Power Dekor Group Co., Ltd.

TEST REPORT

SCOPE OF WORK
Laminate flooring

REPORT NUMBER
200624009SHF-001

TEST DATE(S)
2020-06-24 - 2020-07-14

ISSUE DATE
2020-07-14

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18

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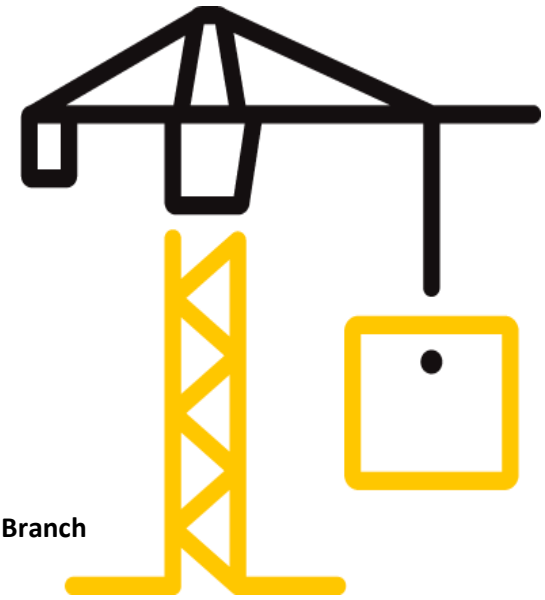

Intertek Testing Services Shenzhen Ltd. Shanghai Fengxian Branch

Test Report

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Test Report

Issue Date: 2020-07-14 Intertek Report No. 200624009SHF-001

Applicant: Power Dekor Group Co., Ltd.

Address: Dare Wood Park, Danyang Development Zone, Jiangsu, China.

Attn: Yun Wang

Test Type： Performance test, samples provided by the applicant.

Product Information

Product Name	Laminate flooring	**Brand**	Power Dekor
Sample Description	Good Condition	**Sample Amount**	45 pcs
		Received Date	2020-06-24

Sample ID	**Model**	**Specification**
S200624009SHF.001~013	HL1350	1212x190x12mm

Test Methods And Standards

Test Standard	EN 13329:2016+A1:2017, Annex A, Annex B, Annex C, Annex D, Annex E, Annex H, EN ISO 24343-1:2012, EN 438-2:2016+A1:2018 Section 25, Section 26, EN 424:2001, EN 425:2002, ISO 24336:2005, ISO 24334:2014, EN 16094:2012 Procedure B
Specification Standard	EN 13329:2016+A1:2017
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: Flora Fan Name: Tod Qian

Title: Reviewer Title: Project Engineer

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Test Items, Method and Results：

EN 13329:2016+A1:2017 Laminate floor coverings – Elements with a surface layer based on aminoplastic thermosetting resins – Specifications, requirements and test methods

General requirements:

Characteristics	Test results	Verdict
Average Overall thickness (mm)	11.95	Pass
Average Length (mm)	1211.97	Pass
Average Width (mm)	190.05	
Maximum Squareness (mm)	0.07	Pass
Maximum Staightness (mm/m)	0.06	Pass
Maximum Flatness length (%)	0.01	Pass
Maximum Flatness width (%)	0.03	Pass
Joint openings average value (mm)	0.08	Pass
Joint openings maximum value (mm)	0.09	
Height differences average value (mm)	0.06	Pass
Height differences maximum value (mm)	0.07	
Dimensional variations after changes in relative humidity (mm)	$\delta l_{average}$: 0.75 $\delta w_{average}$: 0.85	Pass
Static indentation (mm)	0.01	Pass

Classification requirements:

Characteristics	Test results	Classification
Abrasion resistance	> 4000 r	Class 32
Impact resistance (big ball)	≥1600 mm	Class 34
Resistance to staining	refer to next page(s)	Class 34
Effect of a castor chair	Pass 25000 cycles	Class 34
Thickness swelling	refer to next page(s)	Class 32
Locking strength	refer to next page(s)	Class 34
Surface soundness	1.57 N/mm^2	Class 34
Effect of a furniture leg	No visible damage	Class 34

Additional technical characteristics

Micro-scratch resistance	MSR-B1

Note:

1. Test items were specified by applicant.

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Test Items, Method and Results：

Test Item: Geometrical Characteristics

Test Method: EN 13329:2016+A1:2017, Annex A and Annex B

Test Item	Test Result	Nominal Value	Test Requirement in EN 13329
Thickness	Average value= 11.95 mm $\triangle t_{avg}$ = 0.05 mm t_{max}-t_{min} = 0.03 mm	12.0 mm	$\triangle t_{avg} \leqslant$ 0.50 mm t_{max}-$t_{min} \leqslant$ 0.50mm
Length	Average value= 1211.97 mm Maximum $\triangle l$ = 0.10 mm	1212 mm	l ≤ 1500 mm: $\Delta l \leq$ 0.5 mm l > 1500 mm: $\Delta l \leq$ 0.3 mm/m
Width	Average value= 190.05 mm $\triangle W_{avg}$ = 0.05 mm W_{max}-W_{min} = 0.02 mm	190 mm	$\triangle W_{avg} \leqslant$ 0.10 mm W_{max}-$W_{min} \leqslant$ 0.20 mm
Squareness	q_{max} = 0.07 mm	_	$q_{max} \leqslant$ 0.20 mm
Straightness	S_{max} = 0.06 mm/m	_	$S_{max} \leqslant$ 0.30 mm/m
Flatness	Maximum single values: $f_{w, concave}$ = 0.03 % Maximum single values: $f_{l, concave}$ = 0.01 %	_	Maximum single values: $f_{w, concave} \leqslant$ 0.15 %, $f_{w, convex} \leqslant$ 0.20 %, $f_{l, concave} \leqslant$ 0.50 %, $f_{l, convex} \leqslant$ 1.00 %
Openings	O_{avg} = 0.08 mm O_{max} = 0.09 mm	_	$O_{avg} \leqslant$ 0.15 mm $O_{max} \leqslant$ 0.20 mm
Height difference	h_{avg} = 0.06 mm h_{max} = 0.07 mm	_	$h_{avg} \leqslant$ 0.10 mm $h_{max} \leqslant$ 0.15 mm

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Test Items, Method and Results：

Test Item: Dimensional variations after changes in relative humidity

Test Method: EN 13329:2016+A1:2017, Annex C

Results:

Parameter	Test result	Test Requirement
Average length variations, $\delta l_{average}$	0.75 mm	$\delta l_{average} \leqslant 0.9mm$
Average width variations, $\delta w_{average}$	0.85 mm	$\delta w_{average} \leqslant 0.9mm$

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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 ± 2)°C and (50 ± 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	0.01
Specimen 3	0.01
Average value	0.01

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Test Items, Method and Results：

Test Item: Abrasion resistance

Test Method: EN 13329:2016+A1:2017, Annex E

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

Test Condition:

Rotation frequency: 60 r/min

Abrasive material: Taber S-42 abrasive paper strips

Load on each wheel: 500 g

Examine the test specimen for abrasion after each 100 r.

Renew the abrasive papers after every 200 r.

Test Result:

Parameter	Specimen 1	Specimen 2	Specimen 3
Initial wear point (IP) value, r	> 4000	> 4000	> 4000
Average IP value, r	> 4000		

Note:

1. The initial wear point (IP) is that point at which the first clearly recognizable wear-through of the print appears and the sub-layer becomes exposed in six out of 8 octants. The initial wear point is reached when there are areas of at least 1.00 mm^2 wear-through in five octants and an area of 1.00 mm^2 wear-through becomes visible in a six^{th} octant.

2. Abbreviation "r" = revolutions/cycles

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Test Items, Method and Results：

Test Item: Impact Resistance (big ball)

Test Method: EN 13329:2016+A1:2017, 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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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

Results:

Substance	Duration of contact	Resut of visual changes
Group 1: acetone	16 h	5
Group 2: coffee	16 h	5
Group 3: sodium hydroxide (NaOH)	10 min	5
Group 3: hydrogen peroxide (H_2O_2)	10 min	5
Group 3: shoe polish	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 simulated movement of a furniture leg

Test Method: EN 424:2001

Conditioning: Condition the test specimens at (23 ± 2)°C and (50 ± 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/Longitudinal 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) deterioration in the flatness of the surface;

b) damage which partially destroys the surface;

c) cuts of varying depths;

d) penetrating edges;

e) in the case of an open joint floor covering, a joint opening greater or equal to 1 mm;

f) in the case of a treated or welded joint, its failure.

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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 ± 2)°C and (50 ± 5)% relative humidity for at least 24h

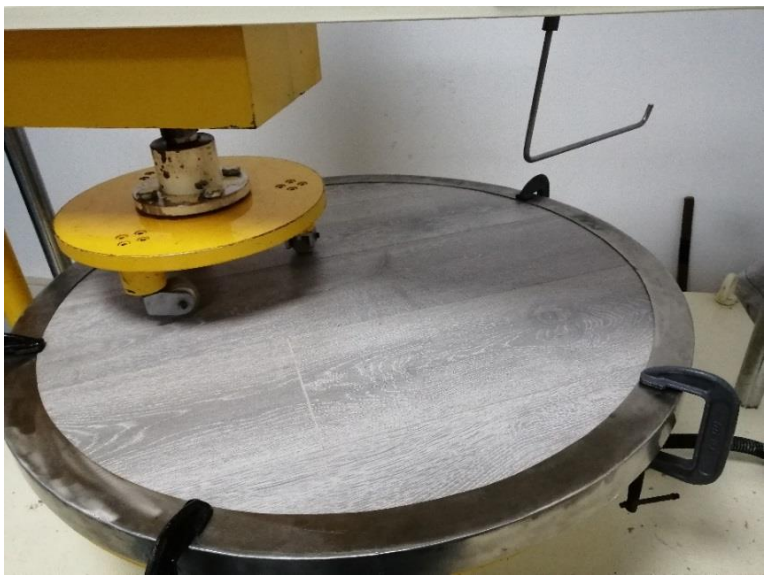
Test Condition: At a temperature range of 18°C to 25 °C

Load mass:	90	kg
Test castors:	Type	H
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

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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	15.52	15.40	15.34	16.3
2		15.49	14.62	14.72	
3	taken in width direction	17.44	17.25	17.59	
4		17.59	17.34	17.22	

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Test Items, Method and Results：

Test Item: Locking Strength

Test Method: ISO 24334:2014

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)	779
Specific locking strength (kN/m)	3.9
Locking strength at 0.2 mm joint opening $F_{0.2}$ (N)	772
Specific locking strength at 0.2 mm joint opening (kN/m)	3.8

Transverse joint

Parameter	Average Result
Maximum locking strength F_{max} (N)	872
Specific locking strength (kN/m)	4.6
Locking strength at 0.2 mm joint opening $F_{0.2}$ (N)	722
Specific locking strength at 0.2 mm joint opening (kN/m)	3.8

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Test Items, Method and Results：

Test Item: Surface soundness

Test Method: EN 13329:2016+A1:2017 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= 1.57 N/mm^2

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Test Items, Method and Results：

Test Item: Micro-scratch resistance

Test Method: EN 16094:2012, Procedure B

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

Test Condition:

Scrub material: SB 7440 (medium fine)

Holder for scrub material: Version 1, 4N

Speed factor: 1

Number of rubs: 160

Reconditioning: Condition the tested specimens at (23 ± 2)°C and (50 ± 5)% for 24 h before visual assessment

Test Result:

Specimen	Visual assessment	Classification
1	No Visible Scratches	MSR-B1
2	No Visible Scratches	MSR-B1
3	No Visible Scratches	MSR-B1
Average value	No Visible Scratches	MSR-B1

Classification for visual assessment as per EN 16094 procedure B

Resistance class	Scratch picture	Explanation
MSR-B1		No visible scratches
MSR-B2		Only few scratches
MSR-B3		Many well visible scratches
MSR-B4		A great many well visible raw and fine scratches, Lissajous figure partly visible
MSR-B5		Mix of Lissajous figure and great many scratches, mat abrasion like area in the middle

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Test Items, Method and Results:

Test Item: Resistance to scratching

Test Method: EN 438-2:2016+A1:2018 Section 25

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

Test Result:

Rating scale	Rating 3

Scratch resistance rating scale

	Discontinuous scratches, or faint superficial marks, or no visible marks.	**≥ 90 % continuous double circle of scratch marks clearly visible.**
Rating 5	6 N	> 6 N
Rating 4	4 N	6 N
Rating 3	2 N	4 N
Rating 2	1 N	2 N
Rating 1	-	1 N

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Appendix A: Sample Received Photo

Front View(Test Face)

Back View

Revision:

NO.	Date	Changes	Author	Reviewer
200624009SHF-001	2020-07-14	First issue	Tod Qian	Flora Fan