



TEST REPORT

No. : GZMR110714128

Date : Jul 05, 2011

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HUIDONG WEIKANG RUBBER AND PLASTIC PRODUCTS CO., LTD
WEIMING INDUSTRIAL AREA, SANZHOU, HUANGBU TOWN, HUIDONG COUNTY, HUIZHOU CITY,
GUANGDONG PROVINCE, CHINA

The following sample(s) was/ were submitted and identified on behalf of the client as:

Sample Name : PVC FLOOR TILE
Material : PVC
SGS Ref No. : GP110720315-2.1, SHHG1105012381BM, GZSL1105048953TX,
GZ1105064835/CHEM, AJD2011002242
Test Performed : Selected test(s) as requested by applicant
Date of Receipt : Jul 01, 2011
Test Period : Jul 01, 2011 to Jul 05, 2011
Test result(s) : Please refer to the following page(s)

*****To be continued*****

Signed for and on behalf of
SGS-CSTC Ltd.

May Huo
Engineer

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TEST REQUESTED:

1. DETERMINATION OF WEAR RESISTANCE (EN 660-2:1999+ A1:2003)
2. DETERMINATION OF RESISTANCE TO STAINING (EN 423:2002)
3. EFFECT OF A CASTOR CHAIR (EN 425:2002)
4. DETERMINATION OF THE SIDE LENGTH, SQUARENESS AND STRAIGHTNESS OF TILES (EN 427:1994)
5. DETERMINATION OF OVERALL THICKNESS (EN 428:1993)
6. DETERMINATION OF THE THICKNESS OF LAYERS (EN 429:1993)
7. DETERMINATION OF MASS PER UNIT AREA (EN 430:1994)
8. DETERMINATION OF PEEL RESISTANCE (EN 431:1994)
9. DETERMINATION OF SHEAR FORCE (EN 432:1994)
10. DETERMINATION OF RESIDUAL INDENTATION AFTER STATIC LOADING (EN 433:1994)
11. DETERMINATION OF DIMENSIONAL STABILITY AND CURING AFTER EXPOSURE TO HEAT (EN 434:1994)
12. DETERMINATION OF FLEXIBILITY (EN 435:1994)
13. COLOUR FASTNESS TO LIGHT (ISO 105 B02: 1994 + AMD1-1998 + AMD2-2000)
14. MIGRATION OF CERTAIN ELEMENTS (EN71 PART 3 : 1994 (INCLUDING AMENDMENT A1:2000/ AC:2002))
15. SLIP RESISTANCE (DIN 51130:2004)
16. REACTION TO FIRE TESTS (EN 13501-1:2007+A1:2009 FIRE CLASSIFICATION OF CONSTRUCTION PRODUCTS AND BUILDING ELEMENTS—PART 1: CLASSIFICATION USING DATA FROM REACTION TO FIRE TESTS, CLASS B_{FL})

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Test Information:

Sample description: See photo

NO.	Test item	Test Method	Test requirements	Result														
1	Wear resistance	EN 660-2:1999+A1:2003	<p>Weigh the specimens to an accuracy of ± 0.1 mg after conditioning. Load each wheel with a weight of (1 ± 0.01) kg. The flow of abrasive is (21 ± 3) g/min. Abrade one specimen during 5000 revolutions, with a break for weighing after each cycle of 1000 revolutions, and then test the two remaining specimens. If, however, the first specimen is abraded through before 5000 revolutions, discard it and test the two remaining specimen in cycles of 200 revolutions stopping the test after 2000 revolutions or when the specimen is abraded through.</p> <p>Calculate the average mass loss. F_m, in milligrams per 100 revolutions for each specimens as follows:</p> $F_m = \frac{F_{tot}}{n} \times 100$ <p>Calculate the loss of volume for each specimen for 100 revolutions as follows:</p> $F_v = \frac{F_m}{\rho}$ <p>Requirement of EN649:1997+A1:2003:</p> <table border="1"> <thead> <tr> <th rowspan="2">Characteristic</th> <th colspan="4">Requirements for wear group</th> </tr> <tr> <th>T</th> <th>P</th> <th>M</th> <th>F</th> </tr> </thead> <tbody> <tr> <td>Volume loss $F_v(\text{mm}^3)$ /100revolutions</td> <td>$F_v \leq 2.0$</td> <td>$2.0 \leq F_v \leq 4.0$</td> <td>$4.0 \leq F_v \leq 7.5$</td> <td>$7.5 \leq F_v \leq 15.0$</td> </tr> </tbody> </table>	Characteristic	Requirements for wear group				T	P	M	F	Volume loss $F_v(\text{mm}^3)$ /100revolutions	$F_v \leq 2.0$	$2.0 \leq F_v \leq 4.0$	$4.0 \leq F_v \leq 7.5$	$7.5 \leq F_v \leq 15.0$	<p>$F_v = 2.2 \text{ mm}^3$</p> <p>Wear group: P</p>
Characteristic	Requirements for wear group																	
	T	P	M	F														
Volume loss $F_v(\text{mm}^3)$ /100revolutions	$F_v \leq 2.0$	$2.0 \leq F_v \leq 4.0$	$4.0 \leq F_v \leq 7.5$	$7.5 \leq F_v \leq 15.0$														

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No	Test Property	Test Method	Test requirements	Result								
2	Determination of resistance to staining	EN 423:2002	Place the fabric on the surface of the test specimen and saturate it with 1ml to 2ml of the test liquid. The main duration of contact shall be 2h. If a stain appears on the test piece after 2h, a new test shall be conducted for a period of 30 min. Examine the residual staining.	See Result 1								
3	Effect of a castor chair	EN 425:2002	Inspect the surface of the castors, and if necessary, clean them with a cotton pad impregnated with denatured ethanol, and dry. Pre-clean the test piece with a vacuum cleaner. Fix the base for the test piece on the circular plate, and lower the triangular platform to allow the castors to come into contact with the test piece. Preset the counter for 25000 revolutions of the plate and set the apparatus in motion with the suction nozzle being operated continuously. At the end of the test, examine the test piece for appearance change from a distance of approximately 800 mm at an approximate angle of 45°. And from all directions by slowly rotating the viewing table. There should not be any damage caused by detachment of layers, opening joints, or crazing. Ignore any flattening or change in appearance, e.g. change in gloss.	Pass								
4	Determination of the side length, squareness and straightness of tiles	EN 427:1994	Condition the test pieces and mandrels at a temperature of (23±2) °C and relative humidity (50±5) % for a minimum of 24 h. Requirement of EN649:1997+A1:2003: Side length should be ≤0.13% of nominal length, up to 0.5mm maximum. Squareness and straightness for side length: <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;"></td> <td style="text-align: right;">deviation</td> </tr> <tr> <td>≤400mm</td> <td style="text-align: right;">≤ 0.25mm</td> </tr> <tr> <td>>400mm</td> <td style="text-align: right;">≤ 0.35mm</td> </tr> <tr> <td>>400mm(intended for welding)</td> <td style="text-align: right;">≤ 0.50mm</td> </tr> </table>		deviation	≤400mm	≤ 0.25mm	>400mm	≤ 0.35mm	>400mm(intended for welding)	≤ 0.50mm	No claim/ Length: 914.6mm Width: 152.3 mm Squareness: 0.12 mm Straightness: 0.15 mm
	deviation											
≤400mm	≤ 0.25mm											
>400mm	≤ 0.35mm											
>400mm(intended for welding)	≤ 0.50mm											

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No	Test Property	Test Method	Test requirements	Result
5	Determination of overall thickness	EN 428:1993	<p>Condition the test pieces and mandrels at a temperature of (23±2) °C and relative humidity (50±5)% for a minimum of 24 h.</p> <p>Requirement of EN649:1997+A1:2003:</p> <p>Average value should be nominal value $^{+0.13}_{-0.10}$ mm</p> <p>Individual results should be average value±0.15mm</p>	<p>No claim/ Ave. thickness: 3.03 mm Max. thickness: 3.05 mm Min. thickness: 3.00 mm</p>
6	Determination of the thickness of layers	EN 429:1993	<p>Condition the test pieces and mandrels at a temperature of (23±2) °C and relative humidity (50±5)% for a minimum of 24 h.</p> <p>Calculate the mean value of thickness for each layer from the number of measurements taken, and express these results to the nearest 0.01mm.</p>	<p>/ Surface Layer thickness: 0.472mm</p>
7	Determination of mass per unit area	EN 430:1994	<p>Requirement of EN649:1997+A1:2003:</p> <p>Total mass per unit area (average) should be nominal value $^{+13\%}_{-10\%}$ g/m²</p>	<p>No claim/ 5007.8 g/m²</p>
8	Determination of peel resistance	EN 431:1994	<p>Place the test piece in the jaws (which are approximately 50 mm apart) of the tensile testing machine so that tension is applied evenly over the width. Set the machine and its recording device in operation such that the speed of separation force which continues beyond the initial separation. And the speed is set to 100mm/min.</p> <p>If the layers cannot be separated, record this and do not conduct the test.</p> <p>Record the peel strength of the upper layer and the bottom layer.</p>	<p>/ Upper layer: (Y direction: 70N/50mm, X direction: 70N/50mm) Bottom layer: can not be separated.</p>

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No	Test Property	Test Method	Test requirements	Result
9	Determination of shear force	EN 432:1994	Use wedges between the jaws and the test piece to ensure that the direction of tensile stress exerted is parallel to the surface of the test piece. Apply the force and increase it by moving the jaws at a constant speed of (100±5)mm/min until complete separation has occurred. Record the maximum force. If adhesive failure is observed, repeat the test.	/ X direction: 7574N, Y direction: 6777N (adhesion failure, record the maximum force)
10	Determination of residual indentation after static loading	EN 433:1994	Mark the place of measurement and measure the initial thickness of the test piece, t ₀ , at its centre to 0.01 mm. Place the test piece on the platform. Place the annular weight on the test piece. Smoothly apply the appropriate total force 500N, and start the stopwatch within 2s. Record the depth of indentation after 150 min to 0.01 mm, and remove the force and the test piece from the platform. After a further 150 min, measure the final thickness of the test piece, t ₁ , at the same position, using the appropriate apparatus. Requirement of EN649:1997+A1:2003: The residual indentation should be ≤0.10 mm	Pass/ (Residual indentation: 0.02 mm)
11	Determination of dimensional stability and curing after exposure to heat	EN 434:1994	Store the test pieces for 360±15 min in the oven, which had previously been stabilized at (80±2) °C. Remove the metal plates bearing the test pieces from the oven. Allow these to cool and recondition at a temperature of (23±2) °C and relative humidity (50±5)% for a further 24 h, unless otherwise specified for the product. Requirement of EN649:1997+A1:2003(intended for dry-joint laying): The Variations of length should be ≤0.25% The Curling should be ≤2mm	Pass/ Variations of length: 0.08% ; Curling: 0.08 mm

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No	Test Property	Test Method	Test requirements	Result
12	Determination of flexibility	EN 435:1994	Condition the test pieces and mandrels at a temperature of (30±2) °C and relative humidity (50±5)% for a minimum of 24 h. The test piece is bent through 180° within 5s around a mandrel under specified conditions. Requirement of EN649:1997+A1:2003: Test using a 20 mm mandrel. For product which show sings of cracking, perform a further test using a 40 mm mandrel. If results show no further cracking, record the use of 40 mm mandrel.	Pass
13	Colour Fastness To Light	ISO 105 B02: 1994 + Amd1-1998 + Amd2-2000; Xenon-Arc Lamp	Requirement of EN649:1997+A1:2003: 6 minimum	Pass/ (6 or better)
14	Migration of Certain Elements	EN71 Part 3 : 1994 (including amendment A1:2000/AC:2002)	---	See Result 2

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15. Slip resistance

Test method: DIN 51130:2004

Results:

Reading	Operator 1-Inclined Platform Shod Results(°)	Operator 2-Inclined Platform Shod Results(°)	R Value
1	12	12	R10
2	12	12	
3	12	12	
Average	12		

Classification:	R Value	Category	Angle of Inclination
	R9	Low	6-10
	R10	Normal	> 10-19
	R11	Above Average	> 19-27
	R12	High	> 27-35
	R13	Very High	> 35

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16. Reaction to fire

I. Test conducted

This test was conducted as per EN 13501-1:2007+A1:2009 Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests. And the test methods as following:

1. EN ISO 9239-1:2010 Reaction to fire tests for floorings —Part 1: Determination of the burning behaviour using a radiant heat source.
2. EN ISO 11925-2:2002 Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test.

II. Details of classified product

a) Description

Color	Orange
Thickness	Approximate 2.85mm
Mass per unit area	About 4.5kg/m ²

Mounting and fixing:

Fire cement board, with its density approximate 1800kg/m³, thickness approximate 6mm, is as the substrate. The test specimens are fixed mechanically to the substrate with no cavity behind it. The test specimen were prepared to incorporate a centre-longitudinal joint. Another joint is situated 250mm from zero joint.

III. Test results

Test method	Parameter	Number of tests	Results
EN ISO 9239-1	Critical flux (kW/m ²)	3	9.18
	Smoke (%×minutes)		131
EN ISO 11925-2 Exposure = 15 s	$F_s \leq 150$ mm	6	YES

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IV. Classification and direct field of application

This classification has been carried out in accordance with **EN 13501-1:2007**.

a) Classification

The product, Orienting Performance Promoted Solid Wood Panel, classification is as following,

Fire behaviour		Smoke production	
B _{fl}	—	s	1

Reaction to fire classification: B_{fl}—S1

Remark: The classes with their corresponding fire performance are given in annex A.

b) Field of application

This classification for the submitted sample is valid for the following end use condition:

- With all substrates classified A1 and A2
- With mechanical fixing
- No an airgap

This classification is valid for the following product parameters:

- Characteristics of specimen as described in § II b of this test report

Statement: The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Warning:

This classification report does not represent type approval or certification of the product.

The test laboratory has, therefore, play no part in sampling the product for the test, although it holds appropriate references to the manufacturer's factory production control that is aimed to be relevant to the samples tested and that will provide for their traceability.

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Annex A

Classes of reaction to fire performance for floorings

class	Test methods	Classification	Additional classification
A1 _{fl}	EN ISO 1182 ^a and	$\Delta T \leq 30^\circ\text{C}$, and $\Delta m \leq 50\%$, and $t_f = 0$ (i.e. no sustained flaming)	-
	EN ISO 1716	PCS $\leq 2.0\text{MJ/kg}$ ^a and PCS $\leq 2.0\text{MJ/kg}$ ^b and PCS $\leq 1.4\text{MJ/m}^2$ ^c and PCS $\leq 2.0\text{MJ/kg}$ ^d	-
A2 _{fl}	EN ISO 1182 ^a or	and $\Delta T \leq 50^\circ\text{C}$, and $\Delta m \leq 50\%$, and $t_f \leq 20\text{s}$	-
	EN ISO 1716		-
	EN ISO 9239-1 ^e	Critical flux ^f $\geq 8.0\text{kW/m}^2$	Smoke productio ^g
B _{fl}	EN ISO 9239-1 ^e and	Critical flux ^f $\geq 8.0\text{kW/m}^2$	Smoke productio ^g
	EN ISO 11925-2 ^h Exposure = 15s	Fs $\leq 150\text{mm}$ within 20 s	-
C _{fl}	EN ISO 9239-1 ^e and	Critical flux ^f $\geq 4.5\text{kW/m}^2$	Smoke productio ^g
	EN ISO 11925-2 ^h Exposure = 15s	Fs $\leq 150\text{mm}$ within 20 s	-
D _{fl}	EN ISO 9239-1 ^e and	Critical flux ^f $\geq 3.0\text{kW/m}^2$	Smoke productio ^g
	EN ISO 11925-2 ^h Exposure = 15s	Fs $\leq 150\text{mm}$ within 20 s	-
E _{fl}	EN ISO 11925-2 ^h Exposure = 15s	Fs $\leq 150\text{mm}$ within 20 s	-

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F _{fl}	No performance determined
^a	For homogeneous products and substantial components of non-homogeneous products.
^b	For any external non-substantial component of non-homogeneous products.
^c	For any internal non-substantial component of non-homogeneous products.
^d	For the product as a whole.
^e	Test duration = 30 min.
^f	Critical flux is defined as the radiant flux at which the flame extinguishes or the radiant flux after a test period of 30 min, whichever is the lower (i.e. the flux corresponding with the furthest extent of spread of flame).
^g	s1 = Smoke ≤ 750 % minutes; s2 = not s1.
^h	Under conditions of surface flame attack and, if appropriate to the end use application of the product, edge flame attack.

Result 1: Result of the staining resistance

NO.	Stain agent	Contact time	Result	Contact time	Result
1	Acetone	2h	0	-	-
2	Coffee (120g coffee per litre of water)	2h	0	-	-
3	Sodium hydroxide 25% solution	2h	0	-	-
4	Hydrogen peroxide 30% solution	2h	0	-	-
5	Shoe Polish	2h	1	30min	1

Expression of results:

Index	Effect of the test after cleaning / abrasion
0	Not affected
1	Very slightly affected
2	Slightly affected
3	Affected
4	Severely affected

*****To be continued*****

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Result 2: Result of Migration of Certain Elements

Test Item(s)	Unit	Test Method (Reference)	Result	MDL	Limit
Soluble Lead (Pb)	mg/kg	EN71 Part 3 :1994 + A1: 2000/AC: 2002, ICP-OES	N.D.	5	90
Soluble Antimony (Sb)	mg/kg	EN71 Part 3 :1994 + A1: 2000/AC: 2002, ICP-OES	N.D.	5	60
Soluble Arsenic (As)	mg/kg	EN71 Part 3 :1994 + A1: 2000/AC: 2002, ICP-OES	N.D.	5	25
Soluble Barium (Ba)	mg/kg	EN71 Part 3 :1994 + A1: 2000/AC: 2002, ICP-OES	N.D.	10	1000
Soluble Cadmium (Cd)	mg/kg	EN71 Part 3 :1994 + A1: 2000/AC: 2002, ICP-OES	N.D.	5	75
Soluble Chromium (Cr)	mg/kg	EN71 Part 3 :1994 + A1: 2000/AC: 2002, ICP-OES	N.D.	5	60
Soluble Mercury (Hg)	mg/kg	EN71 Part 3 :1994 + A1: 2000/AC: 2002, ICP-OES	N.D.	5	60
Soluble Selenium (Se)	mg/kg	EN71 Part 3 :1994 + A1: 2000/AC: 2002, ICP-OES	N.D.	10	500

Note:

1. mg/kg = ppm
2. N.D. = Not Detected (< MDL)
3. MDL = Method Detection Limit
4. Results of soluble elements shown are of the adjusted analytical results
5. The test item 3~7, 10~12 and 16 were carried out by a SGS laboratory.
6. The above test item 15 has been subcontracted to the accredited laboratory.
7. The test results of all items except item 5 and 6 were extracted from the test report No.GZMR110510650.

***** To be continued*****

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Photo:

	
<p>Sample photo</p>	<p>Wear resistance</p>

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

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