

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	European Producers of Laminate Flooring e.V.
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Direct Pressure Laminate Floor Covering (DPL Floor Covering)

European Producers of Laminate Flooring e.V.



[www.bau-umwelt.com](http://www.bau-umwelt.com) / <https://epd-online.com>



## General Information

European Producers of Laminate Flooring e.V.

### Programme holder

IBU - Institut Bauen und Umwelt e.V.  
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10178 Berlin  
Germany

### Declaration number

EPD-EPL-20150021-CBE1-EN

### This Declaration is based on the Product Category Rules:

Floor coverings, 07.2014  
(PCR tested and approved by the independent expert committee)

### Issue date

24.04.2015

### Valid to

23.04.2020



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



Dr. Burkhard Lehmann  
(Managing Director IBU)

Direct Pressure Laminate Floor Covering (DPL Floor Covering)

### Owner of the Declaration

EPLF®  
European Producers of Laminate Flooring e.V.  
Mittelstr. 50  
33602 Bielefeld  
Germany

### Declared product / Declared unit

1m² of DPL floor covering

### Scope:

This Environmental Product Declaration refers to an representative European DPL floor covering produced by manufacturers that are members of EPLF®. Data are based upon production during 2013 in Europe.

The laminate floor covering described in this EPD has a thickness of 9 mm and meets the requirements of the use classes: 21-23, 31-34 according to /EN 13329, EN ISO 10874/. In order to enable the user of the EPD to calculate the LCA results for different thicknesses and use classes, the EPD contains the respective calculation rules.

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.

### Verification

The CEN Norm EN 15804 serves as the core PCR

Independent verification of the declaration  
according to ISO 14025

☐ internally ☒ externally



Christina Bocher  
(Independent tester appointed by SVA)

## Product

### Product description

DPL floor coverings described in this EPD are produced by member companies of EPLF®. The floor coverings meet the requirements of /EN 13329/. DPL floorings consist of a number of layers. On the top side there is a decor with a transparent, wear-resistant contact surface; in the middle there is a core layer made of high density wood fibres and on the back side there is a stabilizing layer to guarantee floor stability. The decorative paper of a DPL floor covering can be printed with any design and gives the floor its individual appearance.

According to EPLF the participating companies are representative for the declaration of the product, the weighting was done according to production volumes. For the marketing in the EU/EFTA (with the exception of Switzerland) the Regulation (EU) No 305/2011 applies. The products need a Declaration of Performance under consideration of /EN 13329/ and the CE-marking.

### Application

The laminate floor covering described in this EPD is intended to be used within a building and meets the requirements of the use classes: 21-23, 31-34 according to /EN 13329/, /EN ISO 10874/. For the application and use the respective national provisions apply.

### Technical Data

#### Constructional data

Name	Value	Unit
Grammage	8.7	kg/m²
Abrasion Class EN 13329	AC1-AC6	-
Product Form	panel	-
Thickness of the element	9	mm
Length of the surface layer	300 - 2500	mm
Width of the surface layer	70 - 400	mm
Length and width of squared	250 - 700	mm

elements		
Density	800 - 1200	kg/m <sup>3</sup>

### Base materials / Ancillary materials

The composition of a DPL floor covering in mass % is:

- 90-96 % High Density Fibre board (HDF)
- 2-4 % paper
- 4-6 % resin
- <1 % corundum

#### HDF (high density fibreboard)

The core board is an HDF board composed of wood fibres and a thermosetting resin, mainly MUF (melamine-urea-formaldehyde) resin.

#### Paper

The renewable resource wood is the main raw material for paper production.

#### Resins

The used amino resins are melamine-urea-formaldehyde resins. Amino resins are thermosetting resins that are cured using heat and pressure.

### Corundum

Bauxite is the mineral resource of corundum. By using aluminiumoxide (Al<sub>2</sub>O<sub>3</sub>) the surface layer of a laminate flooring obtains abrasion and wear resistance.

DPL floor coverings do not contain substances that are listed in the "Candidate List of Substances of Very High Concern for Authorisation" /REACH/.

### Reference service life

The estimated service life of a floor covering depends e.g. on the type of floor covering and the area of application, the user and the maintenance of the product. Comparisons of different floor coverings are only allowed, if these parameters are considered in a consistent way. A minimum service life of 20 years can be assumed according to /BBSR/, technical service life can be considerably longer. The use stage is declared in this EPD for a one year usage.

## LCA: Calculation rules

### Declared Unit

The declared unit is 1m<sup>2</sup> laminate flooring (8.7kg/m<sup>2</sup>, thickness 9mm)

### Declared unit

Name	Value	Unit
Declared unit	1	m <sup>2</sup>
Conversion factor to 1 kg	0.1149	-

### System boundary

Type of EPD: cradle-to-gate - with options

2a) Declaration of a specific product (reference product) as an average from several manufacturers' plants.

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 the transport to the point of installation.

Module A5 includes packaging waste processing during the construction process. A waste treatment in a waste incineration plant is assumed. Credits from energy substitution are declared in module D.

Module B2 includes the cleaning of the floor covering. Provision of water, cleaning agent and electricity for the cleaning of the floor covering is considered, incl. waste water treatment. The LCA results in this EPD are declared for a one year usage.

Module C is not applicable, because the DPL floor coverings reach the end-of-waste state after dismantling from the building.

Module D includes benefits from all net flows in the end-of-life stage that leave the product boundary system after having passed the end-of-waste stage. It is assumed that post-consumer DPL floor covering waste reaches the end-of-waste stage and is 100% incinerated in a European biomass power plant. Loads

from material incineration and resulted energy credits (electricity and thermal energy) are declared within module D.

Module D contains the loads and benefits beyond the system boundaries including the biogenic CO<sub>2</sub> incorporated in the wood fraction of the DPL flooring. The incorporated CO<sub>2</sub> in the wood fraction is 14kg/m<sup>2</sup>. The value declared in module D is the sum of: -8.6 kg CO<sub>2</sub> equiv. + 14kg CO<sub>2</sub> biogenic = 5.4kg CO<sub>2</sub> equiv.

### 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.

### Factors for different thicknesses

The LCA results for the DPL floor covering declared in this EPD refer to a laminate flooring with a thickness of 9mm, which meets the requirements of the use classes: 21-23, 31-34 according to /EN 13329/, /EN ISO 10874/. In order to enable the user of the EPD to

calculate the results for different thicknesses and use classes the factors in the following table can be used for the calculation. For A1-A3, A4, A5 and D the LCA results of the declared product (thickness 9mm) have to be multiplied with these factors.

Factors to calculate the results for module A1-A3 for different DPL floorings						
thickness	6mm	7mm	8mm	10mm	11mm	12mm
Use class	23-32	23-32	23-32	33-34	33-34	33-34
Parameter						
GWP	0,73	0,99	1,26	1,23	1,49	1,76
ODP	0,69	0,76	0,84	1,08	1,15	1,23
AP	0,66	0,74	0,82	1,06	1,14	1,23
EP	0,63	0,70	0,77	1,05	1,13	1,20
POCP	0,65	0,74	0,83	1,07	1,16	1,25
ADPE	0,63	0,68	0,73	1,04	1,09	1,15
ADPF	0,63	0,69	0,76	1,05	1,12	1,19
PERT	0,65	0,75	0,84	1,07	1,17	1,26
PENRT	0,63	0,70	0,77	1,06	1,12	1,19

Factors to calculate the results for modules A4 and A5 for different DPL floorings						
thickness	6mm	7mm	8mm	10mm	11mm	12mm
Use class	23-32	23-32	23-32	33-34	33-34	33-34
Valid for all parameters						
A4	0,65	0,75	0,84	1,08	1,17	1,27
A5	0,73	0,73	0,73	1,00	1,00	1,00

Factors to calculate the results for module D for different DPL floorings						
thickness	6mm	7mm	8mm	10mm	11mm	12mm
Use class	23-32	23-32	23-32	33-34	33-34	33-34
Parameter						
GWP	0,64	0,74	0,84	1,08	1,19	1,29
ODP	0,64	0,74	0,84	1,08	1,18	1,28
AP	0,64	0,74	0,84	1,08	1,18	1,27
EP	0,76	0,73	0,70	0,98	0,95	0,92
POCP	0,63	0,74	0,84	1,09	1,19	1,30
ADPE	0,64	0,74	0,84	1,08	1,18	1,28
ADPF	0,64	0,74	0,84	1,08	1,18	1,28
PERT	0,64	0,74	0,84	1,08	1,18	1,28
PENRT	0,64	0,74	0,84	1,08	1,18	1,28

## LCA: Scenarios and additional technical information

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment.

### Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel (consumption per kg)	0.00159	l/100km
Transport distance	250	km
Capacity utilisation (including empty runs)	85	%
Gross density of products transported	approx. 880	kg/m <sup>3</sup>

### Installation in the building (A5)

Name	Value	Unit
Output substances following waste treatment on site packaging waste	0.232	kg

The amount of installation waste varies and is not declared in this EPD. For the calculation of the environmental impact of 1m<sup>2</sup> laminate flooring including a certain amount of installation waste the values for the production stage (A1-A3), delivery (A4) and end of life (D) have to be multiplied with the amount of waste (e.g. 3% installation waste, factor 1.03).

### Maintenance (B2)

Name	Value	Unit
Maintenance cycle (cleaning frequency per year)	120 times/year	Number/R SL
Water consumption (per year)	0.0068	m <sup>3</sup>
Auxiliary (per year)	0.0507	kg
Electricity consumption (per year)	0.074	kWh

The common cleaning method for laminate floor coverings is damp mopping. Loose dirt should be removed by means of a dry mop or a vacuum cleaner. In case of higher requirements on hygiene (e.g. hospitals, care homes) or strongly frequented areas (shops) a need of a higher cleaning frequency is possible.

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

100% of post-consumer waste (8.7kg) is incinerated in a biomass power plant.



## LCA: Results

The results for module B2 refer to a period of one year.

The module D contains the loads and benefits beyond the system boundaries including the biogenic CO<sub>2</sub> incorporated in the wood fraction of the DPL flooring. The incorporated CO<sub>2</sub> in the wood fraction is 14kg/m<sup>2</sup>.

**The value declared in module D is the sum of: -8.6 kg CO<sub>2</sub> equiv.+ 14kg CO<sub>2</sub> biogenic = 5.4kg CO<sub>2</sub> equiv.**

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

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 <sup>(1)</sup>	Refurbishment <sup>(1)</sup>	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	X

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1m<sup>2</sup> DPL Floor Covering (9mm)

Parameter	Unit	A1-A3	A4	A5	B2	D
Global warming potential	[kg CO <sub>2</sub> -Eq.]	-2.22E+0	1.06E-1	2.46E-1	1.15E-1	5.40E+0
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.23E-9	4.34E-13	9.27E-13	2.97E-11	-4.19E-9
Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	2.75E-2	4.70E-4	3.39E-5	4.06E-4	-5.66E-3
Eutrophication potential	[kg (PO <sub>4</sub> ) <sup>3-</sup> -Eq.]	6.75E-3	1.19E-4	5.09E-6	1.24E-4	-1.37E-5
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	4.37E-3	-1.57E-4	2.55E-6	7.15E-5	7.07E-4
Abiotic depletion potential for non fossil resources	[kg Sb Eq.]	1.98E-6	4.15E-9	4.54E-9	5.79E-8	-1.10E-6
Abiotic depletion potential for fossil resources	[MJ]	1.42E+2	1.46E+0	5.29E-2	2.12E+0	-1.19E+2

### RESULTS OF THE LCA - RESOURCE USE: 1m<sup>2</sup> DPL Floor Covering (9mm)

Parameter	Unit	A1-A3	A4	A5	B2	D
Renewable primary energy as energy carrier	[MJ]	6.34E+1	-	-	-	-
Renewable primary energy resources as material utilization	[MJ]	1.27E+2	-	-	-	-
Total use of renewable primary energy resources	[MJ]	1.90E+2	8.15E-2	6.28E-3	4.08E-1	-2.11E+1
Non renewable primary energy as energy carrier	[MJ]	1.28E+2	-	-	-	-
Non renewable primary energy as material utilization	[MJ]	2.76E+1	-	-	-	-
Total use of non renewable primary energy resources	[MJ]	1.56E+2	1.46E+0	6.24E-2	2.44E+0	-1.57E+2
Use of secondary material	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of non renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m <sup>3</sup> ]	4.22E-2	1.43E-4	5.99E-4	9.39E-4	-3.06E-2

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

#### 1m<sup>2</sup> DPL Floor Covering (9mm)

Parameter	Unit	A1-A3	A4	A5	B2	D
Hazardous waste disposed	[kg]	8.83E-4	6.93E-7	1.98E-8	6.34E-7	-5.49E-5
Non hazardous waste disposed	[kg]	1.61E-1	2.08E-4	4.44E-3	1.24E-2	1.72E-2
Radioactive waste disposed	[kg]	5.43E-3	2.00E-6	3.80E-6	1.27E-4	-1.50E-2
Components for re-use	[kg]	-	-	-	-	-
Materials for recycling	[kg]	-	-	-	-	-
Materials for energy recovery	[kg]	-	-	-	-	-
Exported electrical energy	[MJ]	-	-	3.37E+2	-	-
Exported thermal energy	[MJ]	-	-	7.81E+2	-	-

## References

### PCR 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. April 2013  
www.bau-umwelt.de

### EN 13329

EN 13329: 2009-01: Laminate floor coverings - Elements with a surface layer based on aminoplastic thermosetting resins - Specifications, requirements and test methods

### EN ISO 10874

ISO 10874:2009: Resilient, textile and laminate floor coverings - Classification

### PCR Part B

Institut Bauen und Umwelt e.V.: Requirements on the EPD for floor coverings, July 2014

**EN 14041**

EN 14041:2004: Resilient, textile and laminate floor coverings - Essential characteristics

**BBSR**

*Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR): Nutzungsdauer von Bauteilen für Lebenszyklusanalyse nach Bewertungssystem Nachhaltiges Bauen (BNB), 2011*

**GaBi Software**

GaBi 6 dataset documentation for the software-system and databases, LBP, University of Stuttgart and PE INTERNATIONAL AG, Leinfelden-Echterdingen, 2014 (<http://documentation.gabi-software.com/>)

**REACH**

Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration,

Evaluation, Authorisation and Restriction of Chemicals

**Institut Bauen und Umwelt**

Institut Bauen und Umwelt e.V., Berlin (pub.):  
Generation of Environmental Product Declarations (EPDs);

**ISO 14025**

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

**EN 15804**

EN 15804:2012-04+A1 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

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