

 No.
 :
 GZIN160500923CCM-02

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

i
t

Signed for and on behalf of SGS-CSTC Standards Technical Services Co.,Ltd

Authorized signatory

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Summary of test results

NO.	Test items	Test methods	Test r	Conclusion	
1	Flexural properties	EN 15534-4:2014 Section 4.5.2 and EN 15534-1:2014 Section 7.3.2 and Annex A	See test item 1		Pass
2	Mean Coefficient of Linear Thermal Expansion	ISO 11359-1:2014 & ISO 11359-2:1999 Method A	43×1	43×10 ⁻⁶ K ⁻¹	
3	Shore Hardness	ISO 868:2003	D/1	5:63	/
4	Scratch Resistance	EN 438-2: 2016 Section 25	Rati	ng:1	/
5	Impact resistance- Hollow profiles	EN 15534-4:2014 Section 4.5.1 and EN 15534-1:2014 Section 7.1.2.1	No crack, Max depth of residual indentation: 0.18mm		Pass
6	Moisture resistance under cyclic conditions	EN 15534-4:2014 Section 4.5.5 and EN 15534-1:2014 section 8.3.2 and EN321:2001	Mean of decrease of bending strength: 3.31% Max individual decrease of bending strength: 14.4%		Pass
7	Wear resistance	With reference to EN 660- 2:1999+ A1:2003 and Client's requirement	5.76mg/100 revolutions		/
	Light Ageing Test-	With reference to EN 15534- 1:2014 Section 8.1.1, Section 8.1.2 & EN ISO 4892-2:2013	ΔL* Δa*	8.16 -2.10	-
8	Xenon-arc	-arc Cycle 1 & ISO 7724-1:1984 &		-3.02	/
	Exposure ISO 7724-2:1984 & ISO 7724- 3:1984 & EN 20105-A02:1994		ΔE*ab	9.0	-
		and client's requirement	Grey scale	2	



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Test Information:

Sample description: See photo

Test item 1: Flexural properties

Test method: EN 15534-4:2014 Section 4.5.2 and EN 15534-1:2014 Section 7.3.2 and Annex A

Test condition:

Specimen: 500×141×22.7mm

Testing speed: 16.6mm/min

Span: 450mm

Test result:

F' max (arithmetic mean value): 3558N

F' max (minimum individual values): 3835N

Deflection under a load of 500 N (arithmetic mean value): 1.73mm

Deflection under a load of 500 N (maximum individual values): 1.80mm

EN 15534-4:2014 requirement:

F' max≥ 3300N (arithmetic mean value)

F' max \geq 3000N (individual values)

Deflection under a load of 500 N≤ 2.0mm (arithmetic mean value)

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Deflection under a load of 500 N≤ 2.5mm (individual values)

Conclusion: Pass



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Test Item 2: Mean Coefficient of Linear Thermal Expansion

Test Method: ISO 11359-1:2014 & ISO 11359-2:1999 Method A

Test Condition:

Specimen: 10.08 mm ×5.70 mm ×8.48 mm

Rate of temperature: 5 °C/min

Load: 4 kPa

Flow rate(N₂): 50 ml/min

Test temperature: -20 °C~80 °C

Test mode: Compression

Test direction: Length

Number of specimens tested: 1

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

Test Result:

Test Item	Test Result
Mean Coefficient of Linear Thermal Expansion	43×10 ⁻⁶ K ⁻¹

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Note: All test specimens were cut from the sample.



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Test Item 3: Shore Hardness

Test Method: ISO 868:2003

Test Condition:

Specimen maximum thickness: 23.2 mm

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

Test Result:

Test Item	Test Result
Shore Hardness	D/15:63

Note:

1. D/15:63 Indicated that D is the type of durometer; 15 s is the reading time; 63 is the hardness value.

2. The result was for reference only due to the uneven specimen surface.

3. Test specimens were cut from the sample.

Test Item 4: Scratch Resistance

Test Method: EN 438-2: 2016 Section 25

Test Condition:

Rubbing stylus: Hemispherical diamond scratching point of radius (0.09±0.003)mm and an

included angle of (90 \pm 1) $^{\circ}$

Rotational frequency: (5 ± 1) min⁻¹

Test Result:

Sample	Rating
1	1



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Note: According to EN 438-2-2005 table 3, rating scale as follow:

Pating	Discontinuous scratches, or faint	\geqslant 90% continuous double circle		
nating	superficial marks, or no visible marks	of scratch marks clearly visible		
Rating 5	6N	>6N		
Rating 4	4N	6N		
Rating 3	2N	4N		
Rating 2	1N	2N		
Rating 1	-	1N		

Test item 5: Impact resistance- Hollow profiles

Test method: EN 15534-4:2014 Section 4.5.1 and EN 15534-1:2014 Section 7.1.2.1

Test condition:

Specimen: 300×141×22.7mm

Weight of steel ball: 1000g

Diameter of steel ball: 50mm

Falling height: 700mm

Span: 200mm

Test result:

No crack, Max depth of residual indentation: 0.18mm

EN 15534-4:2014 requirement:

Hollow profiles: None of 10 test specimens shall show a failure with a crack length \geq 10mm or a depth of residual indentation \geq 0.5mm. In case of one failure, 10 additional test specimens shall be tested and no failure with a crack length \geq 10mm or a depth of residual indentation \geq 0.5mm shall occur.

Solid profiles: None of 10 test specimens shall show a failure with a depth of residual indentation \geq 0.5mm. In case of one failure, 10 additional test specimens shall be tested and no failure with a depth of residual indentation \geq 0.5mm shall occur.

Conclusion: Pass



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Test item 6: Moisture resistance under cyclic conditions

Test method: EN 15534-4:2014 Section 4.5.5 and EN 15534-1:2014 section 8.3.2 and EN 321:2001 Test condition:

Cyclic condition: 1. Immerse in 20±1 $^{\circ}$ C water for 28±1d \rightarrow 2. Freezing in -12 \sim -25 $^{\circ}$ C for 24±1h

 \rightarrow 3. Drying in 70±2°C for 72±1h \rightarrow 4. Immerse in 20±1°C water for 72±1h

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\rightarrow5. Freezing in -12 ~ -25°C for 24±1h \rightarrow 6. Drying in 70±2°C for 72±1h
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→7. Immerse in 20±1 $^{\circ}$ C water for 72±1h → 8. Freezing in -12 ~ -25 $^{\circ}$ C for 24±1h

→9. Drying in 70±2°C for 72±1h → 10. 23±2°C, 50±5%RH for 72h.

Specimen: 500×142×22.6mm

Bending span: 450mm

Bending testing speed: 16.6mm/min

Test result:

Mean of decrease of bending strength: 3.31% Max individual decrease of bending strength: 14.4%

EN 15534-4:2014 requirement:

Mean of decrease of bending strength $\leq 20\%$

Individual decrease of bending strength $\leq 30\%$

Conclusion: Pass

Test item 7: Wear resistance

Test method: With reference to EN 660-2:1999+ A1:2003 and Client's requirement

Test condition:

Weigh the specimens to an accuracy of ± 0.1 mg after conditioning. Load each wheel with a weight of (1 ± 0.01) kg. The flow of abrasive is (21 ± 3) g/min. Abrade one specimen during 5000 revolutions, with a break for weighing after each cycle of 1000 revolutions, and then test the two remaining specimens. If, however, the first specimen is abraded through before 5000 revolutions, discard it and test the two remaining specimen is abraded through before 5000 revolutions or when the specimen is abraded through.



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Calculate the average mass loss. Fm, in milligrams per 100 revolutions for each specimen as follows:

$$F_m = \frac{F_{tot}}{n} \times 100$$

Test result: 5.76mg/100revolutions

Note: All test specimens were cut from the sample.

Test Item 8: Light Ageing Test-Xenon-arc Exposure

Test Method: With reference to EN 15534-1:2014 Section 8.1.1, Section 8.1.2 & EN ISO 4892-2:2013 Cycle

1 & ISO 7724-1:1984 & ISO 7724-2:1984 & ISO 7724-3:1984 & EN 20105-A02:1994 and

client's requirement

Test Condition:

Exposure cycle:

EN ISO 4892-2:2013 cycle 1

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

102 min light at (65±3) $^\circ \!\!\! \mathbb C$ BST, (38±3) $^\circ \!\!\! \mathbb C$ CT, (50±10)%RH

18 min light and water spray

Filter: Boro/Boro

Exposure period: 2000h

Test Result:

Sample		Color di	Grev scale		
Campio	ΔL*	∆a*	Δb*	ΔE^*_{ab}	
1	8.16	-2.10	-3.02	9.0	2

Note:

- 1. According to EN 20105-A02:1994, the grey scale was determined under the D65 standard light, with scale 5 as the best and scale 1 as the worst.
- 2. ΔL^* , Δa^* , Δb^* and ΔE^*_{ab} were measured by sphere spectrophotometer under D65 standard light source and with 10° observer. The results include specular reflection condition, 8mm aperture.



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