

TEST REPORT

No. : SHIN2312002151CM01_EN

Date : 2023-12-29

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CUSTOMER NAME: CHANGZHOU HUAREN DECORATIVE MATERIAL CO.,LTD
ADDRESS: NO.110 CHANGHONG ROAD ,WUJIN DISTRICT, CHANGZHOU CITY,JIANGSU

Sample Name : SPC FLOORING
Product Specification : 4+1mmIXPE—5+1mmIXPE

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.

Date of Receipt : 2023-12-13
Testing Period : 2023-12-13 ~ 2023-12-29
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
Services (Shanghai) Co., Ltd..

Xander Yang
Authorized signatory



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Summary of Results:

No.	Test Item	Test Method	Result	Conclusion
1	Resistance to Heat	ASTM F1514-19	See Result	N/A
2	Overall Thickness	ISO 10582:2017 Table 2 & ISO 24346:2006	See Result	N/A
3	Wear Layer Thickness	ISO 10582:2017 Table 2 & ISO 24340:2006	See Result	N/A
4	Total Mass Per Unit Area	ISO 10582:2017 Table 2 & ISO 23997:2007	See Result	N/A
5	Dimensional Stability and Curling after Exposure to Heat	ISO 10582:2017 Table 2 & ISO 23999:2021	See Result	N/A
6	Residual Indentation	ISO 10582:2017 Table 2 & ISO 24343-1:2007	See Result	N/A
7	Effect of Castor Chair	ISO 10582:2017 Table 2 & ISO 4918:2016/Amd1:2018	See Result	N/A
8	Flatness	ISO 10582:2017 Table 2 & Annex B	See Result	N/A
9	Openings and Height Differences between Floor Panels	ISO 10582:2017 Table 2 & Annex C	See Result	N/A
10	Locking Strength	ISO 10582:2017 Table 3 & Annex D	See Result	N/A
11	Determination of Side Length, Edge Straightness and Squareness of Tiles	With Reference to ISO 10582:2017 Table 2 & ISO 24342:2018	See Result	N/A



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12	Classification	ISO 10582:2017 Clause 5	See Result	N/A
13	Composition Analysis	FTIR and EDX	See result	N/A

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



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Original Sample Photo:



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1. Test Item: Resistance to Heat

Test Method: ASTM F1514-19

Test Condition:

Specimen: 50mm×50mm×5mm, 3pcs

Sphere Spectrophotometer d/8

Illuminant: D65

Observer Angle: 10°

Test Mode: SCI

Spot Diameter: 25 mm

Aging Condition: 70°C, 7days

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

Test Result:

Test Item	Test Mode		L*	a*	b*	ΔE^*_{ab}	Average ΔE^*_{ab}
Resistance to Heat	SCI	Before aging	57.87	9.91	27.05	0.18	0.22
		After aging	57.97	9.88	26.90		
	SCI	Before aging	59.78	9.19	26.20	0.36	
		After aging	60.13	9.23	26.22		
	SCI	Before aging	60.08	8.07	24.40	0.13	
		After aging	60.14	8.17	24.46		

Note:

- 1) SCI indicates the results including specular reflection condition.
- 2) Test specimens were cut from original sample.



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2. Test Item: Overall Thickness

Test Method: ISO 10582:2017 Table 2 & ISO 24346:2006

Test Condition:

Specimen: 100mm×50mm×5mm, 5pcs

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

Test Result:

Test Item	Test Result
Overall Thickness (mm)	Average Value: 5.04 Maximum Value: 5.05 Minimum Value: 5.02

Note: Test specimens were cut from original sample.



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3. Test Item: Wear Layer Thickness

Test Method: ISO 10582:2017 Table 2 & ISO 24340:2006

Test Condition:

Specimen: 50mm×13mm×5mm, 5pcs

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

Test Result:

Test Item	Test Result
Wear Layer Thickness(mm)	Average Value: 0.3200 Maximum Value: 0.3275 Minimum Value: 0.3125

Note: Test specimens were cut from original sample.



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4. Test Item: Total Mass Per Unit Area

Test Method: ISO 10582:2017 Table 2 & ISO 23997:2007

Test Condition:

Specimen: 100mm×100mm×4mm, 5pcs

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

Test Result:

Test Item	Test Result					
	Individual Value					Average Value
Total Mass Per Unit Area (g/m ²)	8340	8370	8350	8300	8280	8328

Note: Test specimens were cut from original sample.



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5. Test Item: Dimensional Stability and Curling after Exposure to Heat

Test Method: ISO 10582:2017 Table 2 & ISO 23999:2021

Test Condition:

Specimen: 610mm×181mm×5mm, 3pcs

Heating Temperature: 80°C

Heating Time: 6h

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

Test Result:

Test Item		Test Result	
Dimensional Stability and Curling after Exposure to Heat	Dimensional Change (%)	Manufacturing Direction	Average Value: 0.00
		Across-manufacturing Direction	Average Value: -0.05
	Curling (mm)	0.0	

Note:

- 1). Negative values indicate shrinkage, and positive values indicate expansion.
- 2). Test specimens were cut from original sample.



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6. Test Item: Residual Indentation

Test Method: ISO 10582:2017 Table 2 & ISO 24343-1:2007

Test Condition:

Specimen: 60mm×60mm×5mm, 3pcs

The Diameter of Indenter: 11.30mm

The Total Force: 500N

Maintain Time: 150min

Recovery Time: 150min

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

Test Result:

Test Item	Test Result			
	Individual Value			Average Value
Residual Indentation (mm)	0.08	0.06	0.06	0.07

Note: Test specimens were cut from original sample.



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7. Test Item: Effect of Castor Chair

Test Method: ISO 10582:2017 Table 2 & ISO 4918:2016/Amd1:2018

Test Condition:

Specimen: Φ 750mm \times 5mm, 1pc

Load: 90kg

Type of wheels: Type W

Cycles: 25000r

Type of specimen: Resilient floor coverings

Lab Environmental Condition: (23 \pm 2) $^{\circ}$ C, (50 \pm 5)%RH

Test Result:

Test Item	Test Result
Castor Chair Test	25000r, No visible damage

Note: Test specimens were cut from original sample.



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8. Test Item: Flatness

Test Method: ISO 10582:2017 Table 2 & Annex B

Test Condition:

Specimen: 1225mm×187mm×5mm, 5pcs

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

Test Result:

Test Item		Test Result
Flatness (%)	Length	Concave: 0.05
	Width	Concave: 0.01



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9. Test Item: Openings and Height Differences between Floor Panels

Test Method: ISO 10582:2017 Table 2 & Annex C

Test Condition:

Specimen: 1225mm×187mm×5mm, 8pcs

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

Test Result:

Test Item	Test Result
Openings (mm)	Average Value: 0.00 Maximum Value: 0.00
Height Differences (mm)	Average Value: 0.00 Maximum Value: 0.00



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10. Test Item: Locking Strength

Test Method: ISO 10582:2017 Table 3 & Annex D

Test Condition:

Specimen: 200mm×100mm×5mm, 10pcs (5 for long side, 5 for short side)

Test rate: 100mm/min

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

Test Result:

Test Item		Test Result					
		Individual Value					Average Value
Locking Strength (kN/m)	Long Side	2.9	2.9	2.4	4.2	2.6	3.0
	Short Side	5.2	4.9	4.7	4.7	5.3	5.0

Note: Test specimens were cut from original sample.



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11. Test Item: Determination of Side Length, Edge Straightness and Squareness of Tiles

Test Method: With Reference to ISO 10582:2017 Table 2 & ISO 24342:2018

Test Condition:

Specimen: 1225mm×187mm×5mm, 5pcs

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

Test Result:

Test Item	Length	Width	Straightness	Squareness
Determination of Side Length, Edge Straightness and Squareness of Tiles	Ave.: 1225mm	Ave.: 186.93mm	0.20mm	0.20mm
	Max.: 1226mm	Max.: 186.95mm		
	Min.: 1224mm	Min.: 186.90mm		



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12. Test Item: Classification

Test Method: ISO 10582:2017 Section 5

Test Result:

Test Item	Test Result
Classification	Commercial Class 31

Classification Requirement:

Test Item	Test Result	Requirement in ISO 10582:2017 Table 3 Classification Requirement for Level of Use (Minimal) Type I	Conclusion
Overall Thickness (mm)	Average Value: 5.04 Maximum Value: 5.05 Minimum Value: 5.02	Commercial Class 31: 2.0mm	Pass
Wear Layer Thickness (mm)	Average Value: 0.3200 Maximum Value: 0.3275 Minimum Value: 0.3125	Commercial Class 31: 0.30mm	Pass
Locking Strength	Long Side: 3.0 Short Side: 5.0	1.5kN/m	Pass

Note: Seam strength is not required for products which are intended for gluing with dry-joint laying , for loose lay or floating installation and for tiles / planks with a locking system on the edges .



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Classification:

Class	Symbol	Level of Use	Product Type	Thickness of Wear Layer	Nominal Overall Thickness	Conclusion
31		Commercial Moderate	Meet the Requirement of Type I (See Note 1)	Meet the Requirement	Meet the Requirement	Pass

Note:

- 1). According to ISO 10582:2017, products described in this document shall be identified by binder content by mass in the wear layer as shown in Table 1.

Table 1 — Identification requirements

Type	Minimum wear layer binder content
I	80 %
II	30 %



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2). Classification Requirement for Level of Use (According to ISO 10582:2017)

		Commercial					
31		Moderate	0,30	0,65	2,0		1,5 kN/m
32		General	0,40	0,80	2,0	When welded in accordance with the manufacturer's instructions: Average value ≥ 240 Individual values ≥ 180	1,5 kN/m
33		Heavy	0,55	1,00	2,0		1,5 kN/m
34		Very heavy	0,70	1,50	2,0		2 kN/m



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13. Test Item: Composition Analysis

Sample Description: SPC flooring

Test Method:

Fourier Transform Infrared Spectrometer (FTIR)

Energy dispersive X-ray fluorescence spectrometer (EDX)

Test Result:

No.	Composition	Content, Wt%
1	Poly(vinyl chloride) (PVC)	75
2	Polyacrylate	1
3	Plasticizers	16
4	Stabilizers	
5	Calcium carbonate	6
6	Titanium dioxide	2
7	Silicate	
8	Pigment (see note 2)	



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Note:

1. Wt% - weight percent.
2. Pigment < 1%.
3. Quantitative data is for reference only.
4. Test specimens were cut from the sample.
5. According to ISO 10582:2018, Binder content is a portion of the flooring composition, consisting of Poly(vinyl chloride) (PVC) resin, plasticizers and stabilizers. Products shall be identified by binder content by weight as shown in the following table:

Type	Minimum wear layer binder content
I	80 %
II	30 %

To sum up, the testing sample shall be identified as Type I .



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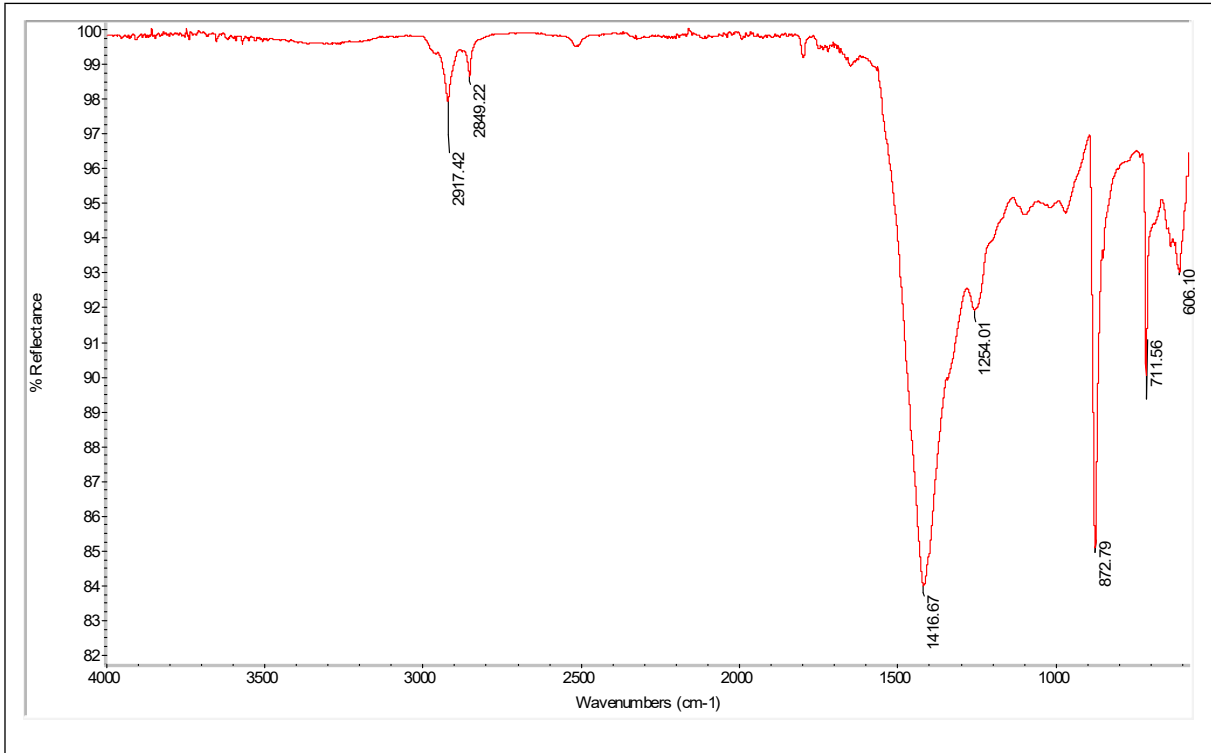
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Fig.1: FTIR spectrum of original sample



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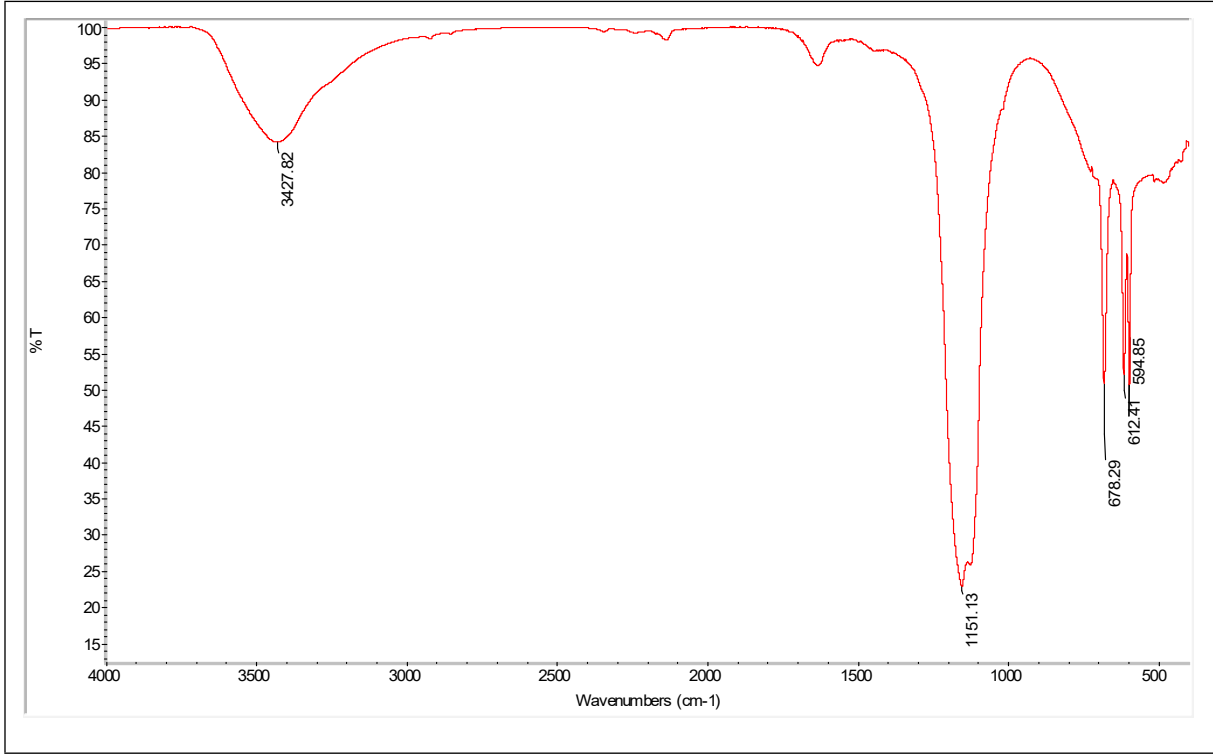
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Fig.2: FTIR spectrum of sample sulfate ash



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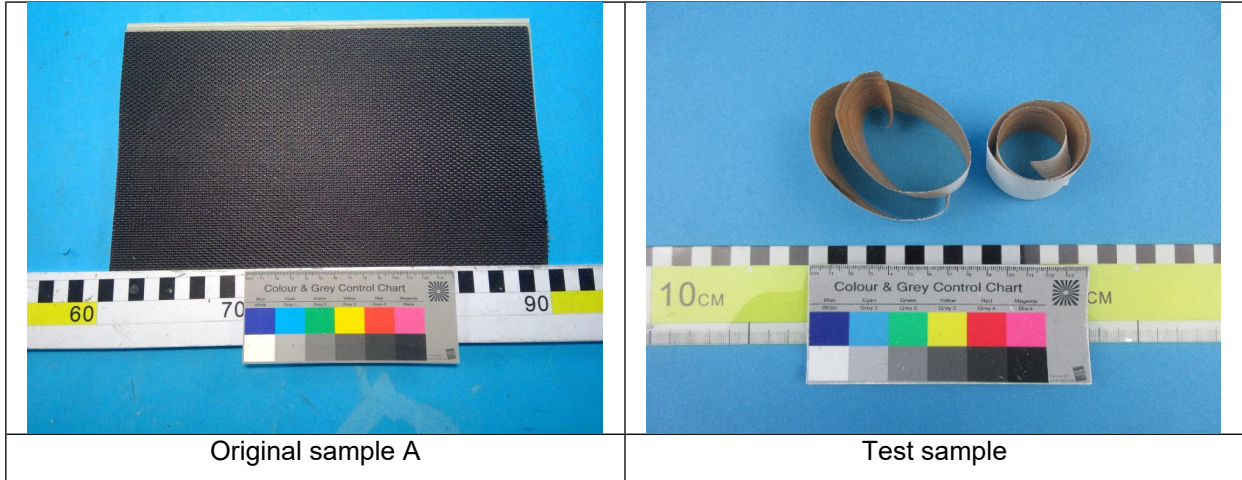
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Test Photo:



Equipment Information:

Equipment	Brand	Model	Equipment No.	Calibration date	Next Calibration date
FT-IR Spectrometer	Thermo	Nicolet iS10	P-314	2023-03-27	2024-03-26
Energy dispersive X-ray fluorescence spectrometer(EDX)	SHIMADZU	EDX-7000	P-431	2023-04-12	2024-04-11

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