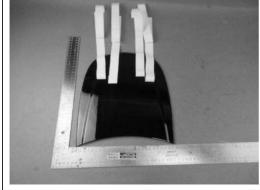


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Before test-Condition 2

After test-Condition 2

Equipment Information:

Equipment	Brand	Model	Equipment No.	Calibration date	Next Calibration date
Single arm pull machine	INSTRON	68SC-5+AVE2	P-852	2021-11-4	2022-11-3



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2.Test Item: Light Ageing Test-Xenon-arc Exposure

Sample Description: Plastic film

Test Method: ISO 4892-2:2013 Cycle 1

Test Condition:

Exposure cycle:

ISO 4892-2:2013 cycle 1

Irradiance: (0.51±0.02)W/(m²·nm)@340nm

102 min light at (65±3) ℃ BST, (38±3) ℃ CT, (50±10)%RH

18 min light and water spray

Filter: Boro/Boro Exposure period: 168h

Test Result:

Sample	Appearance	requirement	Conclusion
1	No visible edge warping,	No advanced	Pass
	harden, yellowing, cracking.	No edge warping, no	
2	No visible edge warping,	harden,	Pass
2	harden, yellowing, cracking.	no yellowing, no	Fass
3	No visible edge warping,	cracking.	Pass
3	harden, yellowing, cracking.		Fass

Note:

- 1. The results were carried out within 1 hour after above specified durations for the intermediate inspection as well as at the end of the exposure.
- 2. Test specimens were cut from the sample.



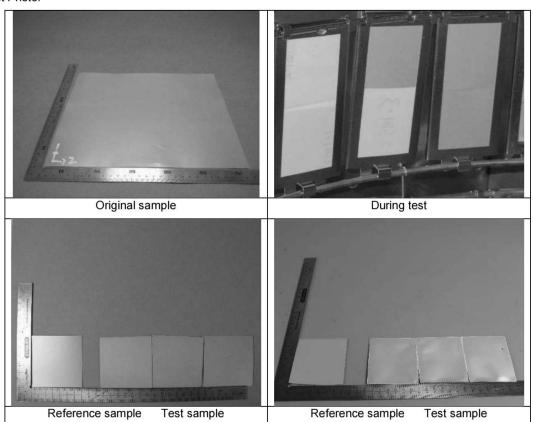


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After test

Test Photo:



Equipment Information:

Before test

Equipment	Brand	Model	Equipment No.	Calibration date	Next Calibration date
XENON Arc Weather-Ometer	Atlas	Ci5000	P-361	2021-4-26	2022-4-25



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3. Test Item: Low Temperature Resistance Test

Sample Description: Plastic film Test Method: Provided by Client

Test Condition:

Test temperature: -20 ℃

Test duration: 2 h

Lab Environment Condition: (23±2) °C, (50±5)%RH

Test Result:

Test Item		Test Result	Requirement	Conclusion
	1	No blistering, fracture, hardening, edge warping and yellowing; No change in appearance by visual inspection	No blistering, fracture,	Pass
Low temperature resistance test	2	No blistering, fracture, hardening, edge warping and yellowing; No change in appearance by visual inspection	hardening, edge warping and yellowing; No change in appearance by visual	Pass
	3	No blistering, fracture, hardening, edge warping and yellowing; No change in appearance by visual inspection	inspection	Pass

Note: Test specimens were cut from the sample.



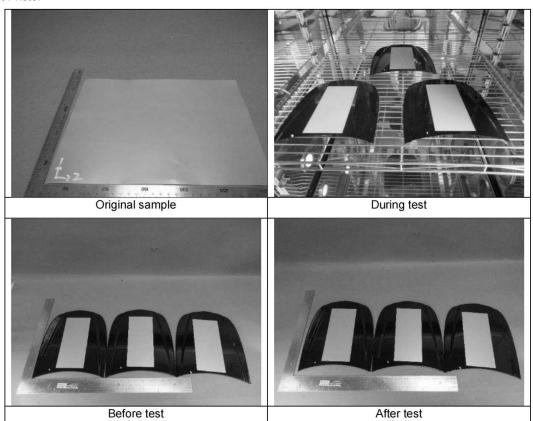
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Test Photo:



Equipment Information:

Equipment	Brand	Model	Equipment No.	Calibration date	Next Calibration date
Climate Test Chamber	WEISS- VOETSCH	C7-340 E series	P-878	2022-3-8	2023-3-7



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4. Test Item: Elongation at Break Sample Description: Plastic film

Test Method: GB/T 1040.1-2018 & GB/T 1040.3-2006

Test Condition:

Specimen: Type 2 Specimen width: 25 mm

Specimen thickness: Direction 1: 0.128 mm; Direction 2: 0.131 mm

Testing speed: 100 mm/min

Initial distance between grips: 100 mm

Lab Environmental Condition: (23 ± 2) °C, (50 ± 5) % RH

Test Result:

Test Item	Test Result				Requirem ent	Conclusion
Elongation at Break	Direction 1	260 % See table 1	≥170 %	Pass		
	Direction 2	210 % See Table 1	7 110 70	Pass		

Note: Test specimens were cut from the sample.

Table 1

Specimen No.	1	2	3	4	5
Direction 1, %	204.2	281.1	245.9	272.7	282.6
Direction 2, %	213.7	213.5	212.6	214.0	178.8



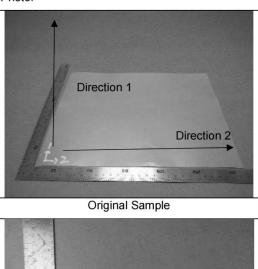
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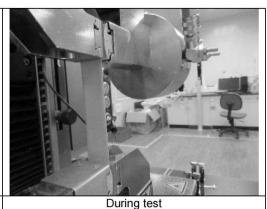


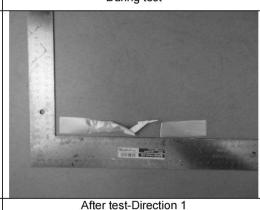
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Test Photo:







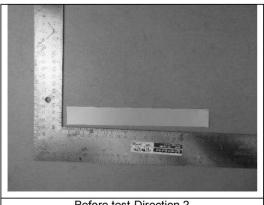
Before test-Direction 1

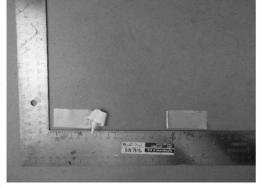




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Before test-Direction 2

After test-Direction 2

Equipment Information:

Equipment	Brand	Model	Equipment No.	Calibration date	Next Calibration date
Single arm pull machine	Zwick/Roell	BT2- FZ2.5TH.D16.001	P-635	2021-4-13	2022-4-12





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5.Test Item: Stone Chip Test Sample Description: Plastic film

Test Method: SAE J400-2002(R2012) Method C

Test Condition:

Test temperature: (25±5) ℃

Gravel type: 9.5mm~15.9mm water-worn road gravel

Gravel quantity: 0.473L

Sample placement Angle: 90°

Air pressure: 70psi Gravel feed: (7~10)s

Test Result:

Sample	Appearance	Requirement	Conclusion
1	Visible metal paint surface is damaged, no visible fracture.		Pass
2	Visible metal paint surface is damaged, no visible fracture.	The metal surface is allowed to be damaged, but there is no fracture.	Pass
3	Visible metal paint surface is damaged, no visible fracture.		Pass

Note: The plastic film shall be pasted on the surface of the metal plate for test, and the metal paint shall be evaluated after the protective film is removed after the test.



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Test Photo:



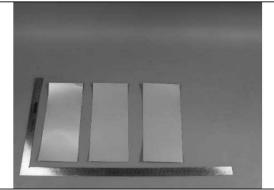
Original Sample



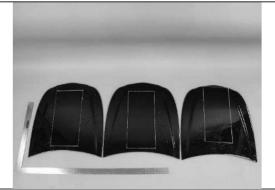




Before test Metal plate



Before test- Plastic film



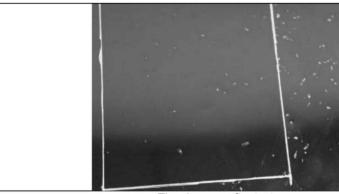
After test- Metal plate





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The close-up after test

Equipment Information:

Equipment	Brand	Model	Equipment No.	Calibration date	Next Calibration date
Multi-Test Gravelometer Impact Tester	H. J. Unkel	1	P-292	2021-11-18	2022-11-17

****** End of report******



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