ENVIRONMENTAL PRODUCT DECLARATION

as per /EN 16810/
as per *ISO 14025* and *EN 15804+A1*

Owner of the Declaration	**ERFMI - European Resilient Flooring Manufacturers' Institute**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ERF-20180180-CCI1-EN
ECO EPD Ref. No.	ECO-00000850
Issue date	05.03.2019
Valid to	04.03.2024

Glued down LVT according to EN ISO 10582

ERFMI
European Resilient Flooring Manufacturers' Institute

Institut Bauen und Umwelt e.V.

www.ibu-epd.com | https://epd-online.com

ECO PLATFORM
EPD
VERIFIED

General Information

ERFMI- European Resilient Flooring Manufacturers' Institute

Programme holder
IBU – Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-ERF-20180180-CCI1-EN

This declaration is based on the product category rules:
Floor coverings, 02/2018
(PCR checked and approved by the SVR)

Issue date
05.03.2019

Valid to
04.03.2024

Prof. Dr.-Ing. Horst J. Bossenmayer
(chairman of Institut Bauen und Umwelt e.V.)

Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.))

Glued down LVT according to EN ISO 10582

Owner of the declaration
ERFMI vzw, European Resilient Flooring Manufacturers' Institute
24, Rue Montoyer
B-1000 Brussels

Declared product / declared unit
1m² Glued down Luxury Vinyl Tile (LVT) floor coverings

Scope:
In this EPD glued down LVT according to EN ISO 10582 floor coverings are declared. The application of this EPD is restricted printed laminate polyvinyl chloride floor coverings produced by the members of the European Resilient Flooring Manufacturers' Institute (ERFMI). Data are based upon production during 2017 for the European market. Data have been provided by 9 companies of ERFMI which represent 75% of ERFMI members. The production sites are located in Europe and China.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of *EN 15804+A1*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR
Independent verification of the declaration and data according to *ISO 14025:2010*
☐ internally ☒ externally

Prof. Dr. Birgit Grahl
(Independent verifier)

Product

Information about the enterprise
ERFMI is the European Resilient Flooring Manufacturers' Institute. Our members offer a wide variety of durable, flexible and impermeable flooring products made of both synthetic and natural material. The overwhelming choice in colour, design, size and construction means there is a resilient floor covering for any interior surface and budget.

Product description/Product definition
Resilient floor coverings are an entire product family of flexible flooring solutions available in sheet, tiles and planks. It is classified in heterogeneous or homogeneous composition based on plastics, linoleum, cork or rubber. Resilient floor coverings can provide different functionalities (acoustic, static control, slip resistance, easy maintenance etc.) to match a wide range of domestic, commercial and industrial applications. It is available in an enormous range of patterns and colours fitting with inspiration and decorative needs.

Luxury Vinyl Tile (LVT) floor coverings are polyvinyl chloride heterogeneous floor coverings consisting of a wear layer and other compact layers which differ in composition and/or design and can contain reinforcement and are supplied in tile and plank form.
For the placing on the market of the product on the EU/EFTA (with exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. The product needs a Declaration of Performance taking into consideration /EN 14041: 2004/AC 2006 Resilient, textile and laminate floor coverings. Essential characteristics/and the CE-marking.
For the application and use the respective national provisions apply.

Application
According to /EN ISO 10874/ the area of application for resilient floor coverings is indicated by use classes. The declared product group covers the use classes 23, 34 and 43.

Technical Data
The following table contains the construction data of the declared product group:

Constructional data

Name	Value	Unit
Product thickness	2.3	mm
Surface weight	3.6	kg/m²
Product Form	tiles	-

The data set out in the Declaration of Performance apply.

Base materials/Ancillary materials
The product group has the following composition:

- Additives 3%
- Filler 34%
- Plasticizer 10%
- Pigments <1%
- Polymers (PVC) 37%
- Auxiliaries <1%
- Lacquer <1%
- Flooring Recyclate (PVC) 16%

Reference service life
The service lifetime of a floor covering for a certain application on a floor is too widespread to give one common number. For this EPD model the reference service lifetime (RSL) is set to one year. This means that all impacts for the use phase are based on the cleaning and maintenance model for one year. Depending on the area of use based on /EN ISO 10874/, the technical lifetime advised by the manufacturer and the estimated time on the floor by the customer, the service lifetime can be determined. The use phase impacts should be calculated with the foreseen service life to arrive at the total environmental impact /EN 16810/.
ERFMI provides an online tool for the calculation of a specific service life on the ERFMI home page (www.erfmi.com) for the end-user.

LCA: Calculation rules

Declared Unit
1m² of floor covering.

Declared unit

Name	Value	Unit
Declared unit	1	m²
Grammage	3.6	kg/m²
Conversion factor to 1 kg	3.6	kg/m²
Layer thickness	0.0023	m

The declaration refers to an average product from 8 production sites of ERFMI members. The data have been weighted according to the annual square meters produced by each site. The life cycle impact assessment is conducted based on the vertical average.

System boundary
Type of EPD: cradle to grave

Modules A1-A3 include processes that provide materials and energy input for the system, manufacturing and transport processes up to the factory gate, as well as waste processing.

Module A4 includes transport of the floor covering to the place of installation.

Module A5 includes the production of offcuts and adhesive for the installation of the floor covering, and incineration of offcuts and packaging material.

Module B2 is including provision of cleaning agent, energy and water consumption for the cleaning of the floor covering incl. waste water treatment. The LCA results in this EPD are declared for a one-year usage.

Module C1 considers electricity supply for the deconstruction of the flooring.

Module C2 includes transportation of the postconsumer waste to waste processing.

End of life scenarios are declared for:

- 100% incineration in a waste incineration plant (WIP) (Scenario 1, C3/1)
- 100% landfilling (Scenario 2, C4/2)
- 100% recycling according to information from AgPR, (Arbeitsgemeinschaft PVC-Bodenbelag Recycling) (Scenario 3 - for the recycling scenario the end of waste state is reached after removal from the building)

Module D includes potential benefits from all net flows given in module A5 and C3 that leave the product boundary system after having passed the end-of-waste state in the form of recovery and/or recycling potentials. Module D is declared for each scenario separately.

Comparability
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

As background database /GaBi ts/ is used.

LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules

Transport to the construction site (A4)

Name	Value	Unit
Transport distance (truck)	2000	km
Capacity utilisation (including empty runs)	85	%

Based on the share of floor covering produced in Asia a transport via ship is considered additionally to the truck transport.

Installation in the building (A5)

Name	Value	Unit
Material loss (installation waste)	4,5	%
Auxiliary (adhesive)	0.3	kg

Biogenic carbon incorporated in the packaging material is released as CO_2 emissions in module A5.

Maintenance (B2)

Name	Value	Unit
Water consumption	0.003	m^3
Electricity consumption	0.55	kWh
Maintenance cycle (vacuum cleaning & wet cleaning)	156	number/ a
Auxiliary (detergent)	0.04	kg

End of Life (C1-C4)

Name	Value	Unit
Energy recovery [100%, Scenario 1]	3.6	kg
Landfilling [100%, Scenario 2]	3.6	kg
Recycling [100%, Scenario 3]	3.6	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

For module D the potential benefits given in module A5 and C3 are declared. For waste incineration combustion in a WIP (R1 > 0.6) with energy recuperation is considered.

LCA: Results

The results for module B2 refer to a period of one year.
For the calculation of the impact of B2 for a certain service life the values for B2 have to be multiplied by the estimated service life in years.
ERFMI provides an online tool for this calculation on the ERFMI home page (www.erfmi.com) for the end-user.
Scenario 1 applies to 100% incineration.
Scenario 2 applies to 100% landfilling.
Scenario 3 applies to 100% recycling.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	X	X	MND	X	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 m² glued down LVT (3.6 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3/1	C4/2	D/1	D/2	D/3
GWP	[kg CO_2-Eq.]	6.65	0.63	1.10	0.28	0.01	0.03	7.06	0.25	-1.89	-0.15	-0.15
ODP	[kg CFC11-Eq.]	8.51E-10	1.55E-14	4.11E-11	1.03E-12	5.53E-14	9.12E-16	2.49E-12	6.85E-14	-3.57E-12	-2.99E-13	-2.99E-13
AP	[kg SO_2-Eq.]	1.78E-2	9.14E-3	1.85E-3	7.28E-4	3.53E-5	7.29E-5	6.22E-3	6.93E-4	-2.90E-3	-2.38E-4	-2.38E-4
EP	[kg $(PO_4)^3$-Eq.]	2.75E-3	1.05E-3	3.17E-4	9.38E-5	3.31E-6	1.84E-5	2.74E-4	7.08E-4	-3.24E-4	-2.62E-5	-2.62E-5
POCP	[kg ethene-Eq.]	4.45E-3	2.04E-4	2.93E-4	5.93E-5	2.21E-6	-2.38E-5	1.44E-4	7.57E-5	-2.38E-4	-1.92E-5	-1.92E-5
ADPE	[kg Sb-Eq.]	2.28E-5	3.59E-8	1.27E-6	1.64E-7	6.61E-9	2.74E-9	2.04E-6	5.55E-8	-4.76E-7	-3.95E-8	-3.95E-8
ADPF	[MJ]	137.80	8.14	16.29	3.36	0.13	0.45	8.45	3.68	-26.73	-2.10	-2.10

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 m² glued down LVT (3.6 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3/1	C4/2	D/1	D/2	D/3
PERE	[MJ]	15.97	0.27	5.36	1.59	0.09	0.03	4.87	0.28	-5.55	-0.46	-0.46
PERM	[MJ]	3.30	0.00	-1.90	0.00	0.00	0.00	-3.30	0.00	0.00	0.00	0.00
PERT	[MJ]	19.27	0.27	3.45	1.59	0.09	0.03	1.57	0.28	-5.55	-0.46	-0.46
PENRE	[MJ]	91.02	8.17	17.08	5.13	0.23	0.46	63.28	3.82	-32.87	-2.61	-2.61
PENRM	[MJ]	53.90	0.00	-0.11	0.00	0.00	0.00	-53.90	0.00	0.00	0.00	0.00
PENRT	[MJ]	144.90	8.17	16.96	5.13	0.23	0.46	9.38	3.82	-32.87	-2.61	-2.61
SM	[kg]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.60
RSF	[MJ]	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND
NRSF	[MJ]	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND
FW	[m³]	5.47E-2	5.04E-4	4.85E-3	2.47E-3	1.16E-4	4.63E-5	1.71E-2	-9.81E-6	-7.57E-3	-6.33E-4	-6.33E-4

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: 1 m² glued down LVT (3.6 kg/m²)

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3/1	C4/2	D/1	D/2	D/3
HWD	[kg]	5.16E-6	2.75E-7	2.85E-7	2.43E-9	1.07E-10	2.63E-8	5.87E-8	1.63E-8	-1.31E-8	-1.05E-9	-1.05E-9
NHWD	[kg]	2.14E-1	4.19E-4	1.58E-1	8.38E-3	1.60E-4	3.82E-5	3.18E+0	3.60E+0	-1.29E-2	-1.06E-3	-1.06E-3
RWD	[kg]	2.81E-3	1.06E-5	2.66E-4	7.02E-4	3.77E-5	6.24E-7	3.67E-4	5.42E-5	-2.44E-3	-2.04E-4	-2.04E-4
CRU	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND
MFR	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	IND	IND	3.60
MER	[kg]	IND	IND	IND	IND	IND	IND	IND	IND	3.60	IND	IND
EEE	[MJ]	IND	IND	0.34	IND	IND	IND	7.56	IND	IND	IND	IND
EET	[MJ]	IND	IND	0.80	IND	IND	IND	17.90	IND	IND	IND	IND

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

References

/PCR 2017, Part A/
Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. 04/2017
www.bau-umwelt.de

/PCR 2018, Part B/
Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part B: Requirements on the EPD for floorcoverings, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, 02/2018

/EN 16810/
EN 16810: Resilient, textile and laminate floor coverings - Environmental product declarations - Product category rules, May 2017

/EN ISO 10582/
EN ISO 10582: Resilient floor coverings - Heterogeneous poly(vinyl chloride) floor coverings – Specification

/EN ISO 10874/
EN ISO 10874: Resilient, textile and laminate floor coverings - Classification

/EN ISO 14041/
EN ISO 14041: Health, safety and energy saving requirements; EN 14041: Resilient, textile and laminate floor coverings - Essential characteristics

/GaBi ts/
GaBi ts dataset documentation for the software-system and databases, LBP,University of Stuttgart and thinkstep, Leinfelden-Echterdingen, 2017 (http://documentation.gabi-software.com/)

Publisher
Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@ibu-epd.com
Web **www.ibu-epd.com**

Programme holder
Institut Bauen und Umwelt e.V.
Panoramastr 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
Mail info@ibu-epd.com
Web **www.ibu-epd.com**

Author of the Life Cycle Assessment
Sphera Solutions GmbH
Hauptstraße 111- 113
70771 Leinfelden-Echterdingen
Germany

Tel +49 711 341817-0
Fax +49 711 341817-25
Mail info@sphera.com
Web **www.sphera.com**

Owner of the Declaration
ERFMI vzw, European Resilient Flooring Manufacturers' Institute
Rue Montoyer 24
1000 Brussels
Belgium

Tel + 32 2 2 87 08 72
Fax .
Mail info@erfmi.com
Web **www.erfmi.com**