

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 1 of 26

CUSTOMER NAME: SAIGE LONGLIFE DECKING LIMITED  
ADDRESS: VICARAGE BARNES LOWER QUINTON STRATFORD UPON AVON  
WARWICKSHIRE CV378SH ENGLAND

This Report supersedes the Report No. SHIN2012083962CM-02 dated: Mar. 04, 2021 issued by SGS, original report will be invalid from today.

Sample Name : SAIGE LONGLIFE DECKING  
Product Specification : 143\*23mm  
Material and Mark : WPC  
Other Information : Grey Hollow Mid-Groove

Above 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.

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Test Required : Please see the next page(s)  
SGS Ref. No. : NJIN2011005002ML  
Ref. Standard : Please see the next page(s)  
Date of Receipt : Dec 23, 2020  
Testing Start Date : Dec 23, 2020  
Testing End Date : Apr 08, 2021  
Test result(s) : For further details, please refer to the following page(s)  
(Unless otherwise stated the results shown in this test report refer only to the sample(s) tested)

Signed for  
SGS-CSTC Standards Technical  
Service (Shanghai)Co., Ltd.

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Erin Huang  
Authorized signatory

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 2 of 26

## Summary of Results:

No.	Test Item	Test Method	Result	Conclusion	
1	Pendulum Test	BS 7976-2:2002+A1:2013	See result	/	
2	Nail Withdrawal	EN 15534-1:2014+A1:2017 & EN 13446:2002	See result	/	
3	Swelling in Thickness after Immersion in Water	EN 317:1993	0.2%	/	
4	Flexural Strength and Modulus of Elasticity	ISO 178:2019	See result	/	
5	Charpy Notched Impact Strength	BS EN ISO 179-1:2010	2.9kJ/m <sup>2</sup> C (Complete break)	/	
6	Charpy Unnotched Impact Strength	BS EN ISO 179-1:2010	11kJ/m <sup>2</sup> C (Complete break)	/	
7	Density	EN ISO 1183-1:2019 Method A	1.392g/cm <sup>3</sup>	/	
8	Flexural Test at Specified Temperature	EN ISO 178:2019 Method A	Flexural Strength	83.1MPa	/
			Flexural Modulus	8100MPa	
9	Tensile Modulus	EN ISO 527-1:2019 & EN ISO 527-2:2012	3750MPa	/	
10	Tensile Test	EN ISO 527-1:2019 & EN ISO 527-2:2012	Tensile Strength	31.2MPa	/
			Tensile Strain at Break	2.4%	
11	Mean Coefficient of Linear Thermal Expansion	ISO 11359-1:2014 & ISO 11359-2:1999 Method A	Length	43×10 <sup>-6</sup> K <sup>-1</sup>	/
			Width	74×10 <sup>-6</sup> K <sup>-1</sup>	

# TEST REPORT

No. : SHIN2012083962CM-03

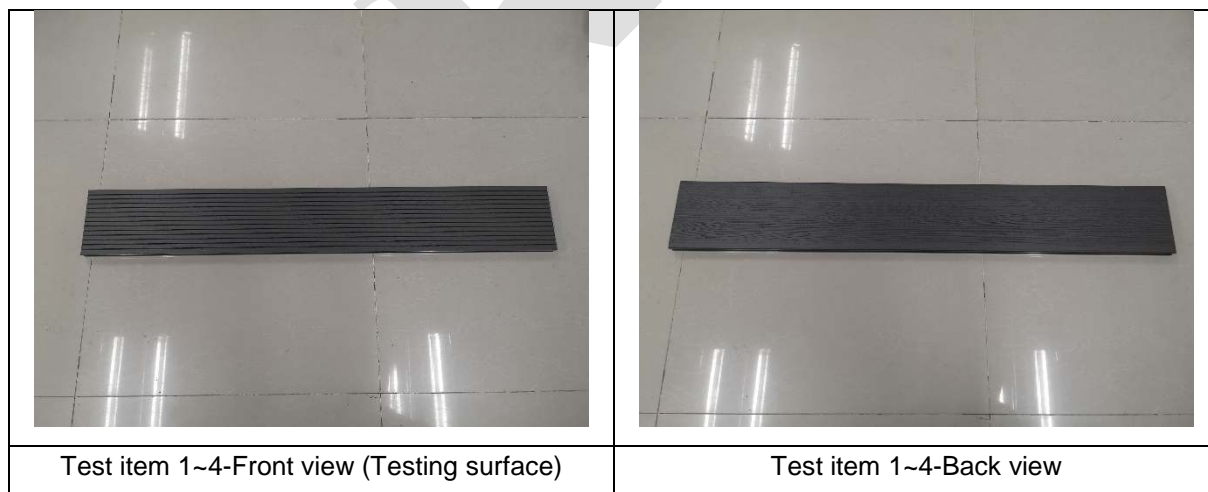
Date : Apr 08, 2021

Page: 3 of 26

12	Hot Nut Test	BS 5287:1988	See result	/
13	RoHS	With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 and IEC 62321-8:2017	See result	/
14	Formaldehyde Emission	With reference to EN 717-1:2004	ND	/

Note: Pass : Meet the requirements;  
Fail : Does not meet the requirements;  
/ : Not Apply to the judgment.

Original Sample Photo(s):

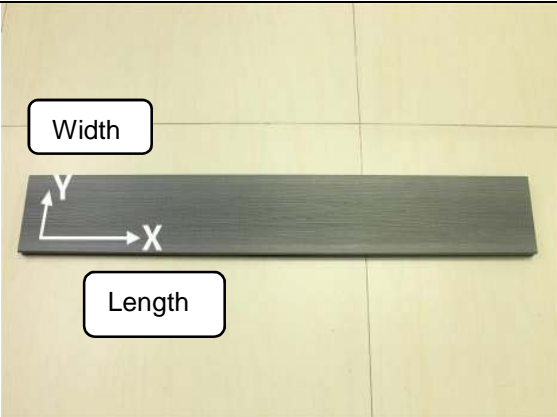




# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 4 of 26

	
<p>Test item 5~11</p>	<p>Hot Nut Test</p>
	
<p>RoHS / Formaldehyde Emission</p>	

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 5 of 26

1. Test Item: Pendulum Test

Test Method: BS 7976-2:2002+A1:2013

Test Condition:

Specimen: 200mm×143mm×23mm, 8pcs

Test Condition: Dry and wet

Testing Surface: Front view and back view

Test direction: Parallel to the grain

Test temperature: 23°C

Slider type: TRL

Temperature corrections for PTV: No correction

Lab Environmental Condition: 20±5°C, 50±5%RH

Test result:

Test Item		Test Result					
		PTV				Average of PTV	PTV (Temperature corrections)
Pendulum test – Front view	Dry	59	58	60	60	59	59
	Wet	44	46	45	45	45	45
Pendulum test – Back view	Dry	49	47	46	45	47	47
	Wet	39	40	39	36	38	38

Note: Test specimens were cut from original sample.

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 6 of 26

2. Test Item: Nail withdrawal

Test Method: EN 15534-1:2014+A1:2017 & EN 13446:2002

Test Condition:

Specimen: 50mm×50mm×23mm, 6pcs

Diameter of the lead hole:  $\Phi$ 2.0mm

Dimension of the screw:  $\Phi$ 4.0mm×38mm

Depth of threaded: throughout the specimens

Test Rate: 1.5mm/min

Lab Environmental Condition:  $20\pm 2^{\circ}\text{C}$ ,  $65\pm 5\%\text{RH}$

Test result:

Test item		Test result							
		Ind.						Ave.	Standard deviation
Nail withdrawal	d (mm)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	/
	$l_p$ (mm)	23.3	23.3	23.3	23.4	23.2	23.4	23.3	/
	$\rho$ (g/cm <sup>3</sup> )	0.9	0.9	0.9	0.9	0.9	0.9	0.9	/
	$F_{\max}$ (N)	2219	2086	2083	2389	2211	2509	2250	170
	f (N/mm <sup>2</sup> )	23.8	22.4	22.3	25.5	23.8	26.8	24.2	1.8

Note: Test specimens were cut from original sample.

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 7 of 26

3. Test Item: Swelling in Thickness after Immersion in Water

Test Method: EN 317:1993

Test Condition:

Specimen: 50mm×50mm×23mm, 8pcs

Immersion in water: 24h

Lab Environmental Condition: 20±2°C, 65±5%RH

Test result:

Test Item	Test result								
	Individual value								Average value
Swelling in Thickness after Immersion in Water (%)	0.2	0.3	0.2	0.2	0.1	0.1	0.3	0.1	0.2

Note: Test specimens were cut from original sample.

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 8 of 26

## 4. Test Item: Flexural Strength and Modulus of Elasticity

Test Method: ISO 178:2019

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

Test Condition:

1) Specimen: 500mm×143mm×23mm, 5pcs

Test Span: 300mm

Test Rate: 6.5mm/min

Test result:

Test item	Test result					
	Individual value					Average value
Flexural Strength (MPa)	42.9	44.1	43.2	43.1	43.5	43.4
Modulus of Elasticity (MPa)	3422	3370	3454	3437	3401	3417

2) Specimen: 500mm×143mm×23mm, 5pcs

Test Span: 350mm

Test Rate: 8.9mm/min

Test result:

Test item	Test result					
	Individual value					Average value
Flexural Strength (MPa)	45.0	44.9	45.6	45.0	44.9	45.1
Modulus of Elasticity (MPa)	4014	4200	4138	4057	4101	4102

3) Specimen: 500mm×143mm×23mm, 5pcs

Test Span: 400mm

Test Rate: 11.6mm/min

Test result:

Test item	Test result					
	Individual value					Average value
Flexural Strength (MPa)	44.1	45.0	40.6	42.1	44.2	43.2
Modulus of Elasticity (MPa)	3953	4081	3415	3579	3849	3775

Note: Test specimens were cut from original sample.



# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 9 of 26

5. Test Item: Charpy Notched Impact Strength

Test Method: BS EN ISO 179-1:2010

Test Condition:

Specimen: ISO 179-1/1eA (Notch preparation: machining)

Specimen thickness: 5.77 mm

The capacity of the pendulum: 1J

Impact speed: 2.9m/s

Span: 62mm

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

Test Result:

Test Item	Test Result
Charpy Notched Impact Strength	2.9kJ/m <sup>2</sup> C (Complete break)

Note: Test specimens were cut from the sample.

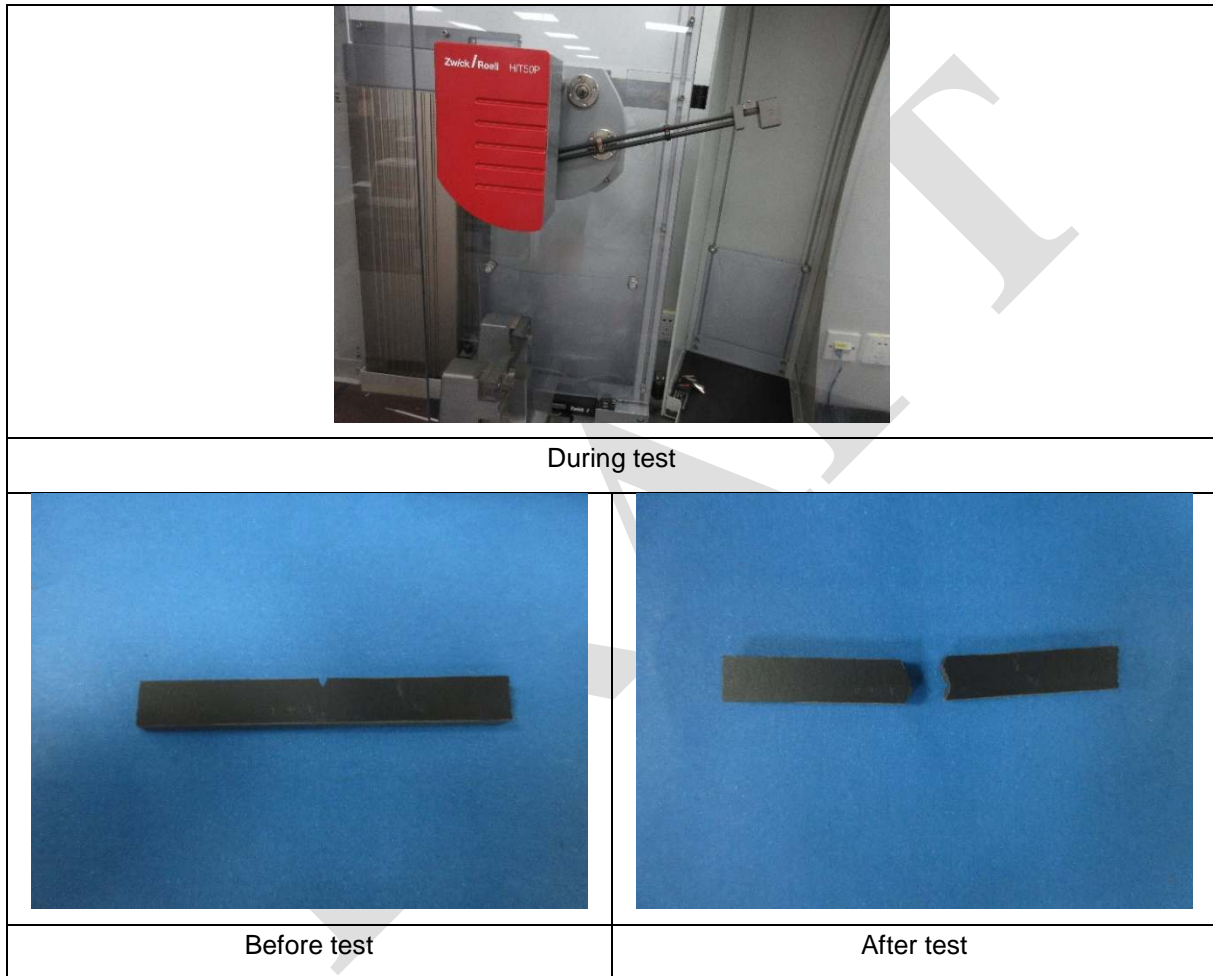
# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 10 of 26

Test Photos:



Note: The test was performed by SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center.

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 11 of 26

6. Test Item: Charpy Unnotched Impact Strength

Test Method: BS EN ISO 179-1:2010

Test Condition:

Specimen: ISO 179-1/1eU

Specimen thickness: 5.81 mm

The capacity of the pendulum: 4J

Impact speed: 2.9m/s

Span: 62mm

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

Test Result:

Test Item	Test Result
Charpy Unnotched Impact Strength	11kJ/m <sup>2</sup> C (Complete break)

Note: Test specimens were cut from the sample.

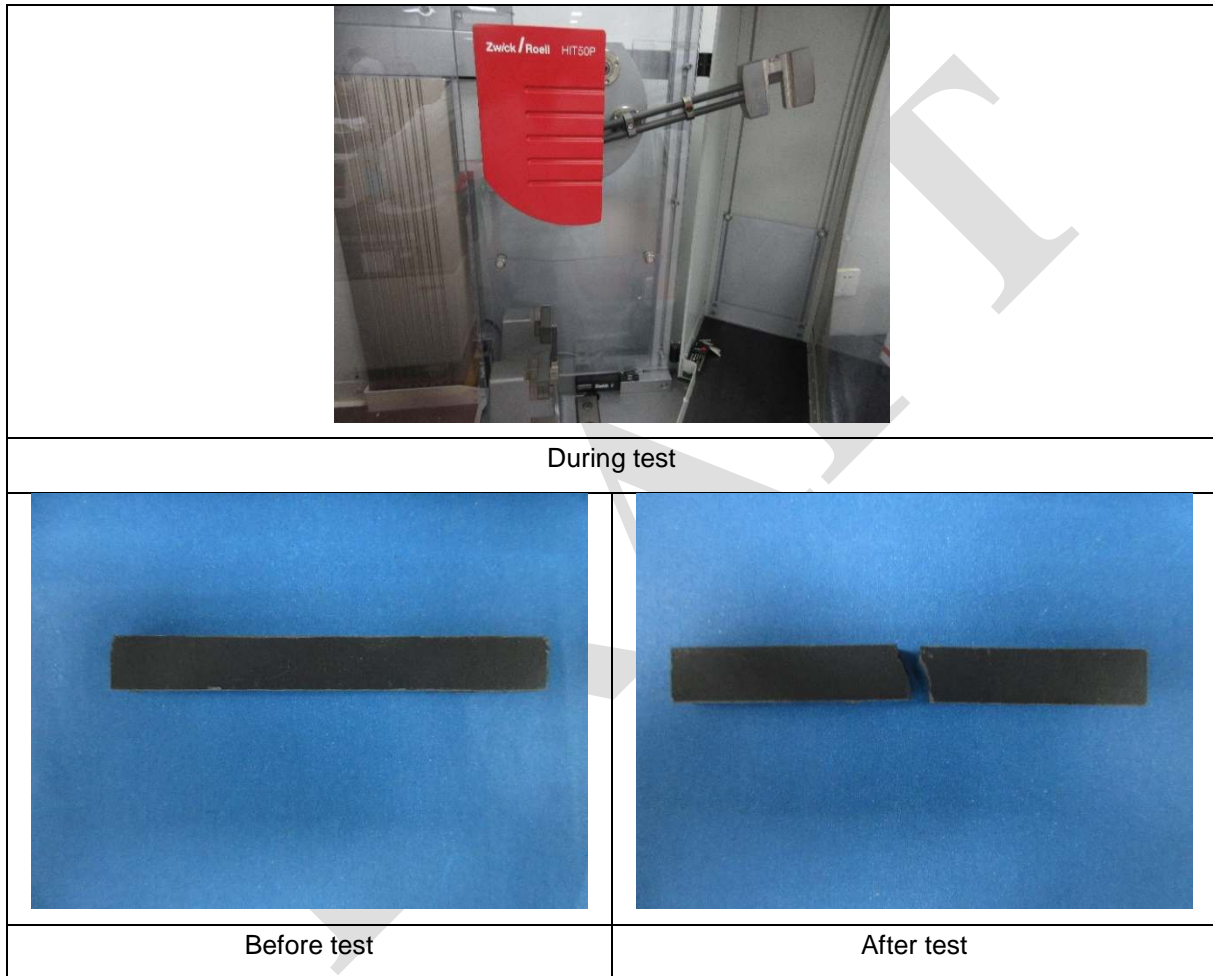
# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 12 of 26

Test Photos:



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# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 13 of 26

7. Test Item: Density

Test Method: EN ISO 1183-1:2019 Method A

Test Condition:

Absolute alcohol,  $23 \pm 0.5$  °C

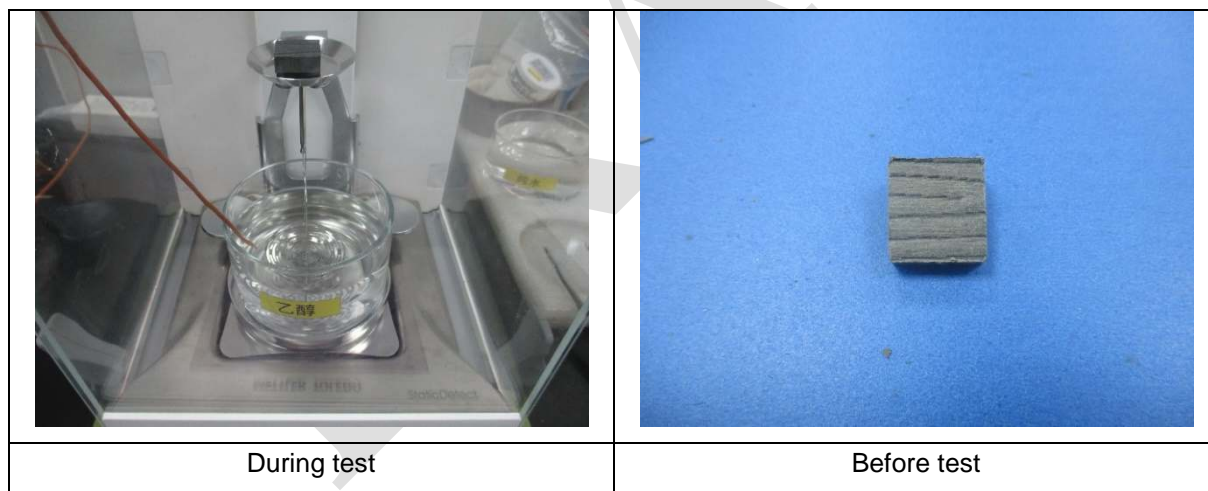
Lab Environmental Condition:  $23 \pm 2$  °C,  $50 \pm 5$  %RH

Test Result:

Test Item	Test Result
Density	1.392g/cm <sup>3</sup>

Note: Test specimens were cut from the sample.

Test Photos:



Note: The test was performed by SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center.

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 14 of 26

8. Test Item: Flexural Test at Specified Temperature

Test Method: EN ISO 178:2019 Method A

Test Condition:

Specimen: 120mm×14.90mm×5.86mm

Test condition: -35°C, 2h→-35°C

Testing speed: 2mm/min

Span: 94mm

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

Test Result:

Test Item	Test Result
Flexural Strength	83.1MPa
Flexural Modulus	8100MPa

Note:

1. Test specimens were cut from the sample.
2. The smooth surface was faced to the loading.

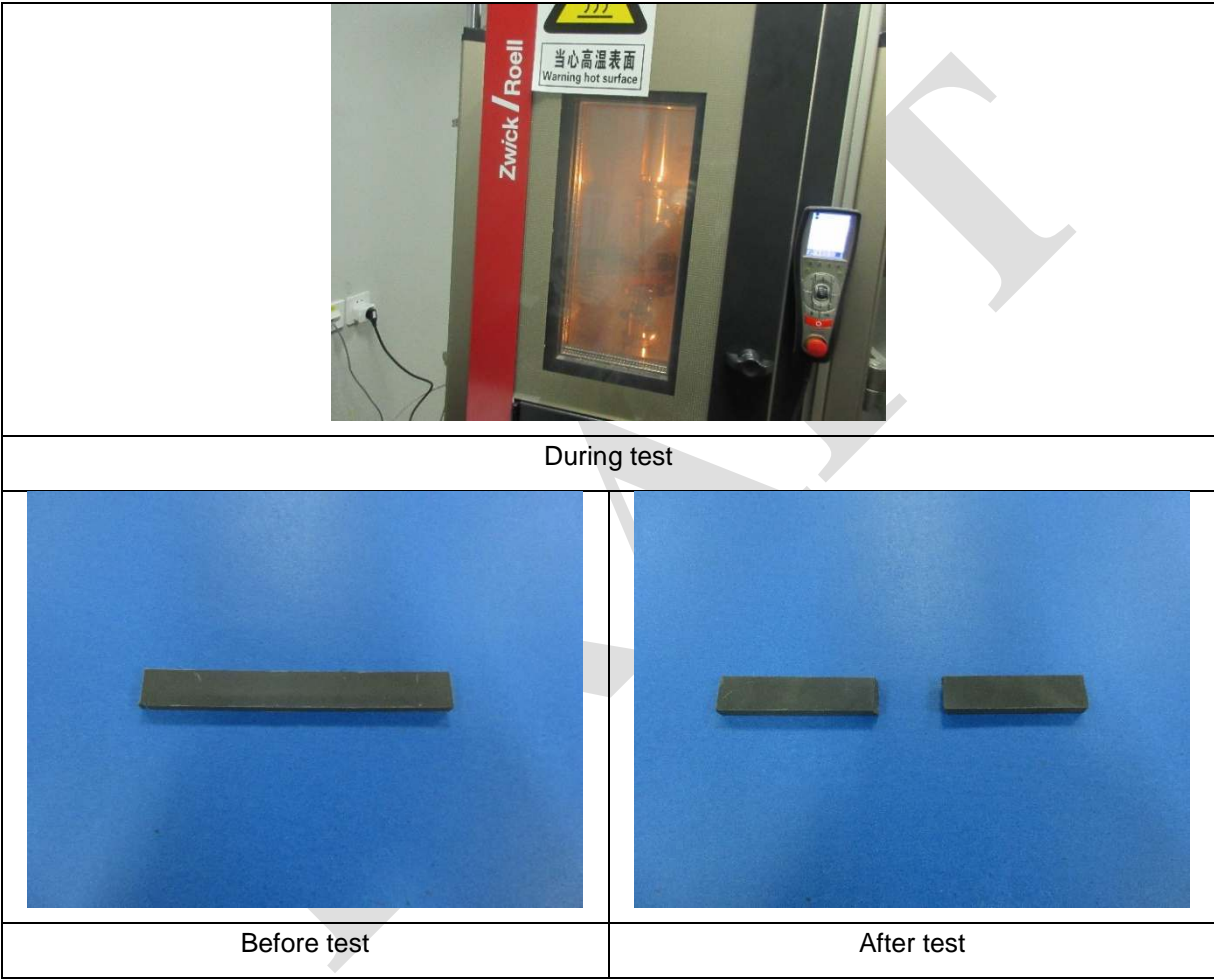
# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 15 of 26

Test Photos:



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# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 16 of 26

9. Test Item: Tensile Modulus

Test Method: EN ISO 527-1:2019 & EN ISO 527-2:2012

Test Condition:

Specimen: Type 1B

Specimen thickness: 5.88mm

Testing speed: 1 mm/min

Gauge length: 50 mm

Initial distance between grips: 115 mm

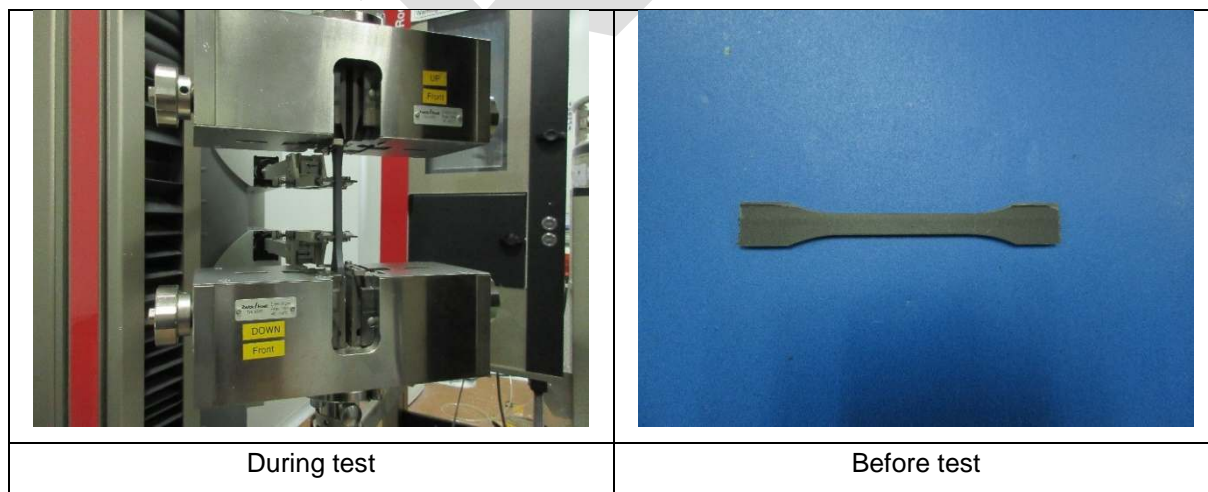
Lab Environmental Condition: 23±2°C, 50±5%RH

Test Result:

Test Item	Test Result
Tensile Modulus	3750MPa

Note: Test specimens were cut from the sample.

Test Photos:



Note: The test was performed by SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center.



# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 17 of 26

10. Test Item: Tensile Test

Test Method: EN ISO 527-1:2019 & EN ISO 527-2:2012

Test Condition:

Specimen: Type 1B

Specimen thickness: 5.88mm

Testing speed: 5mm/min

Gauge length: 50 mm

Initial distance between grips: 115 mm

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

Test Result:

Test Item	Test Result
Tensile Strength	31.2MPa
Tensile Strain at Break	2.4%

Note: Test specimens were cut from the sample.

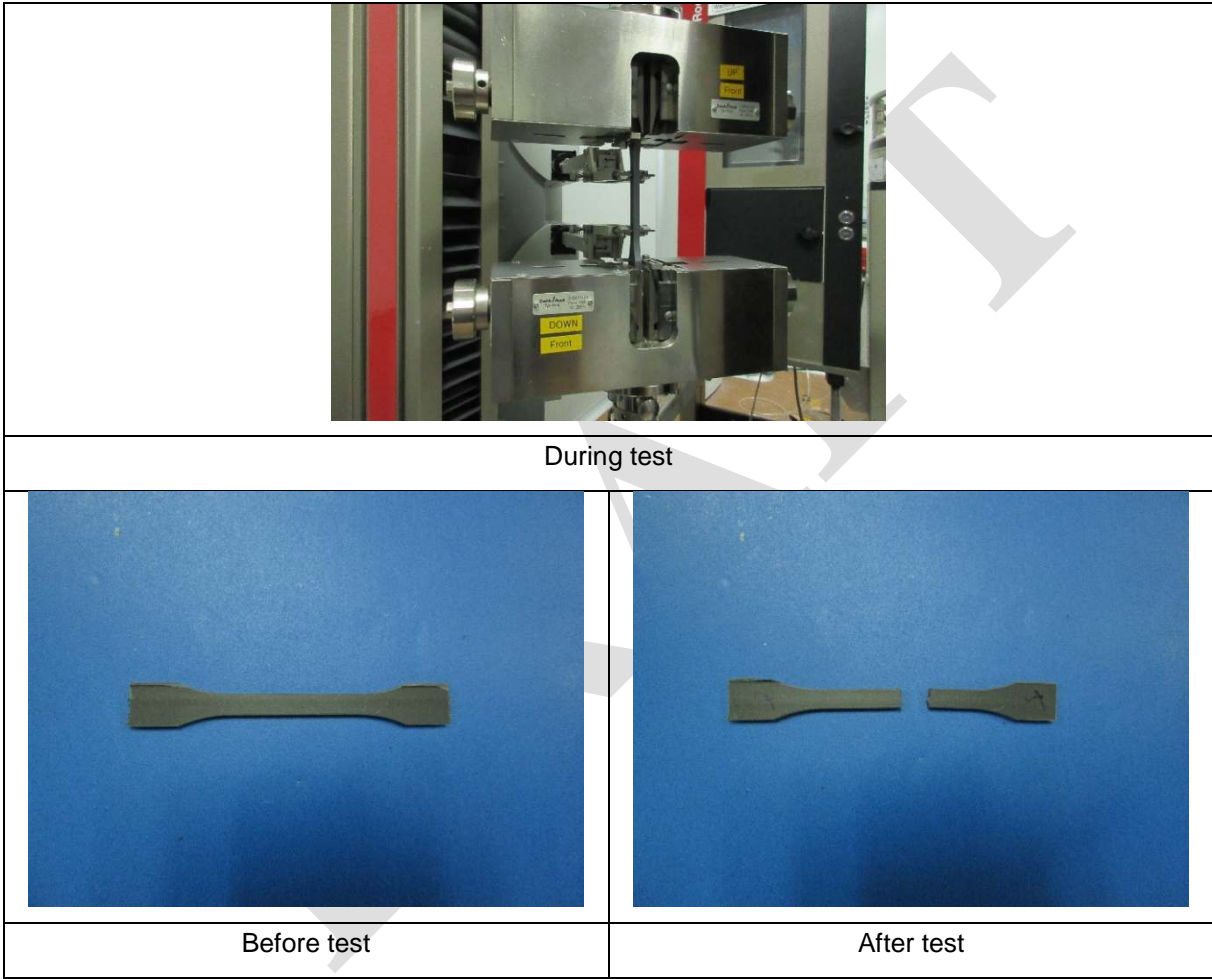
# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 18 of 26

Test Photos:



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# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 19 of 26

11. Test Item: Mean Coefficient of Linear Thermal Expansion

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

Test Condition:

Length - Specimen: 8.56 mm x5.70 mm x5.20 mm

Width - Specimen: 8.72 mm x5.64 mm x5.42 mm

Rate of temperature: 5 °C/min

Load: 4 kPa

Flow rate(He): 50 ml/min

Test temperature: 0 °C~70 °C

Test mode: Compression

Test direction: Length & Width

Number of specimens tested: 1(For each direction)

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

Test Result:

Test Item	Test Result	
Mean Coefficient of Linear Thermal Expansion	Length	43×10 <sup>-6</sup> K <sup>-1</sup>
	Width	74×10 <sup>-6</sup> K <sup>-1</sup>

Note: Test specimens were cut from the sample.

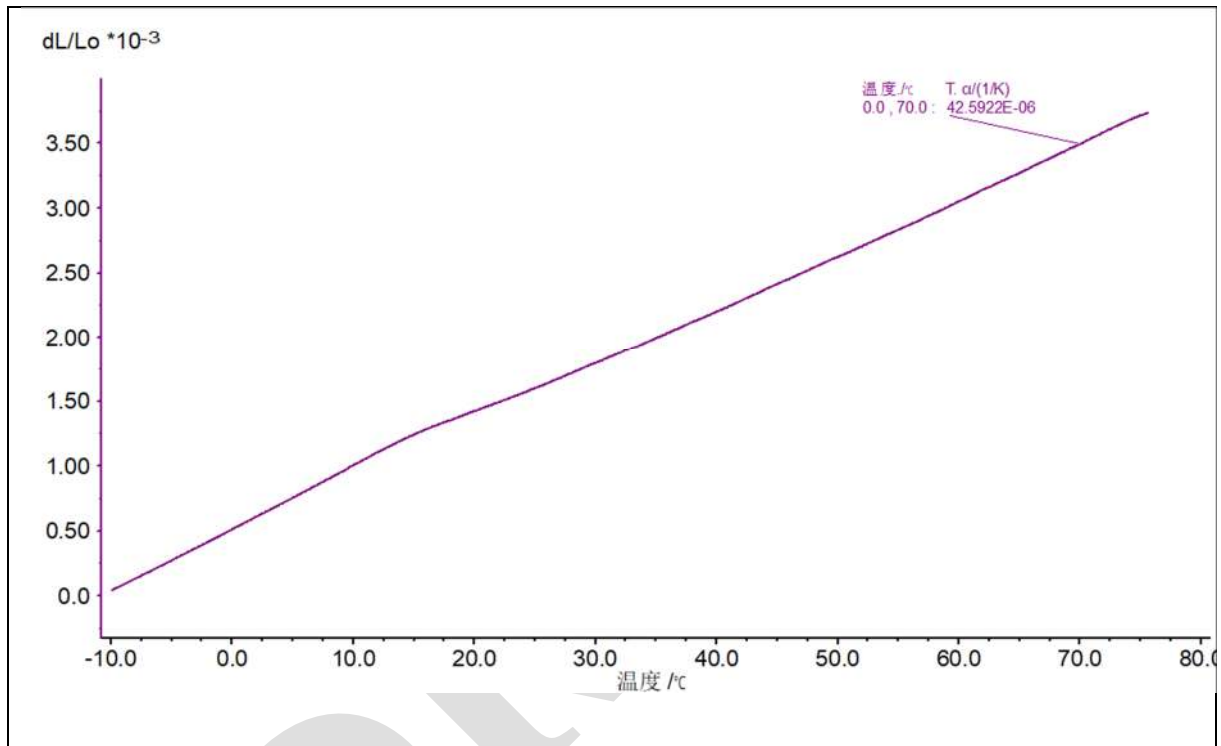
# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 20 of 26

Curve - Length:



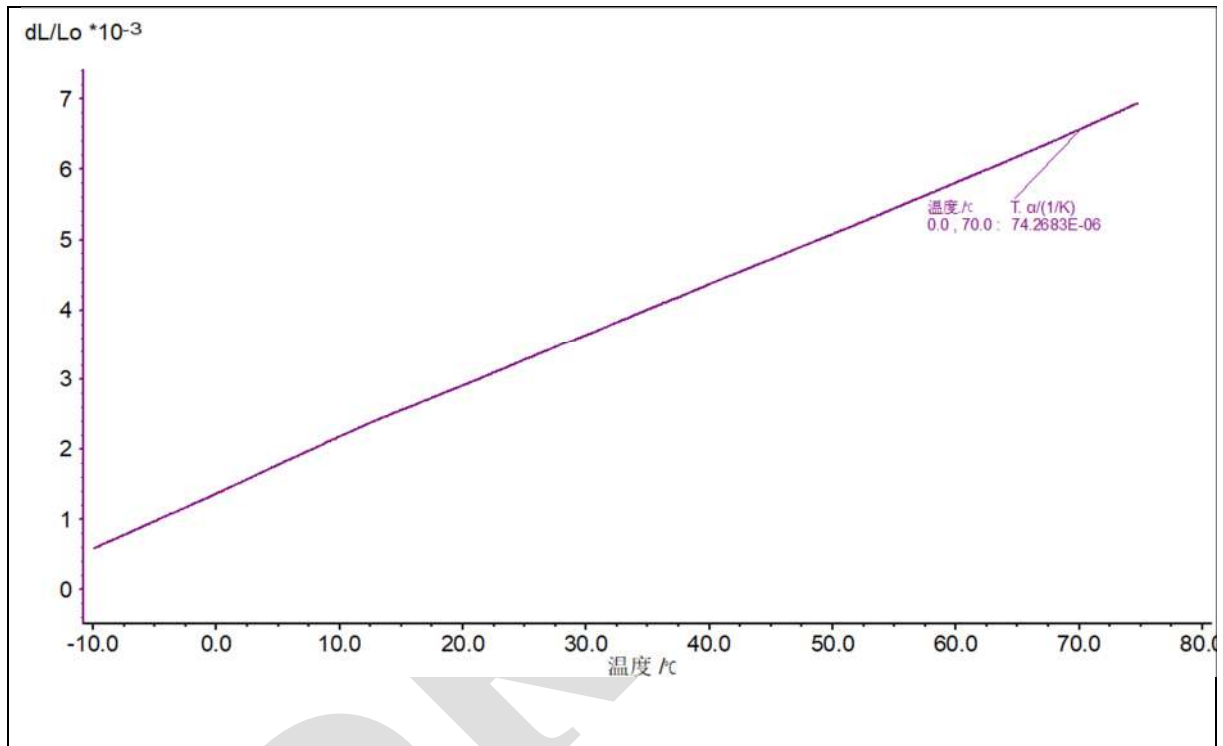
# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 21 of 26

Curve - Width:



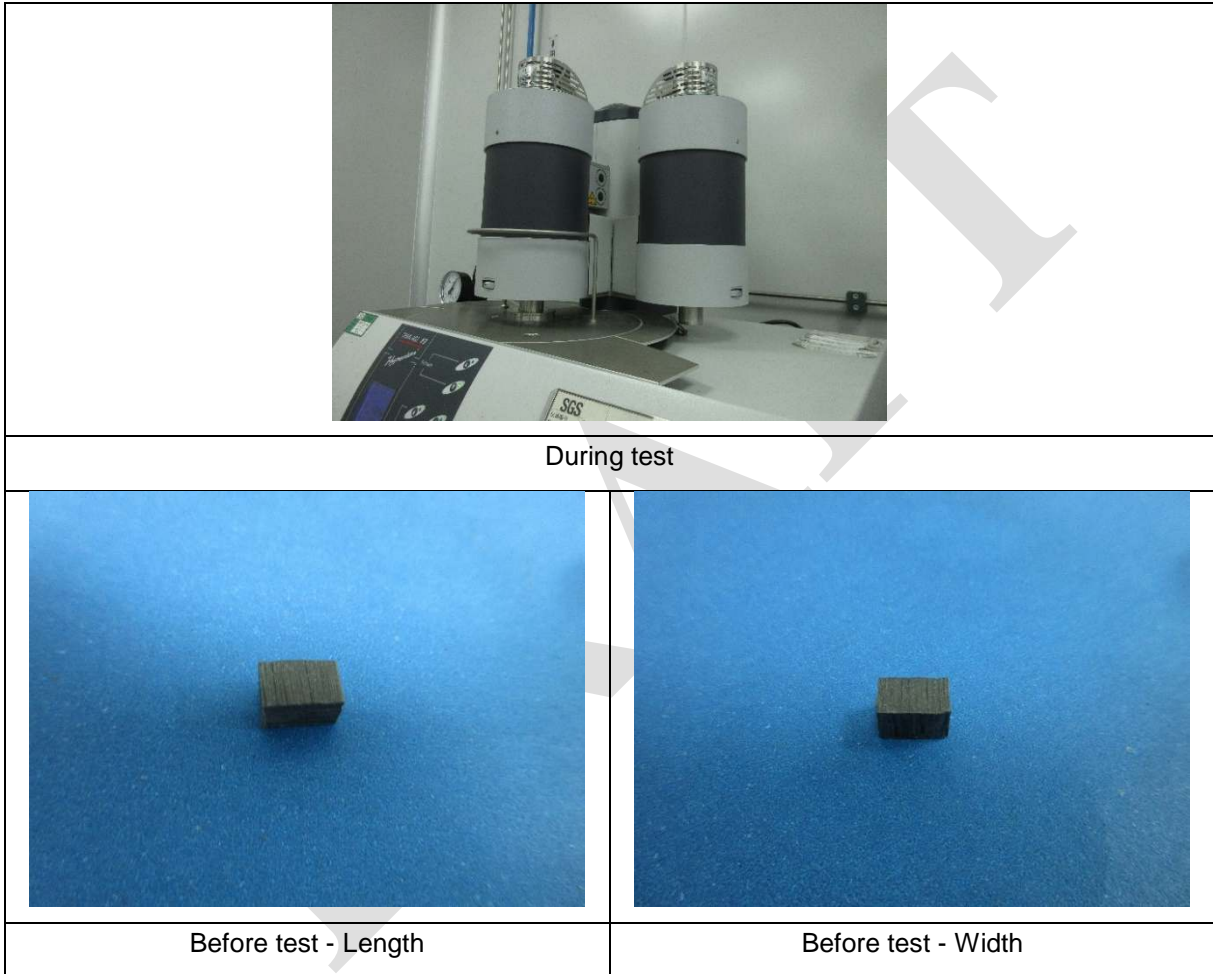
# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 22 of 26

Test Photos:



Note: The test was performed by SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch Testing Center.

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 23 of 26

12. Test Item: Hot Nut Test

Test Method: BS 5287:1988

## I. Sample details

Sample description / Color	Saige Long Life Decking / Dark Grey
Size of sample	300mm×300mm, 3pcs

Conditioning: prior to the test, the specimens were conditioned in the atmosphere at a temperature of  $20 \pm 2$  °C and a humidity of  $65 \pm 2$  % for at least 24 h.

## II. Test conducted

Methods of mounting test specimen:

Specimen No.	1	2	3
Duration of flame (s)	138	119	103
Afterglow and / or smouldering (s)	0	0	0
Time for the effects of ignition to reach the clamping ring (s)	NA	NA	NA
The greatest radius to the nearest 5 mm of the affected area (mm)	20	15	20
Whether the specimen ignites or not (Yes / No)	Yes	Yes	Yes

Remark: NA---Not applicable, the ignition did not reach the clamping ring

Comments (BS 5287:1988):

The radius of affected area is less than 35 mm, which can be described as “low radius of effects of ignition”, indicates that if the material is ignited from a small source such as lighted match or a glowing coal, it will not spread flame under normal conditions in the absence of supporting thermal radiation.

Statements: The test results related only to the behaviour of the test specimens after application of a small source of ignition. They shall not be used as a means of assessing how the product will contribute to an established fire.

Note: The test was performed by SGS-CSTC Standards Technical Services Co., Ltd. Anji Branch Testing Center.

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 24 of 26

13. Test Item: RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU

Test Part Description: Black solid piece

Test Method: With reference to IEC 62321-4:2013+AMD1:2017, IEC 62321-5:2013, IEC 62321-7-2:2017, IEC 62321-6:2015 and IEC 62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit	MDL	Result
Cadmium (Cd)	100	mg/kg	2	ND
Lead (Pb)	1000	mg/kg	2	38
Mercury (Hg)	1000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1000	mg/kg	8	ND
Sum of PBBs	1000	mg/kg	-	ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	-	mg/kg	5	ND
Tribromobiphenyl	-	mg/kg	5	ND
Tetrabromobiphenyl	-	mg/kg	5	ND
Pentabromobiphenyl	-	mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl	-	mg/kg	5	ND
Nonabromobiphenyl	-	mg/kg	5	ND
Decabromobiphenyl	-	mg/kg	5	ND
Sum of PBDEs	1000	mg/kg	-	ND
Monobromodiphenyl ether	-	mg/kg	5	ND
Dibromodiphenyl ether	-	mg/kg	5	ND
Tribromodiphenyl ether	-	mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether	-	mg/kg	5	ND
Hexabromodiphenyl ether	-	mg/kg	5	ND
Heptabromodiphenyl ether	-	mg/kg	5	ND
Octabromodiphenyl ether	-	mg/kg	5	ND
Nonabromodiphenyl ether	-	mg/kg	5	ND



# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 25 of 26

Decabromodiphenyl ether	-	mg/kg	5	ND
Di-butyl Phthalate (DBP)	1000	mg/kg	50	ND
Benzyl Butyl Phthalate (BBP)	1000	mg/kg	50	ND
Di-2-Ethyl Hexyl Phthalate (DEHP)	1000	mg/kg	50	ND
Diisobutyl Phthalates (DIBP)	1000	mg/kg	50	ND

## Remarks:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

## Notes:

(1) The maximum permissible limit is quoted from RoHS Directive (EU) 2015/863.

IEC 62321 series is equivalent to EN 62321 series

[https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP\\_ORG\\_ID,FSP\\_LANG\\_ID:1258637,25](https://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25)

(2) The restriction of DEHP, BBP, DBP and DIBP shall apply to medical devices, including in vitro medical devices, and monitoring and control instruments, including industrial monitoring and control instruments, from 22 July 2021.

# TEST REPORT

No. : SHIN2012083962CM-03

Date : Apr 08, 2021

Page: 26 of 26

14. Test Item: Formaldehyde Emission

Test Part Description: Black solid piece

Test Method: With reference to EN 717-1:2004, analysis was performed by UV-Vis.

Test Item(s)	Unit	MDL	Result
Formaldehyde Emission (In air)	mg/m <sup>3</sup>	0.080	ND

Remarks:

- (1) 1 mg/kg = 0.0001%
- (2) MDL = Method Detection Limit
- (3) ND = Not Detected ( < MDL )
- (4) "-" = Not Regulated

Notes:

- (1) Reference Limit: EN 13986:2004(E)
- (2) Formaldehyde class E1:  $\leq 0.124$  mg/m<sup>3</sup> air  
Formaldehyde class E2:  $> 0.124$  mg/m<sup>3</sup> air
- (3) The reported result is for reference only.

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