

TEST REPORT

No. : XMIN191002432CCM

Date : Oct.15, 2019

Page: 1 of 18

CUSTOMER NAME: CHANGZHOU YUANDONG ADVANCED PLASTIC CO., LTD.
ADDRESS: INDUSTRIAL ZONE, QIANHUANG TOWN, WUJIN DISTRICT, CHANGZHOU CITY, JIANGSU PROVINCE, CHINA

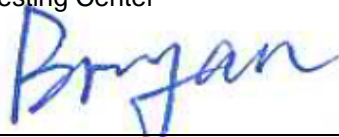
Sample Name : PVC FLOORING
Material : PVC
Type & Specification : 239*1230*6.0*0.7mm
Intended Use : Internal flooring coverings

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 : EN 14041:2018 Resilient, textile, laminate and modular multilayer floor coverings – Essential characteristics
SGS Ref. No. : CANMLC1918637801, CANMLC1918637802, GZIN1909050619MR, SHIN1909067130CM
Date of Receipt : Sep.16, 2019
Testing Start Date : Sep.16, 2019
Testing End Date : Oct.15, 2019
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)

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

Signed for
SGS-CSTC Standards Technical
Services Co., Ltd. Xiamen Branch
Testing Center



Bryan Hong Authorized Signatory



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Test conducted:

EN 14041:2018 Resilient, textile, laminate and modular multilayer floor coverings – Essential characteristics

Sample information:

Product	Floor covering type	Material	Dimension
PVC FLOORING	PVC floor coverings	PVC	239*1230*6.0*0.7mm

EN 14041:2018			
Clause	Requirement	Test method	Result(s) The way of expressing the performance
4.1 Reaction to fire	The reaction-to-fire performance of a given type of floor coverings shall be classified according to the requirements of EN 13501-1.	EN 13501-1:2018 Clause 9 & EN ISO 9239-1:2010 & EN ISO 11925-2:2010, Cor.1:2011 Classification according to the test results, according to 4.1.3.	Classification: B _{fl} —s1 See Annex A Pictogram: 

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



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EN 14041:2018			
Clause	Requirement	Test method	Result(s) The way of expressing the performance
4.2 Content of dangerous substances	Resilient, textile, laminate and modular multilayer floor coverings shall be evaluated with respect to their content of dangerous substances. Content of dangerous substances: test methods and requirements	Pentachlorophenol (PCP) based on testing according to CEN/TR 14823:2003 Analysis was performed by GC-ECD / GC-MS. MDL=Method Detection Limit: 0.1mg/kg (1mg/kg=1ppm=0.0001%)	Not Detected (<MDL) PASS See Annex B Compliant, actively added Pictogram: 
		Phthalates (DBP, BBP, DEHP) based on testing according to EN14041:2018 Annex F, Analysis was performed by GC-MS. MDL=Method Detection Limit: 50mg/kg (1mg/kg=1ppm=0.0001%)	Not Detected (<MDL) PASS See Annex B Compliant, actively added Pictogram: 
		Short chain chlorinated paraffins (C10-13, SCCP), Medium chain chlorinated paraffins (C14-17, MCCP) based on testing according to ISO 18219:2015, Analysis was performed by GC-NCI-MS / GC-ECD. MDL=Method Detection Limit: 50mg/kg (1mg/kg=1ppm=0.0001%)	Not Detected (<MDL) PASS See Annex B Compliant, actively added Pictogram: 

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



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EN 14041:2018			
Clause	Requirement	Test method	Result(s) The way of expressing the performance
4.2 Content of dangerous substances	Resilient, textile, laminate and modular multilayer floor coverings shall be evaluated with respect to their content of dangerous substances. Content of dangerous substances: test methods and requirements	Pentabromodiphenyl ether, Octabromodiphenyl ether, Decabromodiphenyl ether based on testing according to IEC 62321-6:2015, Determination of PBBs and PBDEs by GC-MS. MDL=Method Detection Limit: 5mg/kg (1mg/kg=1ppm=0.0001%)	Not Detected (<MDL) PASS See Annex B Compliant, actively added Pictogram: 
		Cadmium (Cd) / Lead (Pb) based on testing according to EN1122:2001, Analysis was performed by AAS / ICP-OES. MDL=Method Detection Limit: 5mg/kg / 20mg/kg (1mg/kg=1ppm=0.0001%)	Not Detected (<MDL) PASS See Annex B Compliant, actively added Pictogram: 
		Polycyclic Aromatic Hydrocarbons (PAHs) based on testing according to EN14041:2018 Annex E, Analysis was performed by GC-MS. MDL=Method Detection Limit: 0.2mg/kg (1mg/kg=1ppm=0.0001%)	Not Detected (<MDL) PASS See Annex B Compliant, actively added Pictogram: 

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EN 14041:2018			
Clause	Requirement	Test method	Result(s) The way of expressing the performance
4.2 Content of dangerous substances	Resilient, textile, laminate and modular multilayer floor coverings shall be evaluated with respect to their content of dangerous substances. Content of dangerous substances: test methods and requirements	Organostannic (organotin) compounds based on testing according to ISO/TS 16179:2012, Analysis was performed by GC-MS. MDL=Method Detection Limit: 0.2mg/kg (1mg/kg=1ppm=0.0001%)	Not Detected (<MDL) PASS See Annex B Compliant, actively added Pictogram: 
		Perfluorooctanoic acid (PFOA) based on testing according to CEN/TS15968:2010, Analysis was performed by LC-MS. MDL=Method Detection Limit: 10mg/kg (1mg/kg=1ppm=0.0001%)	Not Detected (<MDL) PASS See Annex B Compliant, actively added Pictogram: 
		Other Content of dangerous substances Without testing, based on a manufacturer declaration and supplier declarations (assessment without testing, 4.2.2.2);	No performance determined.

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EN 14041:2018			
Clause	Requirement	Test method	Result(s) The way of expressing the performance
4.3 Emission of dangerous substances into indoor air	Resilient, textile, laminate and modular multilayer floor coverings shall be evaluated concerning their emission of the following dangerous substances: — volatile organic compounds (VOC), with exception of formaldehyde, as specified in 4.3.2; and — formaldehyde (HCHO), as specified in 4.3.3. Table 5 — Classes for formaldehyde emissions (E-classes)	Emissions of volatile organic compounds (VOC) with exception of formaldehyde according to EN 16516:2017	No performance determined.
		Emissions of formaldehyde (HCHO) based on testing according to EN 717-1:2004 Analysis was performed by UV-Vis. MDL=Method Detection Limit: 0.080mg/m ³ (mg/m ³ = milligram per cubic meter)	Not Detected (<MDL) Class E1 Pictogram: 
4.4 Water-tightness	The water-tightness performance of the resilient floor coverings shall be determined by test according to EN 13553:2017	EN 13553:2017, Annex A	No performance determined.
4.5 Slip resistance	The slip resistance performance of a floor covering, shall be determined by test as dynamic coefficient of friction, μ , in accordance with EN 13893 under dry and non-contaminated conditions. The coefficient of friction, μ , shall be declared, depending on the obtained result, as: a) $\mu < 0,30$; or b) $\mu \geq 0,30$.	EN 13893:2002	Dynamic coefficient of friction: X Direction: 0.38 Y Direction: 0.42 Referenced: $\mu \geq 0,30$ Pictogram: 

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EN 14041:2018			
Clause	Requirement	Test method	Result(s) The way of expressing the performance
4.6 Electrical behaviour	Electrical behaviour of the floor coverings, determined as antistatic, static dissipative or conductive performances, shall be individually determined Antistatic: Body Voltage $\leq 2,0 $ kV Static dissipative: Vertical resistance $\leq 1,0 \times 10^9 \Omega$ Conductive: Vertical resistance $\leq 1,0 \times 10^6 \Omega$	Antistatic: EN 1815:2016 method A	No performance determined.
		Static dissipative or conductive: EN 1081:2018 method A	No performance determined.
4.7 Thermal resistance (thermal conductivity)	The performance of thermal resistance, R , of the floor coverings shall be determined	EN 12664:2001 Heat flow meter method Mean temperature: 23°C Temperature difference: 10°C (The test result can not be compared with other results obtained from different test conditions, and should not be cited to the use condition directly.)	Thermal resistance: 0.052 m ² ·K/W Thermal conductivity: 0.116 W/(m·K)

Note: 1. All test specimens were cut from the samples, see the photographs.
2. Test items of clause 4.1, 4.2 were carried out by SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch.
3. Thermal resistance (thermal conductivity) was carried out by SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
4. The test results of clause 4.2 are copied from report No. XMIN190902231CCM dated: Oct.10, 2019 issued by SGS.

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Annex A

Test item: Fire Classification for Burning Behavior of Flooring Material

Sample Description: Floor

Test Method: EN 13501-1:2018 Clause 9 & EN ISO 9239-1:2010 & EN ISO 11925-2:2010, Cor.1:2011

Test result:

I. EN ISO 9239-1:2010 Reaction to fire tests for floorings-Part 1: Determination of the burning behaviour

using a radiant heat source

Specimen: 239mm × 1230mm × 6.0 mm

Flame application time: 10min

Mounting and fixing: Calcium silicate board, with its density about 1016kg/m³, thickness about 21.4mm,
is as the substrate. The specimens were fixed mechanically to the substrate.

Specimen No.	Furthest extent of spread of flame, mm	Critical heat flux (CHF or HF-30), kW/m ²	Integrated smoke value, %-min
1	80	≥11	720.67
2	90	≥11	654.43
3	90	≥11	729.74
Average	87	≥11	701.6

Note:

1. Test specimens were cut from the sample.
2. Specimens that do not ignite or which spread flame less than 110 mm have a critical heat flux $\geq 11\text{ kW/m}^2$.
3. Observations of the burning characteristics: blistering, charring.

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



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II. EN ISO 11925-2:2010, Cor.1:2011 Reaction to fire tests-Ignitability of building products subjected to direct impingement of flame-Part 2: Single-flame source test.

Specimen: 250mm × 90mm × 5.95 mm

Flame application time: 15s

Exposure conditions	Edge exposure			Surface exposure		
Specimen No.	1	2	3	1	2	3
Whether ignition occurs	No	No	No	No	No	No
Whether the flame tip reaches 150 mm above the flame application point within 20s	No	No	No	No	No	No
Whether ignition of the filter paper occurs	No	No	No	No	No	No

Note: Test specimens were cut from the sample.

Conclusion:

According to the test result and classification criteria (See table 1), the submitted sample satisfies Class B_{fl}

Reaction to fire classification: B_{fl}—s1

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.

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



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Table 1. Classes of reaction to fire performance for floorings

Class	Test method(s)	Classification criteria	Additional classification
A1 _{fl}	EN ISO 1182 ^a and	$\Delta T \leq 30\text{ }^{\circ}\text{C}$; 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	$\Delta T \leq 50\text{ }^{\circ}\text{C}$ and $\Delta m \leq 50\%$ and $t_f \leq 20\text{ s}$	-
	EN ISO 1716 and	$PCS \leq 3,0\text{ MJ/kg}$ ^a and $PCS \leq 4,0\text{ MJ/m}^2$ ^b and $PCS \leq 4,0\text{ MJ/m}^2$ ^c and $PCS \leq 3,0\text{ MJ/kg}$ ^d	-
	EN ISO 9239-1 ^e	Critical flux ^f $\geq 8,0\text{ kW/m}^2$	Smoke production ^g
B _{fl}	EN ISO 9239-1 ^e and	Critical flux ^f $\geq 8,0\text{ kW/m}^2$	Smoke production ^g
	EN ISO 11925-2 ^h : Exposure = 15 s	$F_s \leq 150\text{ mm}$ within 20 s	-
C _{fl}	EN ISO 9239-1 ^e and	Critical flux ^f $\geq 4,5\text{ kW/m}^2$	Smoke production ^g
	EN ISO 11925-2 ^h : Exposure = 15 s	$F_s \leq 150\text{ mm}$ within 20 s	-
D _{fl}	EN ISO 9239-1 ^e and	Critical flux ^f $\geq 3,0\text{ kW/m}^2$	Smoke production ^g
	EN ISO 11925-2 ^h : Exposure = 15 s	$F_s \leq 150\text{ mm}$ within 20 s	-
E _{fl}	EN ISO 11925-2 ^h : Exposure = 15 s	$F_s \leq 150\text{ mm}$ within 20 s	-
F _{fl}	EN ISO 11925-2 ^h : Exposure = 15 s	$F_s > 150\text{ mm}$ within 20 s	-

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



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TEST REPORT

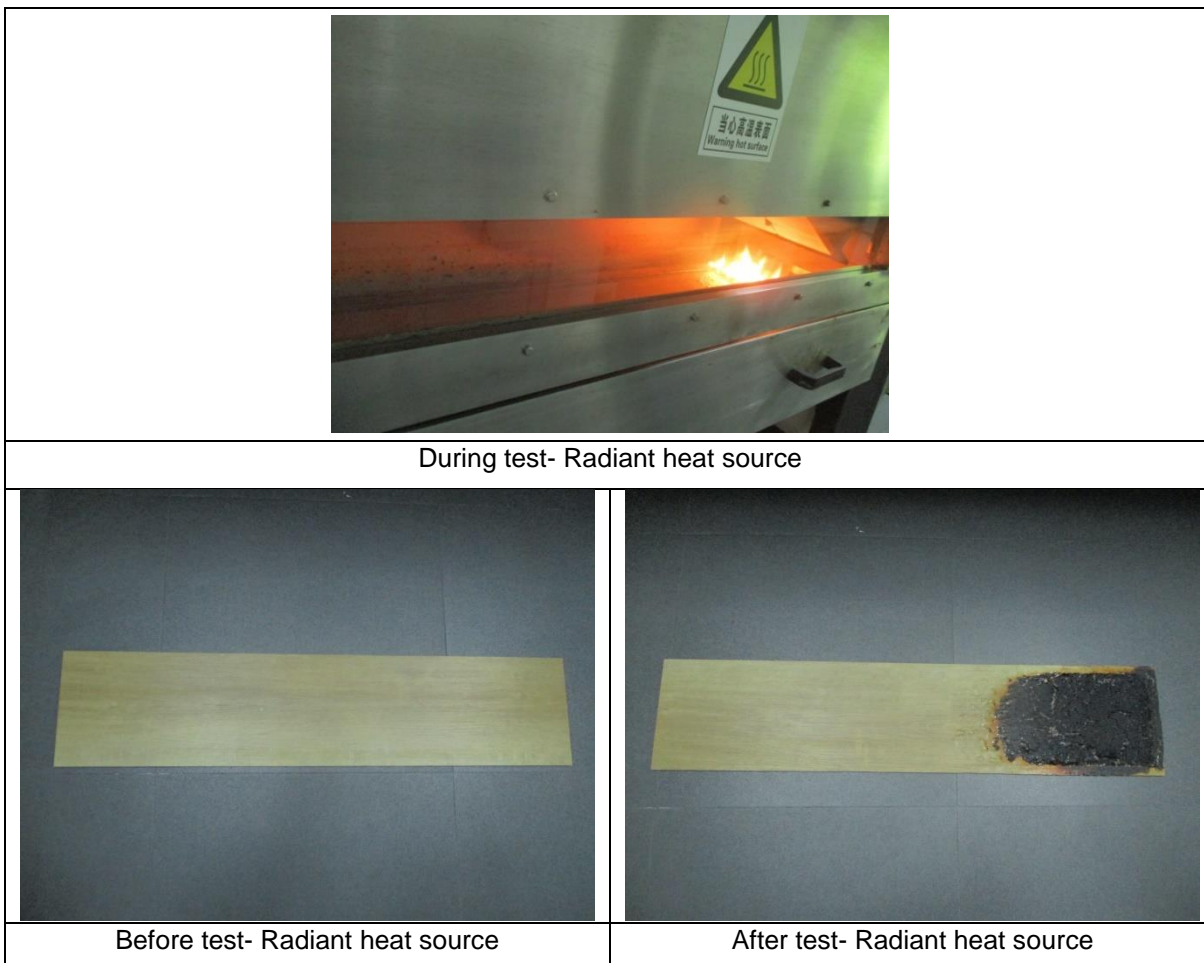
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- ^a For homogeneous products and substantial components of non-homogeneous products.
- ^b For any external non-substantial component of non-homogeneous products.
- ^c For any internal non-substantial component of non-homogeneous products.
- ^d For 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

Test Photo:



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



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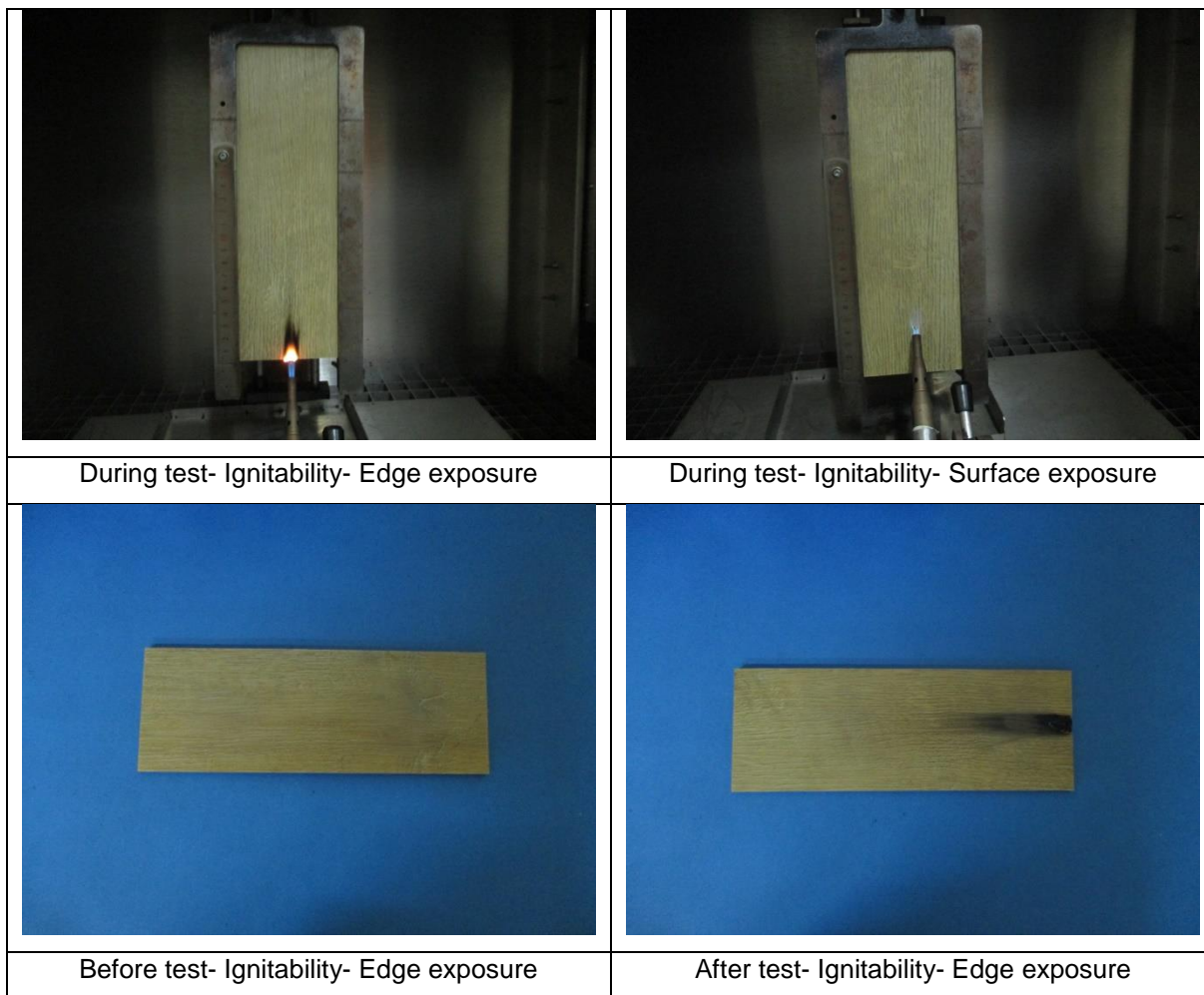
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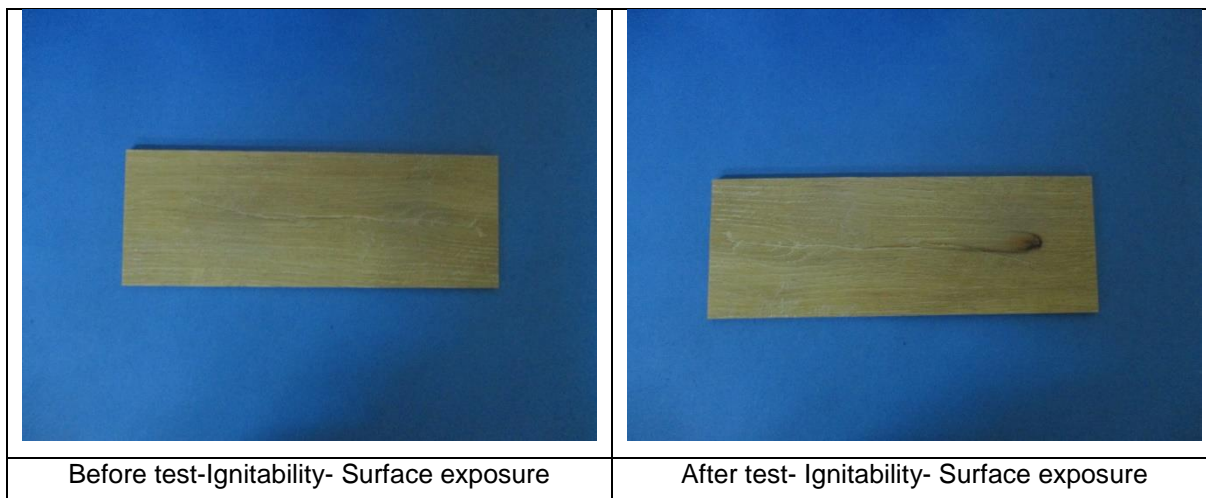
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Equipment Information:

Equipment	Model	Equipment No.	Calibration date	Next Calibration date
Ignitability tester	SIT	GZMR-PL-E226	2019-06-11	2020-06-10
Flooring Radiant Panel Tester	FPR	GZMR-PL-E227	2019-07-16	2020-07-15

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



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Annex B

Test Results:

Test Part Description:

Specimen No.	SGS Sample ID	Description
SN1	CAN19-186378.001	Gray board w/ brown surface & black backing

Remarks:

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

EN 14041:2018-PBDEs

Test Method: With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Decabromodiphenyl ether	1,000	mg/kg	5	ND
Octabromodiphenyl ether	1,000	mg/kg	5	ND
Pentabromodiphenyl ether	1,000	mg/kg	5	ND
Comment	PASS			

Notes:

IEC 62321 series is equivalent to EN 62321 series

http://www.cenelec.eu/dyn/www/f?p=104:30:1742232870351101:::FSP_ORG_ID,FSP_LANG_ID:1258637,25

EN 14041:2018- Pentachlorophenol (PCP)

Test Method: With reference to CEN/TR 14823:2003, analysis was performed by GC-ECD / GC-MS.

<u>Test Item(s)</u>	<u>Limit</u>	<u>Unit</u>	<u>MDL</u>	<u>001</u>
Pentachlorophenol	5	mg/kg	0.1	ND
Comment	PASS			

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EN 14041:2018- Elementary Analysis

Test Method: With reference to EN1122:2001, analysis was performed by AAS / ICP-OES.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	5	ND
Lead (Pb)	1000	mg/kg	20	ND
Comment	PASS			

EN 14041:2018-Phthalates

Test Method: With reference to EN 14041:2018 Annex F, analysis was performed by GC-MS.

Test Item(s)	CAS NO.	Limit	Unit	MDL	001
Dibutyl Phthalate (DBP)	84-74-2	-	mg/kg	50	ND
Benzylbutyl Phthalate (BBP)	85-68-7	-	mg/kg	50	ND
Di(2-ethylhexyl)phthalate(DEHP)	117-81-7	-	mg/kg	50	ND
DBP+BBP+DEHP		1000	mg/kg	-	ND
Comment	PASS				

EN 14041:2018- Chlorinated Paraffins

Test Method: With reference to ISO 18219: 2015, analysis was performed by GC-NCI-MS / GC-ECD.

Test Item(s)	Limit	Unit	MDL	001
Alkanes C10-C13, chloro (short-chain chlorinated paraffins) (SCCPs)	1000	mg/kg	50	ND
Alkanes C14-C17, chloro (medium -chain chlorinated paraffins) (MCCPs)	1000	mg/kg	50	ND
SCCPs + MCCPs	1000	mg/kg	-	ND
Comment	PASS			

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



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EN 14041:2018- Polycyclic Aromatic Hydrocarbons (PAHs)

Test Method: With reference to EN 14041:2018 Annex E, analysis was performed by GC-MS.

Test Item(s)	CAS NO.	Limit	Unit	MDL	001
Benzo(a)anthracene(BaA)	56-55-3	1.0	mg/kg	0.2	ND
Chrysene(CHR)	218-01-9	1.0	mg/kg	0.2	ND
Benzo(b)fluoranthene(BbF)	205-99-2	1.0	mg/kg	0.2	ND
Benzo(j)fluoranthene(BjF)	205-82-3	1.0	mg/kg	0.2	ND
Benzo(k)fluoranthene(BkF)	207-08-9	1.0	mg/kg	0.2	ND
Benzo(a)pyrene(BaP)	50-32-8	1.0	mg/kg	0.2	ND
Benzo(e)pyrene(BeP)	192-97-2	1.0	mg/kg	0.2	ND
Dibenzo(a,h)anthracene(DBA)	53-70-3	1.0	mg/kg	0.2	ND
Comment					PASS

EN 14041:2018- Organotin Compounds

Test Method: With reference to ISO/TS 16179:2012, analysis was performed by GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Tri substituted Organotin	-	mg/kg	-	ND
Dibutyltin (DBT)	-	mg/kg	0.20	ND
Dioctyltin (DOT)	-	mg/kg	0.20	ND
Sum of Organotin compounds	1000	mg/kg	-	ND
Comment				PASS

Notes:

Trisubstituted organotin compounds include Tributyltin (TBT), Triphenyltin (TPhT), Tripropyltin (TPT), Tricyclohexyltin (TCyT), Trioctyltin (TOT) and Trimethyltin (TMT), MDL for each other is 0.20 mg/kg.

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EN 14041:2018- Perfluorooctanoic acid (PFOA)

Test Method: With reference to CEN/TS15968:2010, analysis was performed by LC-MS.

Test Item(s)	CAS NO.	Limit	Unit	MDL	001
Perfluorooctanoic acid (PFOA)	335-67-1	1000	mg/kg	10	ND
Comment					PASS

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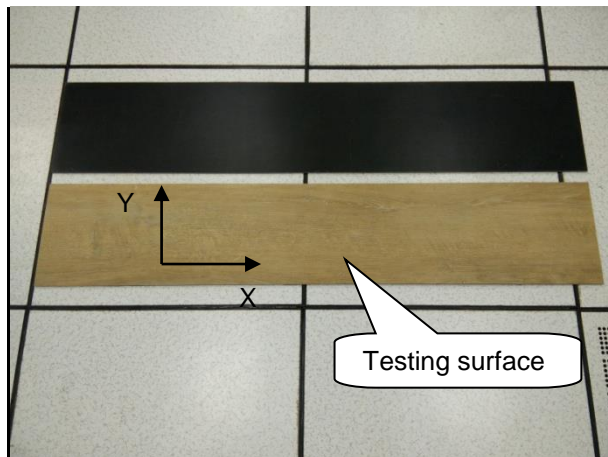
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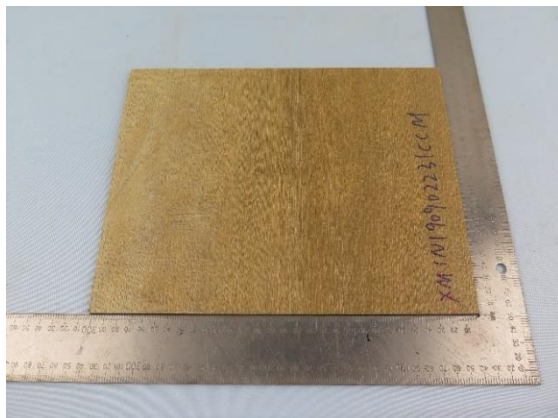
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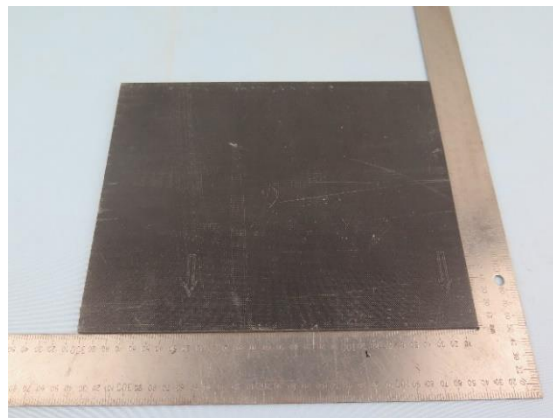
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Original Sample



Specimen for Thermal conductivity
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