

Entwicklungs- und Prueflabor Holztechnologie GmbH · Zellescher Weg 24 · 01217 Dresden · Germany

Amorim Cork Flooring, S.A.
Mrs. Selma Ribeiro
Rua de Ribeirinho, 202

4535-907 Sao Reio de Oleiros
Portugal

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Dresden, 24/05/2021
50 ku/br

Test Report Order no. 2117110/2022/2

Client: Amorim Cork Flooring, S.A.
Rua de Ribeirinho, 202
4535-907 Sao Reio de Oleiros
Portugal

Order: Emission test according to criteria for the allocation of the TÜV
PROFiCERT- product Interior brand Version 1.2 dated 2019-03-01
Testing according to agreement BOD-17-02-06-01
Supervision test
**PVC Cork Flooring with HDF
LVT START**

Contractor: Entwicklungs- und Prueflabor Holztechnologie GmbH
Laboratory Chemical testing
Zellescher Weg 24
01217 Dresden
Germany

Engineer in charge: Dipl.-Nat. A. Kuban



Dipl.-Ing. M. Broege
Head of Laboratory Chemical testing

The test report contains 4 pages and 5 annexes with 13 pages. Any duplication, even in part, requires written permission of EPH. These test results are exclusively related to the tested material.

1 Assignment

Determination of the VOC and formaldehyde emission according to criteria for the allocation of the TÜV PROFiCERT- product Interior brand Version 1.2 dated 2019-03-01 in the framework of a supervision test.

2 Evaluation*

Table 1: Evaluation overview

Label	Evaluation	Result
TÜV PROFiCERT – product interior	TÜV PROFiCERT product interior Version 1.2 for floor coverings	PREMIUM

✓ Requirement complied, ✗ Requirements not complied

The tested product „LVT START“ fulfills the allocation criteria „TÜV PROFiCERT – product Interior“ for the Quality PREMIUM.

3 Product description and identification

Article description

Product name: **LVT START**
 Article number: 80000593

Product description

Type of product: **PVC Cork Flooring with HDF (MMF flooring)**
 Thickness: 9.0 mm

Sampling

Charge: 1500036221
 Date of production: 08/02/2022
 Sampling: By producer
 Date of sampling: 04/03/2022
 Packaging: Carton and foil
 Count: 1 box
 Sample receipt at EPH: 09/03/2022

*Statements on conformity assessment/classification were made on the basis of the measurement results obtained. Measurement uncertainties are not included in the assessment (ILAC G8 03/2009 " Guidelines on the Reporting of Compliance with Specification" Section 2.7).

4 Performed Tests

The following methods were used:

DIN ISO 16000-3: 2013-01, Indoor air – Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air – Active sampling method

DIN ISO 16000-6: 2012-11, 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 or MS-FID

DIN EN ISO 16000-9: 2008-04, Indoor air – Part 9: Determination of emission of volatile organic compounds from building products and furnishing

DIN EN 16516: 2020-10, Construction products: Assessment of release of dangerous substances – Determination of emissions into indoor air;

Table 1: Parameters investigated

Pos.	Parameter	Testing standard	Test period
1	Chamber test (Annex, „Test parameter“)	DIN EN 16516	01/04/2022 – 04/04/2022
1.1	Volatile organic compounds (VOC/SVOC)	DIN EN 16516, GC/MS	
1.2	Formaldehyde/Aldehyde/Acetone	DIN EN 16516, HPLC	

5 Results

Table 3: Requirements and results, Quality PREMIUM

TÜV PROFICERT-product Interior PREMIUM						Compliance of Require- ments
Parameter	Requirements [µg/m³]		Results [µg/m³]			
	3 days	28 days	3 days	7 days	28 days	
Total volatile organic compounds TVOC (AgBB)	< 1,000	≤ 160	65			yes
Total of semi-volatile organic compounds TSVOC		≤ 100	< 5			yes
Total VOC without LCI (D)		≤ 100	< 5			yes
R-Value (LCI (D)) *		≤ 1.0	0.079			yes
Formaldehyde		< 10	< 5			yes
1,4-Dichlorobenzene		< 60	n.d.			yes
Trichloroethylene		≤ 1	n.d.			yes
DEHP		≤ 1	n.d.			yes
DBP		≤ 1	n.d.			yes
Carcinogenic, mutagenic substances and substances toxic to reproduction ¹	∑ ≤ 10	≤ 1 each	n.d.			yes
Ammonia ²		≤ 24	-			yes
Nitrosamines ²		≤ 0.2	-			yes

In addition or deviating for resilient floor coverings:						
Total of semi-volatile organic compounds TVOC (AgBB)		≤ 30	< 5			yes

The documents are attached to the report:

Sampling protocol and product data (Annex 1)

ADAM-file Evaluation according to AgBB 2018 (Annex 2)

General information

Test parameters

Evaluation for AgBB 2018

Measurement – day 3, 7 and 28

Image

Chromatogram – day 3, 7 and 28

Evaluation according to French Regulation on VOC (Annex 3)

Evaluation according to Belgian VOC regulation (Annex 4)

Evaluation according to M1 classification (Annex 5)

6 Evaluation

The tested product „LVT START“ fulfills the allocation criteria „TÜV PROFiCERT – product Interior“ for the Quality PREMIUM.

Following emission requirements will be fulfilled.

- AgBB scheme, August 2018
- Annex 8 of German Model Administrative Provision – Technical Building Rules (MVV TB / ABG), version 2017/1
- Emission class A+ according to the French regulation on VOC „Décret n° 2011-321 du 23 mars 2011“
- Belgian VOC regulation on emissions from construction products „8 MEI 2014. — Koninklijk besluit tot vaststelling van de drempelniveaus voor de emissies naar het binnenmilieu van bouwproducten voor bepaalde beoogde gebruiken“
- LEED v4 (outside North America; LEED v4 for BUILDING DESIGN AND CONSTRUCTION, April 5, 2016)
- BREEAM International New Construction 2016 (Technical Manual SD233 1.0), Exemplary Level
- Finnish M1 classification for construction products, version 15.11.2017 (the requirements for acceptability and ammonia are not included. The emission of ammonia for smoked oak parquet is an exception.)

In addition for resilient floor coverings:

- DE-UZ 120 (not for PVC flooring), February 2011
- Austrian environmental label, guideline UZ 42, elastic floor coverings, version 4.0, January 1, 2019 (The requirements for odour are not included.)



Dipl.-Nat. A. Kuban
Engineer in charge



Sampling protocol for Emission tests TÜV PROFICERT-product INTERIOR

Name of applicant (address / stamp):	Amorim Cork Flooring, S.A. Rua do Ribeirinho, 202 4536-907 S. PAIO DE OLEIROS Portugal	Manufacturer of the product (if deviating from the applicant):	
Factory in which the sample is taken:	Amorim Cork Flooring, S.A. Rua do Ribeirinho, 202 4536-907 S. PAIO DE OLEIROS Portugal	Sample drawer (please mark): Name, company, telephone:	<input type="checkbox"/> supervision body <input type="checkbox"/> certification body <input checked="" type="checkbox"/> producer

Name of product group:	PVC Cork Flooring with HDF	TÜV-PROFICERT Certificate no.:	70 720 5570-2
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Name of the product:	LVT START	Type:	
Model/series:		Batch-No.:	1500036221
Article-No.:	80000593	Date of production:	08-02-2022

Date of sampling:	04-03-2022	Time of day:	
Sample is taken from:	<input type="checkbox"/> the current production <input checked="" type="checkbox"/> store <input type="checkbox"/> retain samples	How had the product been stored prior to sampling?	
Place of storage:		Type of packaging / packaging material:	

Particularities (Possible negative effects, uncertainties, questions, etc.):	
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Intended tests:	
<input type="checkbox"/> Emission test (Initial test) <input checked="" type="checkbox"/> Emission test (surveillance test) <input type="checkbox"/> Emission test (increasing)	<input type="checkbox"/> Other:

Please fill in the product data on page 2!

Product data

Type of product: Modular multilayer floor coverings acc. EN 14041

Parameter	Manufacturer's data	
Construction (number of layers without surface treatment):	3	
<i>Data of the single layers (description, material) [from top to down]</i>		
layer 1*: top layer : 1.8 mm heterogeneous PVC (wear layer 0,15 to 0,55mm)		
layer 2*: Carrier layer: HDF 6 -7 mm		
layer 3*: backing layer 0,8 to 2 mm press cork		
layer 4*:		
layer 5*:		
layer 6*:		
Chemical or thermal treatment (what kind)?:		
Underlay / Impact sound insulation (if relevant)	Material:	
	Thickness [mm]:	
Adhesive used for underlay / sound insulation	Product name:	
	Applied quantity [g/m ²]:	
Surface coating (if relevant)	Chemical basis:	
	Applied quantity [g/m ²]:	
Total thickness (incl. insulation) [mm]:		9
Area weight [g/m ²]:		8.5
Bevels?:		no
Joint structure (click connection, slot & key):		click 2G

* Layers: wear layer/top layer; decor layer; interlayer / core / middle layer; carrier layer; counter layer / back layer; underlay

Confirmation

The signer herewith confirms the correctness of the data given above. The selected samples are part of the product description attached to the corresponding TÜV PROFICERT certificate. The sample was selected, drawn and packed personally in accordance with the sampling instructions.

Date: 04-03-2022

Signature (Stamp): Graça Rocha

Evaluation according to AgBB 2018

2117110/2022/2

1. General Information

Testing laboratory	Entwicklungs- und Prüflabor Holztechnologie GmbH
Responsible laboratory staff	Dipl.-Nat. A. Kuban
Number of the test report	2117110/2022/2
Client/Applicant	Amorim Cork Flooring, S.A.
Name of the product and material number	PVC Cork Flooring with HDF, LVT START, 9mm
Control type	Surveillance - short
Date of batch production	2022-02-08
Date of receipt of the sample	2022-03-09
Storage of the sample until testing	original packaged
Product Group	Composite floor coverings
Top layer	PVC
Backing layer	multilayered

Description of the construction product:

Parameter	Manufacturer	Laboratory
General description of the product	PVC Cork Flooring	Multi layer flooring
Total thickness	9 mm	92 mm
Area weight	8500 g/m ²	8702 g/m ²
Additional information		

Comments

2. Test parameter

Date of the completion of the test specimen	2022-04-01
Preparation of the test specimen by	EPH
Used auxiliary materials	
Start of preconditioning	
Placing of the test specimen into the test chamber and start of testing	2022-04-01
Arrangement of the test specimen in the test chamber	bottom of chamber
Covering of the edges? Ratio of covered edges to uncovered edges?	completely closed
Use of the break-off criteria	Day 3
Manufacturer/type of the test chamber	
Material of the test chamber	Stainless steel
Volume of the test chamber [m ³]	0.225
Area of the test specimen [m ²]	0.09
Air exchange rate [1/h]	0.5
Area specific air flow rate [m/h]	1.250
Temperature [°C]	23±1
Relative humidity [%]	50±3
Comments on testing	Emission test chamber EPH: KT 101

3. Evaluation for AgBB 2018

Parameter	Day 3					Day 7				Day 28			
	[µg/m³]	[mg/m³]	[mg/m³]	[mg/m³]	[mg/m³]	[µg/m³]	[mg/m³]	[mg/m³]	[mg/m³]	[µg/m³]	[mg/m³]	[mg/m³]	[mg/m³]
TVOC	65	0.1	0.3	10.0	>10.0	-	-	0.5	>0.5	-	-	1.0	>1.0
Σ SVOC	0	0.00	0.03	>0.03	-	-	-	0.05	>0.05	-	-	0.1	>0.1
R-Value *	0.079	0.1	0.5	>0.5	-	-	-	0.5	>0.5	-	-	1	>1
Σ VOC w/o LCI	0	0.00	0.05	>0.05	-	-	-	0.05	>0.05	-	-	0.1	>0.1
Σ Carcinogenic	0	0.000	0.001	0.01	>0.01	-	-	0.001	>0.001	-	-	0.001	>0.001
Total							-				-		
DIBt Parameter													
Formaldehyde	0	0.000	0.060	>0.060	-	-	-	0.060	>0.060	-	-	0.120	>0.120
Additional Information													
Σ VVOC	5	0	-	-	-	-	-	-	-	-	-	-	-

*) dimension less Pass Continue Fail

4. Measurement

4.1. Day 3

Date of measurement: 2022-04-04

TVOC ISO 16000-6: -

CAS-No.	Compound name	Ret. Range	RT [min]	C [$\mu\text{g}/\text{m}^3$]	Quantifi- cation	C_tol [$\mu\text{g}/\text{m}^3$]	Identifi- cation	Comment	Ri	LCI Value
78-93-3	Ethylmethylketone	VVOC	5.016	2	specific	1	I		0.000	20000
64-19-7	Acetic acid	VOC	5.571	48	specific	2	I		0.040	1200
142-82-5	n-Heptane	VOC	7.157	1	specific	0	I		0.000	15000
108-87-2	Methyl cyclohexane	VOC	8.038	2	specific	2	I		0.000	8100
98-01-1	Furfural	VOC	12.103	3	specific	0	I		0.000	10
1330-20-7	Xylene	VOC	13.931	2	specific	2	I	p-Xylol	0.000	500
1330-20-7	Xylene	VOC	14.003	1	specific	1	I	m-Xylol	0.000	500
1330-20-7	Xylene	VOC	15.059	1	specific	1	I	o-Xylol	0.000	500
108-94-1	Cyclohexanone	VOC	15.148	1	specific	0	I		0.000	410
111-84-2	n-Nonane	VOC	15.303	1	specific	0	I		0.000	6000
7785-70-8	(+)-pinene	VOC	17.187	3	specific	2	I		0.000	2500
108-95-2	Phenol	VOC	19.152	4	specific	4	I		0.000	70
127-91-3	β -Pinene	VOC	19.48	1	specific	0	I		0.000	1400
124-18-5	n-Decane	VOC	20.311	1	specific	1	I		0.000	6000
	Not identified VOC	VOC	21.448		Tol. equiv.	3	III		-	-
	Not identified VOC	VOC	21.756		Tol. equiv.	2	III		-	-
98-86-2	Acetophenone	VOC	23.327	17	specific	5	I		0.035	490
	Not identified VOC	VOC	25.093		Tol. equiv.	1	III		-	-

CAS-No.	Compound name	Ret. Range	RT [min]	C [$\mu\text{g}/\text{m}^3$]	Quantifi- cation	C_tol [$\mu\text{g}/\text{m}^3$]	Identifi- cation	Comment	Ri	LCI Value
	Not identified VOC	VOC	28.078		Tol. equiv.	1	III		-	-
	Other saturated aliphatic hydrocarbons, C9-C16	VOC	28.185		Tol. equiv.	1	III		0.000	6000
	Not identified VOC	VOC	29.5		Tol. equiv.	1	III		-	-
	Not identified VOC	VOC	29.602		Tol. equiv.	1	III		-	-
7473-98-5	2-Hydroxy-iso-butyrophenone	VOC	30.929		Tol. equiv.	1	III		-	-
	Not identified VOC	VOC	31.033		Tol. equiv.	1	III		-	-
629-50-5	n-Tridecane	VOC	31.29	1	specific	0	I		0.000	6000
	Not identified VOC	VOC	32.803		Tol. equiv.	3	III		-	-
	Not identified VOC	VOC	33.718		Tol. equiv.	1	III		-	-
629-59-4	n-Tetradecane	VOC	33.861	1	specific	0	I		0.000	6000
475-20-7	Longifolene	VOC	34.574	1	specific	0	I		0.000	1400
112-72-1	1-Tetradecanol	VOC	35.377	1	specific	1	I		-	-
90-43-7	o-Hydroxybiphenyl	VOC	36.426	1	specific	1	I		-	-
36122-35-7	Phenylmaleic anhydride	VOC	36.638	3	specific	3	I		-	-
	Not identified VOC	VOC	37.51		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	38.63		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	38.726		Tol. equiv.	2	III		-	-
	Other saturated aliphatic hydrocarbons, C17-C22	SVOC	38.773		Tol. equiv.	1	III		0.000	1000 (SVOC)
	Not identified SVOC	SVOC	38.928		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	39.18		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	39.298		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	39.491		Tol. equiv.	1	III		-	-

CAS-No.	Compound name	Ret. Range	RT [min]	C [$\mu\text{g}/\text{m}^3$]	Quantifi- cation	C _{tol} [$\mu\text{g}/\text{m}^3$]	Identifi- cation	Comment	Ri	LCI Value
	Not identified SVOC	SVOC	40.084		Tol. equiv.	1	III		-	-
2029236-76-6	1,1'-Biphenyl, 3-(1-pentyn-1-yl)-	SVOC	40.82		Tol. equiv.	1	III		-	-
112-39-0	Methyl hexadecanoate	SVOC	41.543		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	41.707		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	41.748		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	42.116		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	42.158		Tol. equiv.	1	III		-	-
142-91-6	Isopropyl palmitate	SVOC	42.545		Tol. equiv.	1	III		-	-
1000221-97-7	2,2,3,3-Tetramethylcyclopropanecarboxylic acid, undecyl ester	SVOC	42.657		Tol. equiv.	2	III		-	-
	Not identified SVOC	SVOC	42.828		Tol. equiv.	1	III		-	-
	Not identified SVOC	SVOC	43.079		Tol. equiv.	1	III		-	-
50-00-0	Formaldehyde	VVOC	6.119	0	DNPH		I		0.000	100 (VVOC)
75-07-0	Acetaldehyde	VVOC	7.444	2	DNPH		I		0.000	1200 (VVOC)
67-64-1	Acetone	VVOC	9.252	5	DNPH		I		0.004	1200 (VVOC)

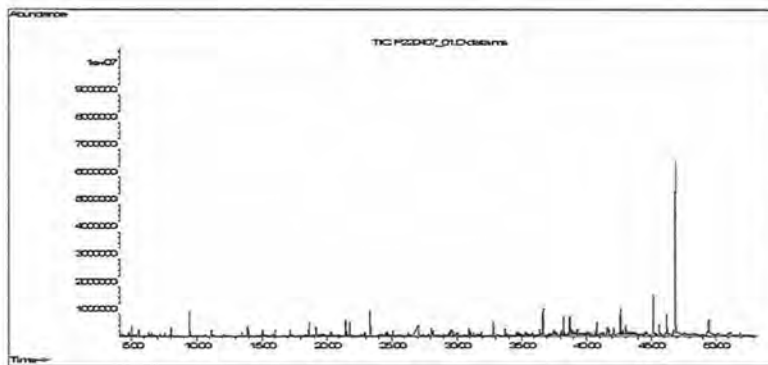
5. Images

5.1. Specimen image



6. Chromatograms

6.1. Day 3



Evaluation according to French VOC-REG 2011

2117110/2022/2

1. Evaluation for French VOC-REG 2011

Parameter	Day 3					
			A+	A	B	C
	[$\mu\text{g}/\text{m}^3$]	[$\mu\text{g}/\text{m}^3$]	[$\mu\text{g}/\text{m}^3$]	[$\mu\text{g}/\text{m}^3$]	[$\mu\text{g}/\text{m}^3$]	[$\mu\text{g}/\text{m}^3$]
TVOC	42	42	<1000	<1500	<2000	2000
Formaldehyde	0	0	<10	<60	<120	120
Acetaldehyde	2	2	<200	<300	<400	400
Toluene	-	-	<300	<450	<600	600
Tetrachlorethene	-	-	<250	<350	<500	500
Xylene	4	4	<200	<300	<400	400
1,2,4-Trimethylbenzene	-	-	<1000	<1500	<2000	2000
1,4-Dichlorobenzene	-	-	<60	<90	<120	120
Ethylbenzene	-	-	<750	<1000	<1500	1500
2-Butoxyethanol	-	-	<1000	<1500	<2000	2000
Styrene	-	-	<250	<350	<500	500
Total			A+			

Evaluation according to Belgian VOC-REG 2015

2117110/2022/2

1. Evaluation for Belgian VOC-REG 2015

Parameter	Day 3			
			✓	✗
	[µg/m³]	[mg/m³]	[mg/m³]	[mg/m³]
TVOC	5	0.0	1.0	>1.0
Σ SVOC	0	0.0	0.1	>0.1
R-Value *	0.077	0	1	>1
Σ Carcinogenic	0	0.000	0.001	>0.001
Toluene	-	-	0.300	>0.300
Acetaldehyde	2	0.002	0.200	>0.200
Formaldehyde	0	0.000	0.100	>0.100
Total			✓	

*) dimension less ✓ Pass ✗ Fail

Evaluation according to M1

2117110/2022/2

1. Evaluation for M1

Parameter	Day 3				
			M1	M2	M3
	[$\mu\text{g}/\text{m}^3$]	[$\text{mg}/\text{m}^2\text{h}$]	[$\text{mg}/\text{m}^2\text{h}$]	[$\text{mg}/\text{m}^2\text{h}$]	[$\text{mg}/\text{m}^2\text{h}$]
TVOC	5	5	<200	<400	400
Formaldehyde	0	0	<50	<125	125
Ammonia	-	-	<30	<60	60
Σ Carcinogenic	0	0	<5	5	-
Total			M1		

Acquisition and evaluation of odor is not yet implemented in ADAM!