

FLOORCO TRADING LTD

TEST REPORT

SCOPE OF WORK

LAMINATE FLOORING

REPORT NUMBER

230808001SHF-001

TEST DATE(S)

2023-08-08 - 2023-08-30

ISSUE DATE

2023-09-04

PAGES

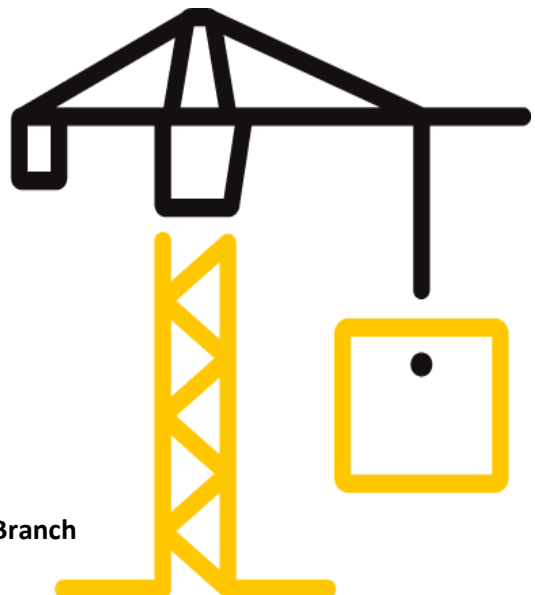
18

DOCUMENT CONTROL NUMBER

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Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch



Test Report

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Test Report

Issue Date: 2023-09-04 Intertek Report No. 230808001SHF-001
 Applicant: FLOORCO TRADING LTD
 Address: 118 CARBINE ROAD, MT WELLINGTON
 Attn: TERRY
 Test Type: Performance test, samples provided by the applicant.

Product Information

Product Name	LAMINATE FLOORING	Brand	/
Sample Description	Good Condition	Sample Amount	132pcs
		Received Date	2023-08-04
Sample ID	Model	Specification	
S230808001SHF.001~014	FLOORCO LAMINATE FLOORING	/	

Test Methods And Standards

Test Standard	EN 13329:2016+A2:2021, Annex A, Annex B, Annex C, Annex D, Annex H, EN ISO 24343-1:2012, EN 438-2:2016+A1:2018, Section 4, 26, EN ISO 16581:2019/ISO 16581:2014, EN 425:2002, ISO 24336:2005, ISO 24334:2019, EN 322:1993, EN 16094:2021 Procedure A
Specification Standard	EN 13329:2016+A2:2021
Test Conclusion	The samples were tested according to the above standards, and the results are shown in the following page.

Note:

1.This report does not involve sampling. The report only reflects conformity of the tested items of the samples provided by the testing applicant. Representativeness and authenticity of the submitted samples are responsibilities of the testing applicant.

Report Authorized

Sally Xie
 Name: Sally Xie
 Title: Reviewer

Daniel Zhang
 Name: Daniel Zhang
 Title: Project Engineer

Test Report

Issue Date: 2023-09-04

Intertek Report No. 230808001SHF-001

Test Items, Method and Results:

EN 13329:2016+A2:2021 Laminate floor coverings – Elements with a surface layer based on aminoplastic thermosetting resins – Specifications, requirements and test methods

General requirements:

Characteristics	Test results	Verdict
Geometrical Characteristics	refer to next page(s)	Fail
Dimensional variations after changes in relative humidity	$\delta l_{\text{average}} = 0.6\text{mm}$ $\delta w_{\text{average}} = 0.6\text{mm}$	Pass
Static indentation (mm)	0.01	Pass

Classification requirements:

Characteristics	Test results	Classification
Impact resistance (large ball)	1600 mm	Class 34
Resistance to staining	refer to next page(s)	Class 34
Effect of a furniture leg	No visible damage	Class 34
Effect of a castor chair	Pass 25000 cycles	Class 33
Thickness swelling	refer to next page(s)	Class 33
Locking strength	refer to next page(s)	Class 33
Surface soundness	1.71 N/mm ²	Class 34

Additional technical characteristics

Characteristics	Test results
Humidity at dispatch from the manufacturer	4.8%
Appearance, surface defects	refer to next page(s)
Micro-scratch resistance	MSR-A2

Note:

1. Test items were specified by applicant.

Test Report

Issue Date: 2023-09-04

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Test Items, Method and Results:

Test Item: Geometrical Characteristics

Test Method: EN 13329:2016+A2:2021, Annex A and Annex B

Test Item	Test Result	Nominal Value	Test Requirement in EN 13329
Thickness (without underlay)	Average value= 12.06 mm $\Delta t_{avg} = 0.06$ mm $t_{max} - t_{min} = 0.07$ mm	12.0 mm	$\Delta t_{avg} \leq 0.50$ mm $t_{max} - t_{min} \leq 0.50$ mm
Length	Average value= 1217.72 mm Maximum $\Delta l = 1.76$ mm	1216 mm	$l \leq 1500$ mm: $\Delta l \leq 0.5$ mm $l > 1500$ mm: $\Delta l \leq 0.3$ mm/m
Width	Average value= 196.05 mm $\Delta W_{avg} = 0.05$ mm $W_{max} - W_{min} = 0.07$ mm	196 mm	$\Delta W_{avg} \leq 0.10$ mm $W_{max} - W_{min} \leq 0.20$ mm
Squareness	$q_{max} = 0.09$ mm	—	$q_{max} \leq 0.20$ mm
Straightness	$S_{max} = 0.13$ mm/m	—	$S_{max} \leq 0.30$ mm/m
Flatness	Maximum single values: $f_{w, concave} = 0.05$ % Maximum single values: $f_{l, concave} = 0.10$ %	—	Maximum single values: $f_{w, concave} \leq 0.15$ %, $f_{w, convex} \leq 0.20$ %, $f_{l, concave} \leq 0.50$ %, $f_{l, convex} \leq 1.00$ %
Openings	$O_{avg} = 0.03$ mm $O_{max} = 0.04$ mm	—	$O_{avg} \leq 0.15$ mm $O_{max} \leq 0.20$ mm
Height difference	$h_{avg} = 0.05$ mm $h_{max} = 0.08$ mm	—	$h_{avg} \leq 0.10$ mm $h_{max} \leq 0.15$ mm

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Issue Date: 2023-09-04

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Test Items, Method and Results:

Test Item: Dimensional variations after changes in relative humidity

Test Method: EN 13329:2016+A2:2021, Annex C

Results:

Parameter	Test result	Test Requirement
Average length variations, $\delta l_{\text{average}}$	0.6 mm	$\delta l_{\text{average}} \leq 0.9\text{mm}$
Average width variations, $\delta w_{\text{average}}$	0.6 mm	$\delta w_{\text{average}} \leq 0.9\text{mm}$

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Test Items, Method and Results:

Test Item: Static indentation

Test Method: EN ISO 24343-1:2012

Conditioning: Condition the test specimens at $(23 \pm 2)^{\circ}\text{C}$ and $(50 \pm 5)\%$ relative humidity for at least 24h

Test Condition:

Indenter: Steel cylindrical indenter, with the edge of the flat base slightly rounded
Indenter diameter: 11.3 mm
Total load applied: 500 N
Indentation time: 150 min
Recovery time: 150 min

Test Result:

Residual Indentation	Result (mm)
Specimen 1	0.01
Specimen 2	0.00
Specimen 3	0.01
Average value	0.01

Test Report

Issue Date: 2023-09-04

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Test Items, Method and Results:

Test Item: Impact Resistance (large ball)

Test Method: EN 13329:2016+A2:2021, Annex H

Conditioning: Condition the test specimens at (23±2)°C and (50±5)% relative humidity for at least 72h

Test Condition:

Impactor: Polished steel ball

Impactor mass: 324 g

Impactor diameter: 42.8 mm

Drop height: 1600 mm

Test Result:

Specimen	Crack on the surface (Yes/No)	Verdict
1	No	Pass
2	No	
3	No	
4	No	
5	No	

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Issue Date: 2023-09-04

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Test Items, Method and Results:

Test Item: Resistance to staining

Test Method: EN 438-2:2016+A1:2018, Section 26

Conditioning: Condition the test specimens at (23 ± 2)°C and (50 ± 5)% relative humidity for at least 24h

Group	Staining agent	Duration of contact	Result of visual changes
1	Acetone	16 h	5
2	Coffee (approx. 80°C)	16 h	5
3	Sodium hydroxide (25% solution)	10 min	5
3	Hydrogen peroxide (30% solution)	10 min	5
3	Carbon black suspension in paraffin oil	10 min	5

Assessment of results

Numerical rating	Description
5	No change test area indistinguishable from adjacent surrounding area
4	Minor change test area distinguishable from adjacent surrounding area, only when the light source is mirrored on the test surface and is reflected towards the observer's eye, e. g. discoloration, change in gloss and colour
3	Moderate change test area distinguishable from adjacent surrounding area, visible in several viewing directions, e. g. discoloration, change in gloss and colour
2	Significant change test area clearly distinguishable from adjacent surrounding area, visible in all viewing directions, e. g. discoloration, change in gloss and colour, and/or structure of the surface slightly changed, e.g. cracking, blistering
1	Strong change the structure of the surface being distinctly changed and/or discoloration, change in gloss and colour, and / or the surface material being totally or partially delaminated

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Test Items, Method and Results:

Test Item: Effect of a furniture leg

Test Method: EN ISO 16581:2019/ISO 16581:2014

Conditioning: Condition the specimens at $(23 \pm 2)^{\circ}\text{C}$ and $(50 \pm 5)\%$ relative humidity for at least 5 days

Test Condition:

Type of Feet: Type 0

Applied Mass: 32 kg

Test Speed: 0.18 m/s

Results:

Path	Observation		Verdict
	Length direction/Longitudinal direction	Width direction/Transverse direction	
1	No visible damage	No visible damage	Pass
2	No visible damage	No visible damage	
3	No visible damage	No visible damage	

Record the damage caused for each test path

- a) gouging;
- b) delamination at the surface;
- c) damage of the edges, for example, chipping, delamination at the edge;
- d) deformations of the surface;
- e) joint opening greater or equal to 0.2 mm.

Test Report

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Test Items, Method and Results:

Test Item: Castor chair test

Test Method: EN 425:2002

Conditioning: Condition the test specimens at $(23 \pm 2)^\circ\text{C}$ and $(50 \pm 5)\%$ relative humidity for at least 24h

Test Condition: At a temperature range of 18°C to 25°C

Load mass: 90 kg

Test castors: Type W

Speed of rotating platform: 20 r/min

Speed of castor assembly: 50 r/min

Total test revolutions: 25000 r

Mounting of the specimen: Floating installation with click joints

Test Result:

Type of damage	Observation (Yes/No)	Verdict
Delamination	No	Pass
Opening of joints	No	
Surface damage	No	
Crazing	No	

Test Photo:



After test

Test Report

Issue Date: 2023-09-04

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Test Items, Method and Results:

Test Item: Determination of thickness swelling after partial immersion in water

Test Method: ISO 24336:2005

Conditioning: Condition the test specimens at (23±2)°C and (50±5)% relative humidity to constant mass

Test Condition: Specimens are partially immersed(50 mm) in water at 20°C, during 24h

Test Result:

Specimen	Direction	Thickness swelling (%)			
		Point 1	Point 2	Point 3	Average
1	taken in length direction	10.44	10.78	10.79	10.7
2		10.38	10.81	10.35	
3	taken in width direction	10.57	10.73	11.15	
4		10.66	10.94	10.95	

Test Report

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Test Items, Method and Results:

Test Item: Locking Strength

Test Method: ISO 24334:2019

Conditioning: Condition the test specimens at (23±2)°C and (50±5)% relative humidity to constant mass

Test Condition: Test speed 0.5 mm/min

Test Result:

Longitudinal joint

Parameter	Average Result
Maximum locking strength F_{max} (N)	910
Specific locking strength (kN/m)	4.3
Locking strength at 0.2 mm joint opening $F_{0.2}$ (N)	699
Specific locking strength at 0.2 mm joint opening (kN/m)	3.3

Transverse joint

Parameter	Average Result
Maximum locking strength F_{max} (N)	876
Specific locking strength (kN/m)	4.6
Locking strength at 0.2 mm joint opening $F_{0.2}$ (N)	699
Specific locking strength at 0.2 mm joint opening (kN/m)	3.7

Test Report

Issue Date: 2023-09-04

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Test Items, Method and Results:

Test Item: Surface soundness

Test Method: EN 13329:2016+A2:2021, Annex D

Conditioning: Condition the test specimens at (23±2)°C and (50±5)% relative humidity for at least 24h

Test items	Test Results
Surface soundness	Mean= 1.71 N/mm ²

Test Report

Issue Date: 2023-09-04

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Test Items, Method and Results:

Test Item: Appearance, surface defects

Test Method: EN 438-2:2016+A1:2018

Conditioning: Condition the test specimens at (23±2)°C and (50±5)% relative humidity for at least 24h

Test items	Test Results
Appearance, surface defects	There was no smudges, smears, fingerprints, scratches, foreign particles, damage or any other of blemish evident within the decorative surface.



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Test Items, Method and Results:

Test Item: Moisture content

Condition: 96 hours at a temperature of $23\pm 2^{\circ}\text{C}$ and relative humidity of $50\pm 5\%$

Test Items	Test Method	Test Results
Moisture content	EN 322:1993	4.8 %

Test Report

Issue Date: 2023-09-04

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Test Items, Method and Results:

Test Item: Micro-scratch resistance

Test Method: EN 16094:2021, Procedure A

Conditioning: Condition the test specimens at (23 ± 2)°C and (50 ± 5)% relative humidity for at least 1 week

Test Condition:

Scrub material: SB 7447 (very fine)
 Holder for scrub material: Version 2, 6N
 Speed factor: 1
 Number of rubs: 80
 Glossmeter geometry: 60 °

Test Result:

Specimen	Gloss change
1	25.9%
2	18.5%
3	19.9%
Average value	22%
Classification	MSR-A2

Classification of mean values of gloss change as per EN 16094 procedure A (except for mat surfaces)

Micro-Scratch resistance class according to procedure A	Change of gloss
MSR-A1	≤ 10%
MSR-A2	> 10% to ≤ 30%
MSR-A3	> 30% to ≤ 50%
MSR-A4	> 50% to ≤ 70%
MSR-A5	> 70%

Note:

1. For mat surfaces(surface with a reflectometer value $R' \leq 7$, measured with 60 ° geometry), calculate the absolute gloss change.

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Appendix A: Sample Received Photo



Revision:

NO.	Date	Changes
230808001SHF-001	2023-09-04	First issue