

TEST REPORT

No. : SHIN181002976CCM

Date : Nov. 12, 2018

Page: 1 of 23

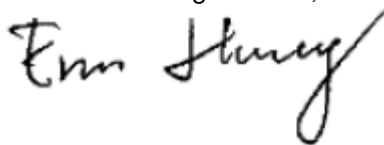
CUSTOMER NAME: SHENZHEN JIAHE CO.,LTD
ADDRESS: XIANDONG VILLAGE CHIGANG TOWNPUNING JIEYANG CITY
GUANGDONG PROVINCE PR CHINA

Sample Name : SPC FLOORING

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.

Test Required : Please see the next page(s)
Test Method : Please see the next page(s)
SGS Ref. No. : WHIN1810003500SC
Date of Receipt : Oct. 09, 2018
Testing Start Date : Oct. 09, 2018
Testing End Date : Nov. 12, 2018
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.



Erin Huang
Authorized signatory



SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center Construction Material Laboratory

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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 2 of 23

Summary of Result(s):

No.	Test Item	Test Method	Result	Conclusion
1	Dimensional stability and curling after exposure to heat	EN 434:1994	See result	/
2	Residual indentation	EN ISO 24343-1:2012	0.01 mm	/
3	Density	EN ISO 23996:2012 Method B	1987.2kg/m ³	/
4	Flexibility	EN ISO 24344:2012 Method B	See result	/
5	Staining and resistance to chemicals	EN ISO 26987:2012	See result	/
6	Water absorption	With reference to EN 15534-1:2014 Clause 8.3	0%	/
7	Swelling in thickness after immersion in water	With reference to EN 317:1993	0%	/
8	Resistance to impact	With reference to EN 438-2:2016 Clause 21	1550mm, no cracking	/
9	Abrasion Resistance	BS EN 13329:2016 and client's requirement	See result	/
10	Light Ageing Test-Xenon-arc Exposure	ISO 4892-2:2013 Cycle 1	See result	/
11	Formaldehyde Emission	With reference to EN 717-1:2004	See result	/
12	Migration of certain elements	With reference to EN 71-3:2013+A3:2018	See result	/
13	VOC	With reference to US EPA 5021A:2014	See result	/
14	Dynamic Coefficient of Friction	EN 13893:2002	See result	/
15	Inclination plan test (wet/barefoot ramp test)	Refer to EN 15534-1:2014	See result	/



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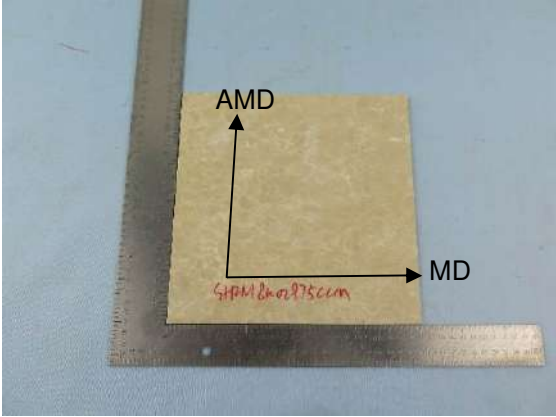
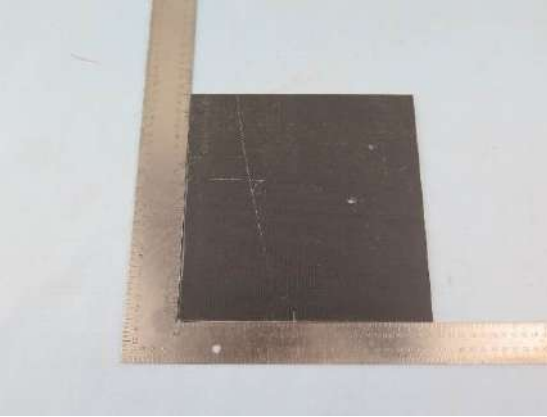
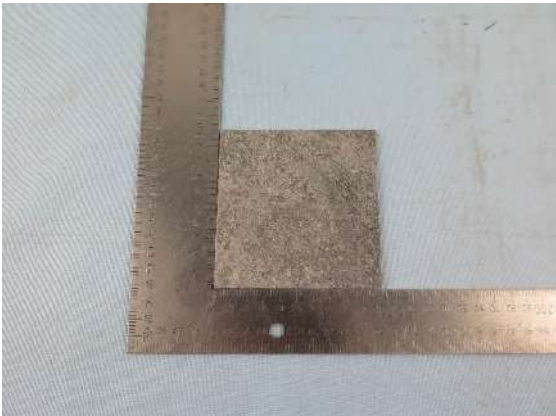
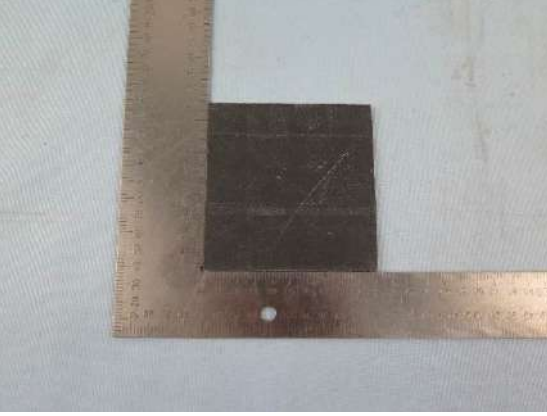
No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 3 of 23

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

Original Sample Photo(s):

	
<p>Dimensional stability and curling after exposure to heat (Front view)</p>	<p>Dimensional stability and curling after exposure to heat (Back view)</p>
	
<p>Residual indentation / Density / Staining and resistance to chemicals / Water absorption (Front view)</p>	<p>Residual indentation / Density / Staining and resistance to chemicals / Water absorption (Back view)</p>



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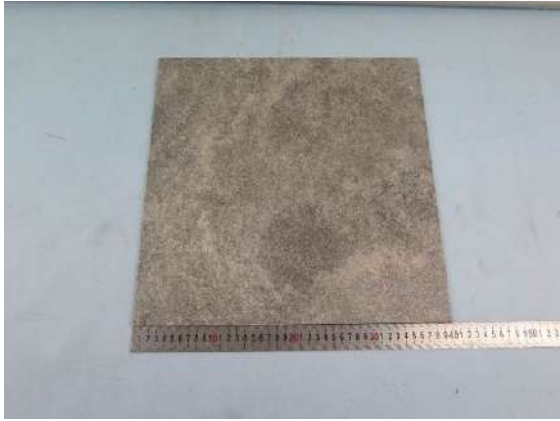

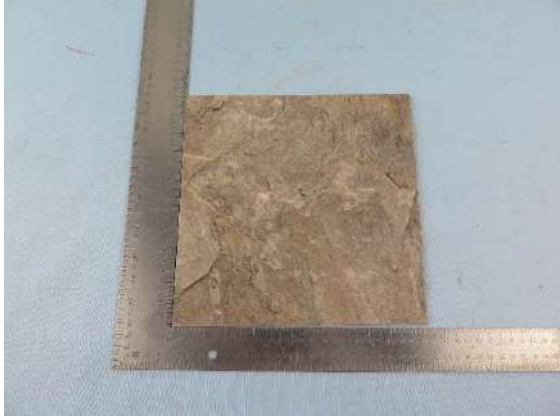
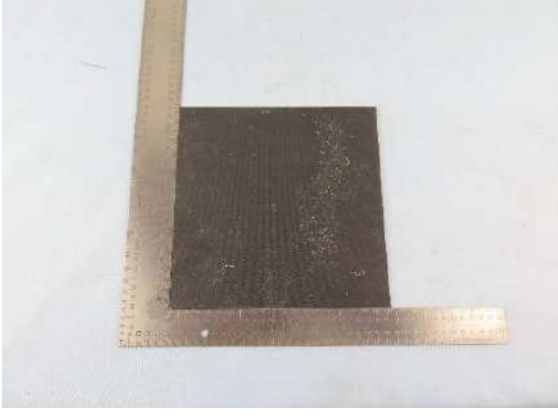
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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 4 of 23

	
<p>Flexibility / Swelling in thickness after immersion in water (Front view)</p>	<p>Flexibility / Swelling in thickness after immersion in water (Back view)</p>
	
<p>Resistance to impact (Front view)</p>	<p>Resistance to impact (Back view)</p>



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 5 of 23

1. Test item: Dimensional stability and curling after exposure to heat

Test method: EN 434:1994

Test condition:

Specimen: 240mm×240mm×4mm, 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: -0.02
		Across-manufacturing direction	Average value: -0.05
	Curling (mm)	0.0	

Note: A negative value indicates expansion, and a positive value indicates shrinkage.



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 6 of 23

2. Test item: Residual indentation

Test Method: EN ISO 24343-1:2012

Test Condition:

Specimen: 100mm×100mm×4mm, 3pcs

Diameter of indenter: 11.30mm

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)	0.01	0.02	0.01	0.01

3. Test item: Density

Test Method: EN ISO 23996:2012 Method B

Test Condition:

Specimen: 100mm×100mm×4mm, 3pcs

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test item	Test result			
	Individual value			Average value
Density (kg/m ³)	1982.05	2001.36	1978.20	1987.2



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 7 of 23

4. Test item: Flexibility

Test method: EN ISO 24344:2012 Method B

Test condition:

Specimen: 250mm×50mm×4mm, 6pcs (3pcs in each direction)

Test span: 150mm

Test speed: 100mm/min

Lab environmental condition: 23±2°C, 50±5%RH

Test result:

Test item	Test result	
	Individual value	Average value
Flexibility in MD direction (mm)	10.7	10.5
	10.6	
	10.1	
Flexibility in AMD direction (mm)	10.7	10.8
	10.6	
	11.0	

Note: Test specimens were cut from original sample.



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 8 of 23

5. Test item: Staining and resistance to chemicals

Test method: EN ISO 26987:2012

Test condition:

Specimen: 100mm×100mm×4mm, 5pcs

Duration of contact: 2h

Lab environmental condition: 23±2°C, 50±5%RH

Test result:

Test Item		Test Result
Staining and resistance to chemicals	Acetone	0
	Coffee (120g/L)	0
	25% Sodium hydroxide	0
	30% Hydrogen peroxide	0
	Shoe polish simulant	0

Note:

Interpretation and presentation of results:

Index	Effect of test after cleaning / abrasion
0	Not affected
1	Slight
2	Moderate
3	Severe



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 9 of 23

6. Test item: Water absorption

Test Method: With reference to EN 15534-1:2014 Clause 8.3

Test Condition:

Specimen: 100mm×100mm×4mm, 5pcs

Immersion in water: 24h

Lab environmental condition: 23±2°C, 50±5%RH

Test Result:

Test item	Test result					
	Individual value					Average value
Water absorption (%)	0.0	0.0	0.0	0.0	0.0	0

7. Test item: Swelling in thickness after immersion in water

Test method: With reference to EN 317:1993

Test condition:

Specimen: 50mm×50mm×4mm, 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	0	0	0	0	0	0	0	0

Note: Test specimens were cut from original sample.



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 10 of 23

8. Test item: Resistance to impact

Test method: With reference to EN 438-2:2016 Clause 21

Test condition:

Specimen: 230mm×230mm×4mm, 5pcs

Steel ball: Φ42.8mm, 324g

Lab environmental condition: 23±2°C, 50±5%RH

Test result:

Test item	Test result
Maximum unbroken height	1550mm, no cracking



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 11 of 23

9. Test Item: Abrasion Resistance

Sample Description: Panel with coating

Test Method: BS EN 13329:2016 and client's requirement

Test Condition:

Abrasive paper strips: CS-0+S-42

Load: 500g/wheel (total 1000g)

Speed: 60rpm

Test Result:

Sample	Initial wear point (IP) (See note 1)	Abrasion classes (See note 2)
1	3000	AC3
2	3000	AC3
3	3000	AC3

Note:

- 1) Initial wear point (IP) ---the point at which the first clearly recognizable wear-through of the print appears and the sub-layer becomes exposed in three quadrants.
- 2) According to BS EN 13329:2016 Annex E, Abrasion classes-AC6 is the best and AC1 is the worst. as follows:

Abrasion classes	AC1	AC2	AC3	AC4	AC5	AC6
IP	≥500	≥1000	≥2000	≥4000	≥6000	>8500



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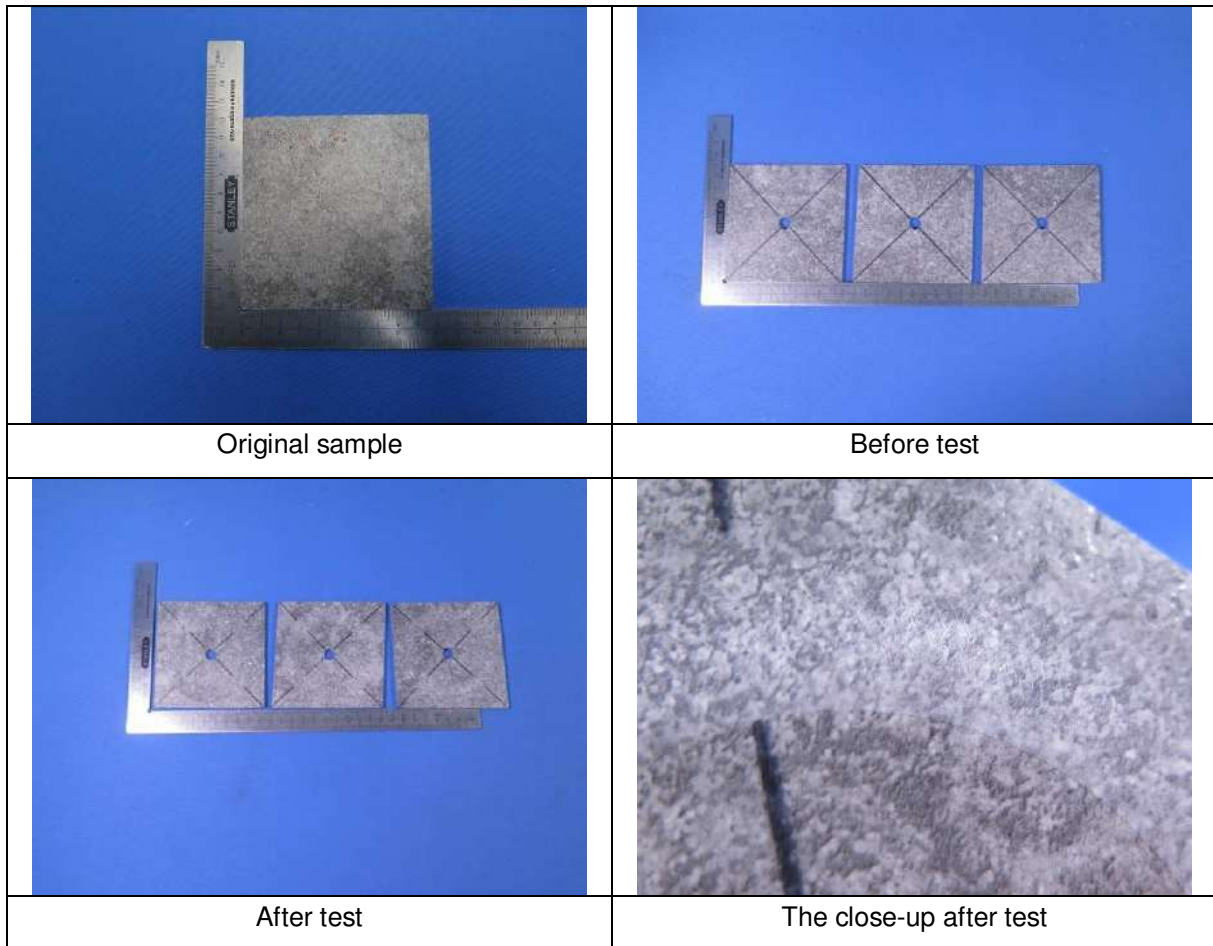
TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 12 of 23

Test photo(s):



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 13 of 23

10. Test item: Light Ageing Test-Xenon-arc Exposure

Sample description: Plastic board

Test method: ISO 4892-2:2013 Cycle 1

Test condition:

Exposure cycle:

ISO 4892-2: 2013 cycle 1

Irradiance: (0.51±0.02)W/(m²·nm)@340nm

102 min light at (65±3)°C BST, (38±3)°C CT, (50±10)%RH

18 min light and water spray

Filter: Boro/Boro

Exposure period: 360h

Test Result:

Sample	Appearance	ΔE^*_{ab} (See note 1)	
		SCE	SCI
1	No visible change	0.5	0.6

Note:

- 1) According to ASTM D2244-16, ΔE^*_{ab} values were measured by d/8 sphere spectrophotometer. Use D65 standard light source with 10° observer, 25mm aperture. SCE: exclude specular reflection condition, SCI: include specular reflection condition.
- 2) The results were carried out within 1 hour after above specified durations for the intermediate inspection as well as at the end of the exposure.



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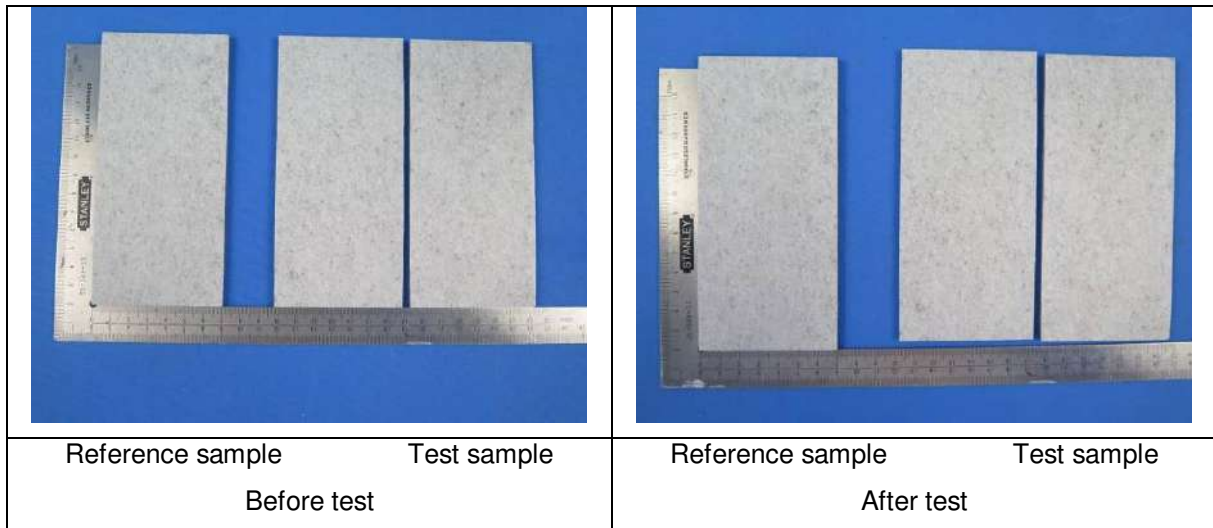
TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 14 of 23

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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 15 of 23

11. Test item: Formaldehyde Emission

Test Part Description: Gray solid board with brown outer skin

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 ³	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) mg/m³ = milligram per cubic meter
- (2) Reference Limit: EN 13986:2004(E)
 Formaldehyde class E1: ≤0.124 mg/m³ air
 Formaldehyde class E2: >0.124 mg/m³ air
- (3) The test result is only for reference.

Sample photo(s):



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 16 of 23

12. Test item: Migration of certain elements

Test Part Description: Gray solid board with brown outer skin

Test Method: With reference to EN 71-3:2013+A3:2018, analysis was performed by ICP-OES.

Test Item(s)	Limit	Unit	MDL	Result
Soluble Chromium (VI) (Cr VI)	0.2	mg/kg	0.18	ND
Soluble Lead (Pb)	23	mg/kg	5	ND
Soluble Antimony (Sb)	560	mg/kg	10	ND
Soluble Arsenic (As)	47	mg/kg	10	ND
Soluble Barium (Ba)	18750	mg/kg	50	ND
Soluble Cadmium (Cd)	17	mg/kg	5	ND
Soluble Chromium (III) (Cr III)	460	mg/kg	5	ND
Soluble Mercury (Hg)	94	mg/kg	10	ND
Soluble Selenium (Se)	460	mg/kg	10	ND
Soluble Boron (B)	15000	mg/kg	50	ND
Soluble Cobalt (Co)	130	mg/kg	10	ND
Soluble Manganese (Mn)	15000	mg/kg	50	ND
Soluble Strontium (Sr)	56000	mg/kg	50	ND
Soluble Zinc (Zn)	46000	mg/kg	50	ND
Soluble Copper (Cu)	7700	mg/kg	50	ND
Soluble Aluminum (Al)	70000	mg/kg	50	ND
Soluble Nickel (Ni)	930	mg/kg	10	ND
Soluble Tin (Sn)	180000	mg/kg	4.9	ND
Soluble Organic Tin*	12	mg/kg	-	ND



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 17 of 23

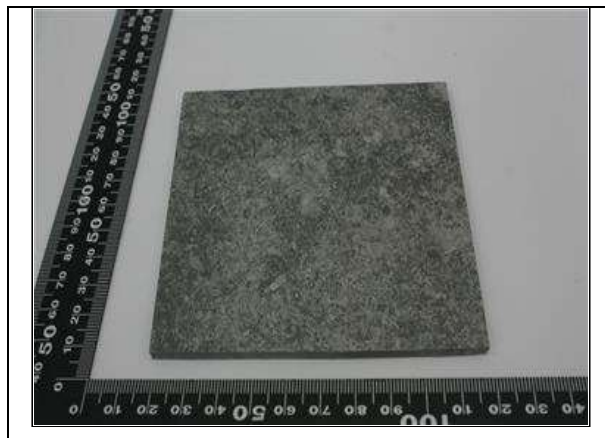
Remarks:

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

Notes:

- (1) Confirmation test of soluble chromium (III) & chromium (VI) is not required in case of soluble chromium does not exceed their requirements as specified in EN 71-3:2013+A3:2018.
- (2) *Confirmation test of soluble organic tin is not required in case of soluble tin, after conversion, does not exceed the soluble organic tin requirement as specified in EN 71-3:2013+A3:2018.

Sample photo(s):



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 18 of 23

13. Test item: Volatile Organic Compounds (VOCs)

Test Part Description: Gray solid board with brown outer skin

Test Method: With reference to US EPA 5021A:2014, analysis was performed by HS-GC-MS.

Test Item(s)	CAS NO.	Unit	MDL	Result
1,1-Dichloroethylene	75-35-4	mg/kg	1	ND
Dichloromethane	75-09-2	mg/kg	1	ND
cis-/trans-1,2-Dichloroethylene	156-59-2/156-60-5	mg/kg	2	ND
1,1-Dichloroethane	75-34-3	mg/kg	1	ND
2,2-Dichloropropane	594-20-7	mg/kg	1	ND
Bromochloromethane	74-97-5	mg/kg	1	ND
Chloroform	67-66-3	mg/kg	1	ND
1,1,1-Trichloroethane	71-55-6	mg/kg	1	ND
1,1-Dichloropropene	563-58-6	mg/kg	1	ND
Carbon tetrachloride	56-23-5	mg/kg	1	ND
Benzene	71-43-2	mg/kg	1	ND
1,2-Dichloroethane	107-06-2	mg/kg	1	ND
Trichloroethylene	79-01-6	mg/kg	1	ND
1,2-Dichloropropane	78-87-5	mg/kg	1	ND
Dibromomethane	74-95-3	mg/kg	1	ND
Bromodichloromethane	75-27-4	mg/kg	1	ND
Z/E-1,3-Dichloropropene	10061-01-5/10061-02-6	mg/kg	2	ND
Toluene	108-88-3	mg/kg	1	ND
1,1,2-Trichloroethane	79-00-5	mg/kg	1	ND
Tetrachloroethylene	127-18-4	mg/kg	1	ND
1,3-Dichloropropane	142-28-9	mg/kg	1	ND
Dibromochloromethane	124-48-1	mg/kg	1	ND
1,2-Dibromoethane	106-93-4	mg/kg	1	ND
Chlorobenzene	108-90-7	mg/kg	1	ND



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 19 of 23

Test Item(s)	CAS NO.	Unit	MDL	Result
1,1,1,2-Tetrachloroethane	630-20-6	mg/kg	1	ND
Ethylbenzene	100-41-4	mg/kg	1	ND
m-/p-Xylene	108-38-3/106-42-3	mg/kg	2	ND
o-Xylene	95-47-6	mg/kg	1	ND
Styrene	100-42-5	mg/kg	1	ND
Bromoform	75-25-2	mg/kg	1	ND
Isopropylbenzene	98-82-8	mg/kg	1	ND
Bromobenzene	108-86-1	mg/kg	1	ND
1,1,2,2-Tetrachloroethane	79-34-5	mg/kg	1	ND
1,2,3-Trichloropropane	96-18-4	mg/kg	1	ND
n-propylbenzene	103-65-1	mg/kg	1	ND
2-Chlorotoluene	95-49-8	mg/kg	1	ND
4-Chlorotoluene	106-43-4	mg/kg	1	ND
1,3,5-Trimethylbenzene	108-67-8	mg/kg	1	ND
tert-Butylbenzene	98-06-6	mg/kg	1	ND
1,2,4-Trimethylbenzene	95-63-6	mg/kg	1	ND
sec-Butylbenzene	135-98-8	mg/kg	1	ND
1,3-Dichlorobenzene	541-73-1	mg/kg	1	ND
1,4-Dichlorobenzene	106-46-7	mg/kg	1	ND
p-Isopropyltoluene	99-87-6	mg/kg	1	ND
1,2-Dichlorobenzene	95-50-1	mg/kg	1	ND
n-Butylbenzene	104-51-8	mg/kg	1	ND
1,2-Dibromo-3-chloropropane	96-12-8	mg/kg	1	ND
Hexachlorobutadiene	87-68-3	mg/kg	1	ND
1,2,4-Trichlorobenzene	120-82-1	mg/kg	1	ND
Naphthalene	91-20-3	mg/kg	1	ND
1,2,3-Trichlorobenzene	87-61-6	mg/kg	1	ND
Total of 54 items above		mg/kg	-	ND



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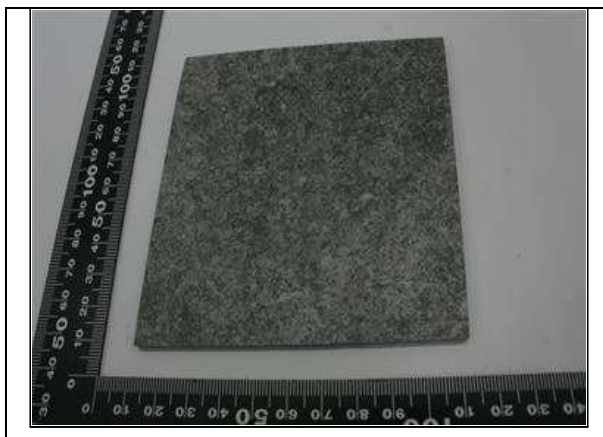
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Page: 20 of 23

Remarks:

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

Sample photo(s):



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 21 of 23

14. Test Item: Dynamic Coefficient of Friction

Sample Description: See photo

Test Method: EN 13893:2002

Test Condition:

Specimen thickness: 4.08mm

Slider load: 10kg

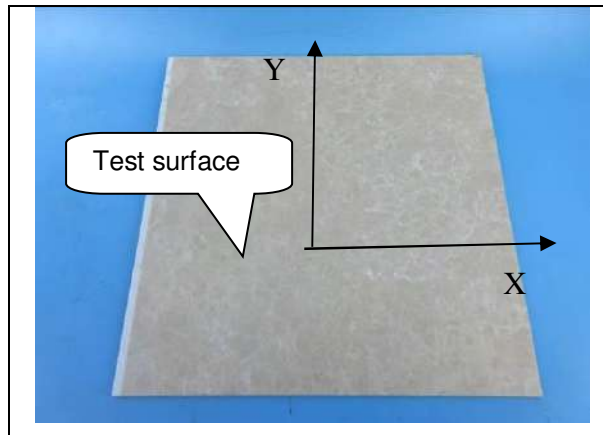
Testing speed: 0.20m/s

Test result:

X direction: 0.29

Y direction: 0.29

Original Sample Photo:



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



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TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 22 of 23

15. Test Item: Inclination plan test (wet/ barefoot ramp test)

Test Method:

Refer to EN 15534-1:2014 Composites made from cellulose-based materials and thermoplastics (usually called wood-polymer composites (WPC) or natural fibre composites (NFC))

Part 1: Test methods for characterisation of compounds and products - Clause 6.4.3

Test solution: potable water with a uniform concentration of 1 g/L sodium lauryl sulfate

Sample Description:

Flooring, 700mm×230mm, 2pcs, form a testing surface of 700mm×460mm, see photo

Testing surface & testing direction: see photo

Test Result:

Test item(s)	Test result(s)	Rating group
Inclination plan test (wet/ barefoot ramp test)	Critical angle of inclination: 3.4°	/

Note: There was no calibration board (standard surface) used for test.

Evaluation of the test results according to three rating classes:

Rating group	Angle of Inclination (°)
Class A: 12°	12° ≤ X ≤ 17°
Class B: 18°	18° ≤ X ≤ 23°
Class C: 24°	X ≥ 24°



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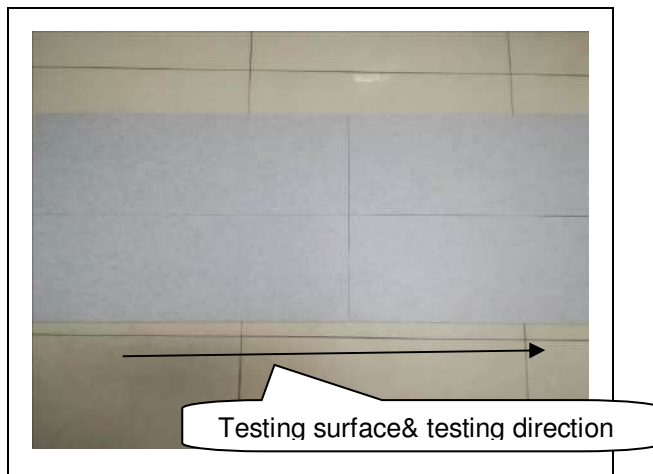
TEST REPORT

No. : SHIN181002975CCM

Date : Nov. 12, 2018

Page: 23 of 23

Original Sample Photo:



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

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

In the territory of the People's Republic of China, the test report without CMA logo expresses the test report shall only be used for client scientific research, teaching, internal quality control, product research and development, etc...and just for client internal reference.



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