

EnviroBuild Materials Ltd

TEST REPORT

SCOPE OF WORK

Hyperion Explorer WPC Decking

REPORT NUMBER

201021008SHF-001

TEST DATE(S)

2020-10-21 - 2020-12-14

ISSUE DATE

2020-12-18

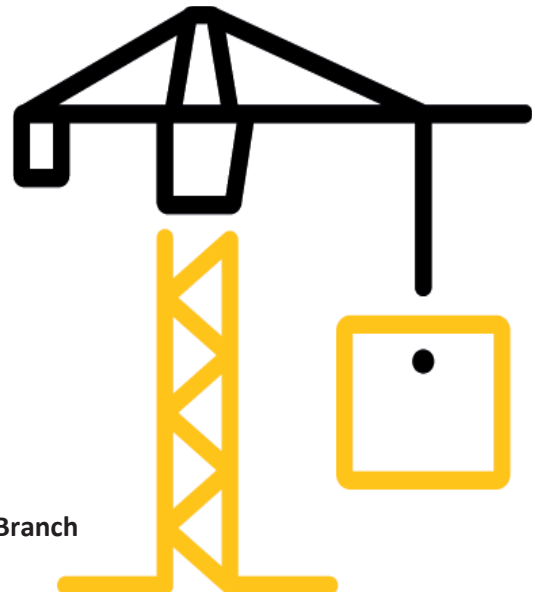
PAGES

19

DOCUMENT CONTROL NUMBER

LFT-APAC-SHF-OP-10k(May 1, 2020)

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Test Report

Issue Date: 2020-12-18 Intertek Report No. 201021008SHF-001
 Applicant: EnviroBuild Materials Ltd
 Address: 25 Lavington Street, London, SE1 0NZ
 Attn: Mr.James Brueton
 Manufacturer:
 Address:
 Test Type: Performance test, samples provided by the applicant.

Product Information

Product Name	Hyperion Explorer WPC Decking		Brand	/
Sample Description	Good Condition		Sample Amount	34 pcs
			Received Date	2020-09-15
Sample ID	Model	Specification		
S201021008SHF.001~012	D-145H21	145x21mm		

Test Methods And Standards

Test Standard	EN 15534-1:2014 Section 6.1, 6.4.2, 6.5, 6.6, 7.1.2.1, 7.4.1, 7.5, 8.3.1, 8.3.2, 8.3.3, 9.2, 9.3, 9.4, Annex A EN 15534-4: 2014 Section 4.3, 4.4, 4.5.1, 4.5.2, 4.5.3, 4.5.5, 4.5.6, 4.5.7 ISO 11359-2:1999, EN 479:2018, CEN/TS 15676:2007
Specification Standard	EN 15534-4: 2014
Test Conclusion	The samples were tested according to the above standards, and the results are shown in the following page.

Note:

1.This report relates specifically to the sample(s) that were drawn and provided by the applicant or their nominated third party. The reported result(s) provide no warranty or verification on the sample(s) representing any specific goods and/or shipment and only relate to the sample(s) as received and tested.

Report Authorized


 Name: Mason Wang Title: Reviewer

 Name: Jackie Zhou Title: Project Engineer



TESTING SERVICES

Test Report

Issue Date: 2020-12-18

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Test Items, Method and Results:

EN 15534-4: 2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results
Appearance	EN 15534-1:2014 Section 6.1 EN 15534-4: 2014 Section 4.3	Test specimens ware no crack, no blister and other visible defects.



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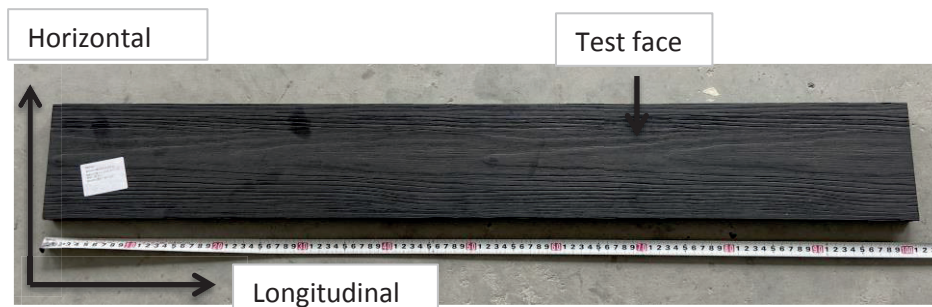
Test Items, Method and Results:

EN 15534-4: 2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results	Test requirements	Verdict
Slipperiness (Pendulum test)	EN 15534-1:2014 Section 6.4.2 CEN/TS 15676:2007 EN 15534-4: 2014 Section 4.4	Longitudinal direction: Mean: 56 Min.: 55 Horizontal direction: Mean: 73 Min.: 70	Pendulum value ≥ 36	Pass

Note:

1. Requirement is cited from EN 15534-4:2014 Table 1.
2. Test surface and direction please refer to below picture.
3. Test condition: Dry condition.



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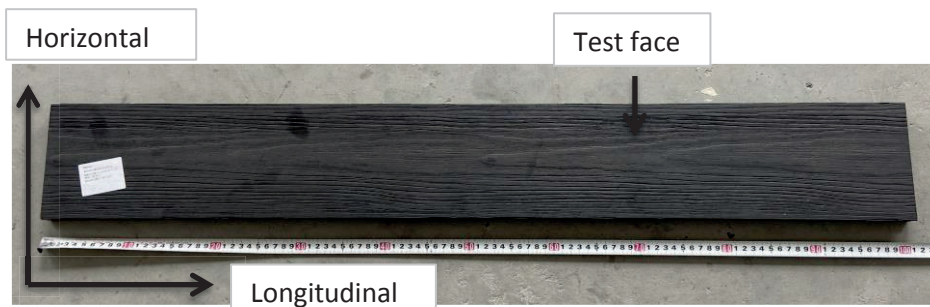
Test Items, Method and Results:

EN 15534-4: 2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results	Test requirements	Verdict
Slipperiness (Pendulum test)	EN 15534-1:2014 Section 6.4.2 CEN/TS 15676:2007 EN 15534-4: 2014 Section 4.4	Longitudinal direction: Mean: 38 Min.: 36 Horizontal direction: Mean: 45 Min.: 43	Pendulum value ≥ 36	Pass

Note:

1. Requirement is cited from EN 15534-4:2014 Table 1.
2. Test surface and direction please refer to below picture.
3. Test condition: Wet condition.



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Test Items	Test Method	Test Results	Test requirements	Verdict
Linear mass	EN 15534-1:2014 Section 6.5 EN 15534-4: 2014 Section 4.4	Mean.: 2603 g/m Max.: 2621 g/m Min.: 2587 g/m	Individual values \geq 95% declared value by the manufacturer.	N/A



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Test Items	Test Method	Test Results
Dimensions	EN 15534-1:2014 Section 6.6 EN 15534-4: 2014 Section 4.4	Mean Thickness: 21.86 mm
		Mean Width: 145.00 mm
		Mean Length: 1005 mm
		Max. Deviation flatwise straightness: 0.08 mm
		Max. Deviation edgewise straightness: 0.07 mm
		Max. Cupping: 0.15 mm

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Test Items	Test Method	Test Results	Test requirements	Verdict
Falling mass impact resistance	EN 15534-1:2014 Section 7.1.2.1 EN 15534-4: 2014 Section 4.5.1	Type Hollow profile Max. Crack length (mm): No crack Max. Residual Indentation (mm): 0.31	None of 10 test specimens shall show a failure with a crack length ≥ 10 mm or a depth of residual indentation $\geq 0,5$ mm.	Pass

Note:

1. The falling mass was 1000g and the drop height was 700mm.

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Test Items	Test Method	Test Results	Test requirements	Verdict
Flexural properties	EN 15534-1:2014 Annex A EN 15534-4: 2014 Section 4.5.2	Bending Strength: 27.4 MPa Modulus of elasticity: 3969 MPa Maximum load: Mean: 3786 N Min.: 3540 N Deflection at 500N: Mean: 0.86 mm Max.: 0.99 mm	Flexural properties -F'max: Mean \geq 3300 N Min. \geq 3000 N -Deflection under a load of 500 N Mean \leq 2,0 mm Max. \leq 2,5 mm	Pass

Note:

1. The test span was 330 mm offered by applicant.

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Test Items	Test Method	Test Results	Test requirements	Verdict
Creep behaviour	EN 15534-1:2014 Section 7.4.1 EN 15534-4: 2014 Section 4.5.3	Span: 330 mm	Known span in use	Pass
		Mean ΔS : 1.65 mm	Mean $\Delta S \leq 10$ mm	
		Max. ΔS : 1.72 mm	Max. $\Delta S \leq 13$ mm	
		Mean ΔS_r : 1.27 mm	Mean $\Delta S_r \leq 5$ mm	

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Test Items	Test Method	Test Results	Test requirements	Verdict
Swelling and water absorption (28 days immersion)	EN 15534-1:2014 Section 8.3.1 EN 15534-4: 2014 Section 4.5.5	<p>Mean Swelling:</p> <p>1.81 % in thickness 0.22 % in width 0.36 % in length</p> <p>Max. Swelling:</p> <p>2.36 % in thickness 0.23 % in width 0.44 % in length</p> <p>Water absorption:</p> <p>Mean: 4.32 % Max.: 5.06 %</p>	<p>Means swelling:</p> <p>≤ 4 % in thickness ≤ 0,8 % in width ≤ 0,4 % in length</p> <p>Max. swelling:</p> <p>≤ 5 % in thickness ≤ 1,2 % in width ≤ 0,6 % in length</p> <p>Water absorption:</p> <p>Mean ≤ 7 % Max. ≤ 9 %</p>	Pass

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Test Items	Test Method	Test Results	Test requirements	Verdict
Moisture resistance under cyclic test conditions	EN 15534-1:2014 Section 8.3.2 EN 15534-4: 2014 Section 4.5.5	Original Bending Strength: 27.4 MPa	Decrease of bending strength, Mean ≤ 20 % Max. ≤ 30 %	Pass
		After exposure,		
		Mean Bending Strength: 26.1 MPa		
		Decrease: 5 %		
		Min. Bending Strength: 24.4 MPa		
Decrease: 11 %				

Note:

1. The test span was 330 mm offered by applicant.

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Test Items	Test Method	Test Results	Test requirements	Verdict
Boiling Test	EN 15534-1:2014 Section 8.3.3 EN 15534-4: 2014 Section 4.5.5	Water absorption in weight: Mean: 3.06 % Max.: 3.34 %	Water absorption in weight: Mean \leq 7% Max. \leq 9%	Pass

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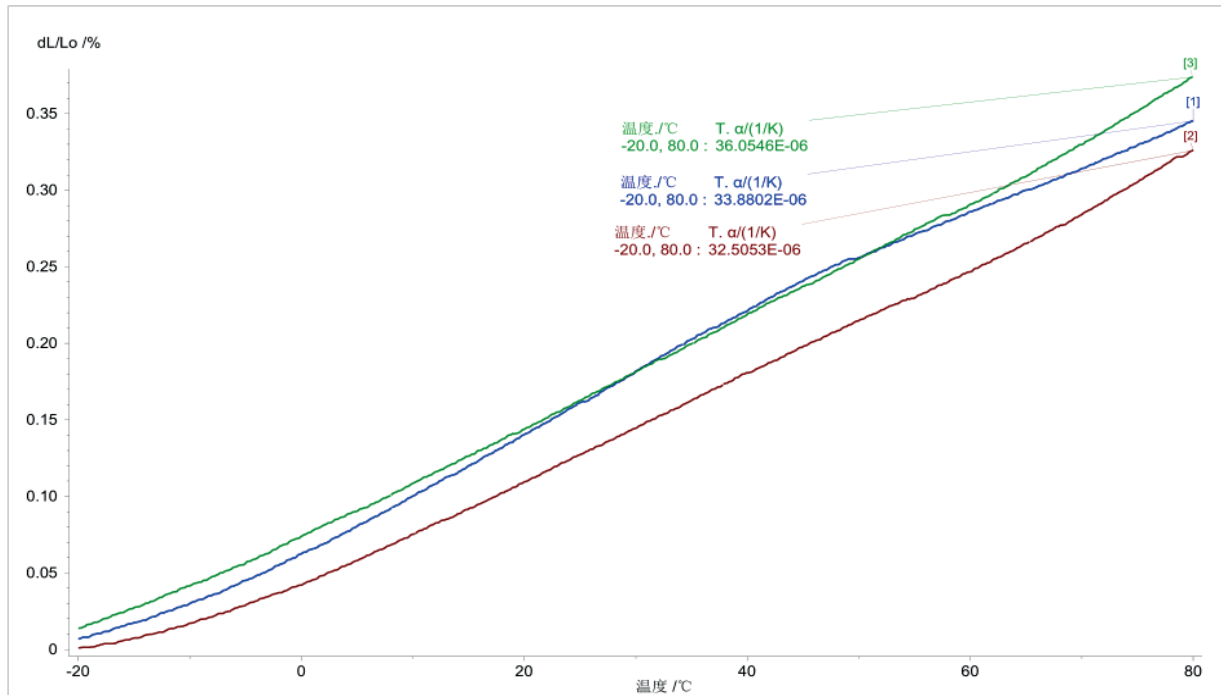
EN 15534-4: 2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC)) Part 4: Specifications for decking profiles and tiles

Test Items	Test Method	Test Results	Test requirements	Verdict
Linear thermal expansion coefficient*	EN 15534-1:2014 Section 9.2 EN 15534-4: 2014 Section 4.5.6 ISO 11359-2:1999	Mean: 34.2 $\times 10^{-6} K^{-1}$	$\leq 50 \times 10^{-6} K^{-1}$	Pass

Note:

- *Test item is subcontracted on accreditation by CNAS L2233.

Test graph:



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Test condition: Place the test pieces horizontally in the oven, maintain the test pieces in the oven for 60 min. at 100°C.

Test Items	Test Method	Test Results
Heat reversion	EN 15534-1:2014 Section 9.3 EN 15534-4:2014 Section 4.5.7 EN 479:2018	Test Temperature: 100°C Mean: 0.09 %

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Test condition: ambient air temperature 23±2°C

Test Items	Test Method	Test Results
Heat build-up	EN 15534-1:2014 Section 9.4 EN 15534-4:2014 Section 4.5.7	Set temperature rise for use in horizontal position: 50 °C
		Actual temperature rise for black control specimen: 50.4 °C
		Temperature of test specimen: 44.1 °C
		Predicted heat build-up ΔT: -6.3 °C



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Indenter: a hardened steel spherical body with diameter of 10 mm

Test load: Additional load of 2000N with preload of 20N

Indentation time: (25 ± 5) s

Recovery time: at least 24h

Test Items	Test Method	Test Results
Resistance to indentation	EN 15534-1:2014 Section 7.5	Brinell hardness: 79 MPa
	EN 15534-4:2014 Section 4.5.7	Rate of elastic recovery: 65 %



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Appendix A: Sample Received Photo



Front View(Test surface)



Back View



Section View

Revision:

NO.	Date	Changes	Author	Reviewer
201021008SHF-001	2020-12-18	First issue	Jackie Zhou	Mason Wang