

**Report No.:** 0154221036c 001

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**Client:** TAIZHOU HUALI PLASTIC CO.,LTD  
Zhangdian Industrial Zone,Jiangyan City,Jiangsu Prov.,P.R.China

**Test item(s):** Rigid LVT Flooring

**Identification/  
Model No(s):** N/A

**Sample Receiving date:** 2017-01-05

**Testing Period:** 2017-01-05 – 2017-02-16

**Test specification:**

**Test result:**

Customer's requirement:

1. Emission test for VOC and formaldehyde based on standards ISO 16000-3, Pass  
ISO 16000-6 & 9,and evaluation based on the AgBB/ DiBt requirements

**For and on behalf of  
TÜV Rheinland (Shanghai) Co., Ltd.**



2017-02-20

Jet Lee / Department Manager

*Date*

*Name/Position*

*Test result is drawn according to the kind and extent of tests performed.*

*This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.*

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Material list:

Item: Rigid LVT Flooring

Material No.	Material	Color	Location
M001	Whole product	brown	Refer to photo

**Test method(s)**

- ISO 16000-3:2011 Indoor air – Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air – Active sampling method
- ISO 16000-6:2004 Indoor air – Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA® sorbent, thermal desorption and gas chromatography using MS/FID
- ISO 16000-9:2006 Indoor air – Part 9: Determination of the emission of volatile organic compounds from building products and furnishing – Emission test chamber method

**Test chamber conditions**

Test chamber:	Corresponding to ISO 16000-9
Test chamber volume:	1 m <sup>3</sup>
Temperature of supply air:	23 °C ± 2 °C
Relative humidity of supply air:	50 % ± 5 %
Air exchange rate:	0.5 m <sup>3</sup> /h
Loading factor:	0.4 m <sup>2</sup> /m <sup>3</sup>

**Test Results**

Table 1. Emission Results after 3 days

Substance	CAS No.	Chamber concentration ( $\mu\text{g}/\text{m}^3$ )	LCI/NIK value ( $\mu\text{g}/\text{m}^3$ )	R value (C/LCI)	Classification (Carc. 1 & 2)/SVOC
Total VOC (TVOC) ( $\text{C}_6\text{-C}_{16}$ )	-	32	-	-	-
Total SVOC (TSVOC) ( $> \text{C}_{16}$ )	-	n.d.	-	-	-
Formaldehyde	50-00-0	n.d.	100	-	-

Table 2. Emission Results after 7 days

Substance	CAS No.	Chamber concentration ( $\mu\text{g}/\text{m}^3$ )	LCI/NIK value ( $\mu\text{g}/\text{m}^3$ )	R value (C/LCI)	Classification (Carc. 1 & 2)/SVOC
Total VOC (TVOC) ( $\text{C}_6\text{-C}_{16}$ )	-	46	-	-	-
Total SVOC (TSVOC) ( $> \text{C}_{16}$ )	-	n.d.	-	-	-
Formaldehyde	50-00-0	n.d.	100	-	-

Table 3. Emission Results after 28 days

Substance	CAS No.	Chamber concentration ( $\mu\text{g}/\text{m}^3$ )	LCI/NIK value ( $\mu\text{g}/\text{m}^3$ )	R value (C/LCI)	Classification (Carc. 1 & 2)/SVOC
Total VOC (TVOC) ( $\text{C}_6\text{-C}_{16}$ )	-	8	-	-	-
Total SVOC (TSVOC) ( $> \text{C}_{16}$ )	-	n.d.	-	-	-
Formaldehyde	50-00-0	n.d.	100	-	-

Table 4. Evaluation of results based on the AgBB/ DiBt requirements

Parameter	3 Days		7 days		28 days	
	Result	AgBB/ DiBt requirement	Result	AgBB/ DiBt requirement *1	Result	AgBB/ DiBt requirement
TVOC (C <sub>6</sub> – C <sub>16</sub> )	0.032 mg/m <sup>3</sup>	≤ 10mg/m <sup>3</sup>	0.046 mg/m <sup>3</sup>	≤ 0.5 mg/m <sup>3</sup>	0.008 mg/m <sup>3</sup>	≤ 1.0 mg/m <sup>3</sup>
∑ SVOC (C <sub>16</sub> – C <sub>22</sub> )	n.d.	None	n.d.	≤ 0.05 mg/m <sup>3</sup>	n.d.	≤ 0.1 mg/m <sup>3</sup>
∑ R (dimensionless)	None	None	None	≤ 0.5	None	≤ 1
∑ VOC without LCI	n.d.	None	n.d.	≤ 0.05 mg/m <sup>3</sup>	n.d.	≤ 0.1 mg/m <sup>3</sup>
∑ Carcinogenic	n.d.	≤ 0.01mg/m <sup>3</sup>	n.d.	≤ 0.001mg/m <sup>3</sup>	n.d.	≤ 0.001mg/m <sup>3</sup>
Formaldehyde	n.d.	None	n.d.	0.060 mg/m <sup>3</sup>	n.d.	≤ 0.120 mg/m <sup>3</sup>

The results can be summarized as follow:

- No carcinogenic substances were detected after 3, 7 days and 28 days.
- The total VOC (TVOC) after 3 days was below the threshold limit of 10 mg/m<sup>3</sup>
- The total VOC (TVOC) after 7 days was less than the half of the 28 days threshold limit of 1 mg/m<sup>3</sup>
- The total SVOC after 7 days was less than the half of the 28 days threshold limit of 0.1 mg/m<sup>3</sup>.

**Abbreviation:**

VOC = Volatile Organic Compound  
 SVOC = Semi Volatile Organic Compound  
 TVOC = Total Volatile Organic Compound  
 TSVOC = Total Semi Volatile Organic Compound  
 C<sub>i</sub> = Chamber concentration of compound i  
 LCI (or NIK) = Lowest Concentration of Interest  
 n.d. = not detected (< 1 µg/m<sup>3</sup>)  
 Carc. = Carcinogenic, classified according to the GHS system  
 µg/m<sup>3</sup> = micrograms per cubic meter  
 mg/m<sup>3</sup> = milligrams per cubic meter  
 ppm = parts per million

**Remark:**

- <sup>1</sup> According to the AgBB/ DiBt the test should be performed for 28 days, however the test may be terminated from a minimum of 7 days after loading if the measured values are less than half the 28-day limits, and in addition no significant increases in the concentration of individual substances can be found in comparison to the measurements of the third day

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**Sample Photo(s)**



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