# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

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| Owner of the Declaration | MeisterWerke Schulte GmbH |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
| Publisher | Institut Bauen und Umwelt e.V. (IBU) |
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## Direct Pressure Laminate Floor Covering (DPL Floor Covering)

## MeisterWerke Schulte GmbH

Institut Bauen und Umwelt e.V.

**www.bau-umwelt.com / https://epd-online.com**

## General Information

MeisterWerke Schulte GmbH

**Programme holder**
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Germany

**Declaration number**
EPD-MWS-20150245-CBE1-EN

**This Declaration is based on the Product Category Rules:**
Floor coverings, 07.2014
(PCR tested and approved by the SVR)

**Issue date**
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11.01.2022

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

Dr. Burkhart Lehmann
(Managing Director IBU)

Direct Pressure Laminate Floor Covering (DPL Floor Covering)

**Owner of the Declaration**
MeisterWerke Schulte GmbH
Johannes-Schulte-Allee 5
59602 Rüthen-Meiste

Germany

**Declared product / Declared unit**
1m² of DPL floor covering (8 mm, 7.45 kg/m²)

**Scope:**
This Environmental Product Declaration refers to a specific DPL floor covering produced by MeisterWerke Schulte GmbH. Data are based upon production during 2014 in Germany (Rüthen-Meiste).

The laminate floor covering described in this EPD has a thickness of 8 mm and meets the requirements of the use class 32 according to /EN 13329, EN ISO 10874/.

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 |

Prof. Dr. Birgit Grahl
(Independent verifier appointed by SVR)

## Product

**Product description**
DPL floor coverings described in this EPD are produced by MeisterWerke Schulte GmbH. The floor coverings meet the requirements of /EN 13329/.The MeisterWerke laminate floorings with a thickness of 7 - 9 mm are hard flooring elements according to /EN 14041/ and /EN 13329/ which are produced in a DPL procedure. The planks consist of several layers which are joint together durably under use of pressure and heat. On the upper side there is a highly wear resistant wear-layer and the decor-layer. The middle-layer is a HDF (High Density Fiber) board made of wood based material. The products are equipped with an impregnated counterbalance on the backside. The decorative paper of a DPL floor covering can be printed with any design and gives the floor its individual appearance. MeisterWerke is distributing laminate floorings under the brands MEISTER (http://www.meister.com) or Schulte Räume (http://www.schulte-raeume.de). The laminate floor coverings described in this EPD meet the requirements of the Regulation (EU) No 305/2011. For the placing on the market in the EU/EFTA (with the exception of Switzerland) the Regulation (EU) No 305/2011 applies.The products have a Declaration of performance under consideration of /EN 14041/ 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, 31-33 according to /EN 13329/ and /EN ISO 10874/.
For the application and use the respective national provisions apply.

**Technical Data**

**Constructional data**

| Name | Value | Unit |
|---|---|---|
| Grammage | 7.45 | kg/m² |
| Abrasion Class /EN 13329/ | AC1-AC5 | - |
| Product Form | panel | - |
| Thickness of the element | 8 | mm |
| Length of the surface layer | 500 - 2500 | mm |
| Width of the surface layer | 100 - 500 | mm |
| Length and width of squared | 250 - 900 | mm |

| | | |
|---|---|---|
| elements | | |
| Density | 900 - 1100 | kg/m³ |

**Base materials / Ancillary materials**

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

- 92-94 % High Density Fibre board (HDF)
- 2-3 % paper
- 3-4 % resin
- <1 % corundum

HDF (high density fibreboard)
The core board is an HDF board (density approx. 890 kg/m³ ± 3%) 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 ($Al_2O_3$) 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 floor coverings 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 1m² laminate flooring (7.45 kg/m², thickness 8 mm)

**Declared unit**

| Name | Value | Unit |
|---|---|---|
| Declared unit | 1 | m² |
| Conversion factor to 1 kg | 0.133 | - |

**System boundary**

Type of EPD: cradle-to-gate - with options
1a) Declaration of a specific product from a single manufacturers' plant.

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. Potential benefits 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 potential benefits from energy substitution (electricity and thermal energy) are declared within module D.

Module D contains the loads and benefits beyond the system boundaries excluding the biogenic $CO_2$ incorporated in the wood fraction of the DPL flooring. The incorporated $CO_2$ in the wood fraction is approx. 10 kg/m² and is declared in module C3.

**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 8mm, which meets the requirements of the use class 32 according to /EN 13329/ and /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 tables can be used for the calculation. For A1-A3, A4, A5 and D the LCA results of the declared product (thickness 8 mm) have to be multiplied with these factors. Module B2 stays the same.

| Factors to calculate the results for module A1-A3 for different DPL floorings | | |
|---|---|---|
| **thickness** | **7mm** | **9mm** |
| **Use class** | **31** | **32** |
| **Parameter** | | |
| **GWP** | 0.82 | 1.22 |
| **ODP** | 0.84 | 1.17 |
| **AP** | 0.85 | 1.14 |
| **EP** | 0.86 | 1.12 |
| **POCP** | 0.86 | 1.14 |
| **ADPE** | 0.86 | 1.11 |
| **ADPF** | 0.86 | 1.12 |
| **PERT** | 0.85 | 1.14 |
| **PENRT** | 0.86 | 1.13 |

| Factors to calculate the results for module A4 for different DPL floorings | | |
|---|---|---|
| **thickness** | **7mm** | **9mm** |
| **Use class** | **31** | **32** |
| **Parameter** | | |
| **GWP** | 0.85 | 1.15 |
| **ODP** | 0.85 | 1.14 |
| **AP** | 0.85 | 1.14 |
| **EP** | 0.85 | 1.14 |
| **POCP** | 0.85 | 1.14 |
| **ADPE** | 0.85 | 1.15 |
| **ADPF** | 0.85 | 1.15 |
| **PERT** | 0.85 | 1.14 |
| **PENRT** | 0.85 | 1.14 |

| Factors to calculate the results for module A5 for different DPL floorings | | |
|---|---|---|
| **thickness** | **7mm** | **9mm** |
| **Use class** | **31** | **32** |
| **Parameter** | | |
| **GWP** | 0.83 | 1.07 |
| **ODP** | 0.83 | 1.07 |
| **AP** | 0.83 | 1.12 |
| **EP** | 0.83 | 1.07 |
| **POCP** | 0.83 | 1.08 |
| **ADPE** | 0.83 | 1.24 |
| **ADPF** | 0.83 | 1.11 |
| **PERT** | 0.83 | 1.12 |
| **PENRT** | 0.84 | 1.11 |

| Factors to calculate the results for module D for different DPL floorings | | |
|---|---|---|
| **thickness** | **7mm** | **9mm** |
| **Use class** | **31** | **32** |
| **Parameter** | | |
| **GWP** | 0.85 | 1.15 |
| **ODP** | 0.85 | 1.15 |
| **AP** | 0.85 | 1.14 |
| **EP** | 0.83 | 1.09 |
| **POCP** | 0.85 | 1.15 |
| **ADPE** | 0.85 | 1.15 |
| **ADPF** | 0.85 | 1.14 |
| **PERT** | 0.85 | 1.15 |
| **PENRT** | 0.85 | 1.15 |

## 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. 1000 | kg/m$^3$ |

**Installation in the building (A5)**

| Name | Value | Unit |
|---|---|---|
| Output substances following waste treatment on site packaging waste | 0.356 | kg |

The amount of installation waste varies and is not declared in this EPD. For the calculation of the environmental impact of 1m² 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/RSL |
| Water consumption (per year) | 0.0068 | $m^3$ |
| 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 (7.45 kg) is incinerated in a biomass power plant.

## LCA: Results

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

**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 | 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 | MND | MND | X | MND | X |

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1m² DPL Floor Covering (8 mm)**

| Parameter | Unit | A1-A3 | A4 | A5 | B2 | C3 | D |
|---|---|---|---|---|---|---|---|
| Global warming potential | [kg $CO_2$-Eq.] | -2.93E+0 | 9.23E-2 | 5.09E-1 | 1.15E-1 | 1.00E+1 | -5.48E+0 |
| Depletion potential of the stratospheric ozone layer | [kg CFC11-Eq.] | 1.12E-9 | 3.80E-13 | 1.92E-12 | 2.97E-11 | 0.00E+0 | -3.63E-9 |
| Acidification potential of land and water | [kg $SO_2$-Eq.] | 2.33E-2 | 4.11E-4 | 6.53E-5 | 4.06E-4 | 0.00E+0 | -5.16E-3 |
| Eutrophication potential | [kg $(PO_4)^{3-}$-Eq.] | 5.45E-3 | 1.04E-4 | 1.06E-5 | 1.24E-4 | 0.00E+0 | -3.20E-5 |
| Formation potential of tropospheric ozone photochemical oxidants | [kg ethene-Eq.] | 3.53E-3 | -1.38E-4 | 5.21E-6 | 7.15E-5 | 0.00E+0 | 5.82E-4 |
| Abiotic depletion potential for non-fossil resources | [kg Sb-Eq.] | 1.48E-6 | 3.62E-9 | 7.34E-9 | 5.79E-8 | 0.00E+0 | -9.58E-7 |
| Abiotic depletion potential for fossil resources | [MJ] | 1.13E+2 | 1.27E+0 | 1.03E-1 | 2.12E+0 | 0.00E+0 | -1.04E+2 |

**RESULTS OF THE LCA - RESOURCE USE: 1m² DPL Floor Covering (8 mm)**

| Parameter | Unit | A1-A3 | A4 | A5 | B2 | C3 | D |
|---|---|---|---|---|---|---|---|
| Renewable primary energy as energy carrier | [MJ] | 5.51E+1 | 7.13E-2 | 1.21E-2 | 4.08E-1 | 0.00E+0 | -1.83E+1 |
| Renewable primary energy resources as material utilization | [MJ] | 1.08E+2 | 0.00E+0 | 0.00E+0 | 0.00E+0 | -1.08E+2 | 0.00E+0 |
| Total use of renewable primary energy resources | [MJ] | 1.64E+2 | 7.13E-2 | 1.21E-2 | 4.08E-1 | -1.08E+2 | -1.83E+1 |
| Non-renewable primary energy as energy carrier | [MJ] | 1.06E+2 | 1.28E+0 | 1.22E-1 | 1.44E+0 | 0.00E+0 | -1.36E+2 |
| Non-renewable primary energy as material utilization | [MJ] | 1.82E+1 | 0.00E+0 | 0.00E+0 | 1.00E+0 | -1.82E+1 | 0.00E+0 |
| Total use of non-renewable primary energy resources | [MJ] | 1.24E+2 | 1.28E+0 | 1.22E-1 | 2.44E+0 | -1.82E+1 | -1.36E+2 |
| Use of secondary material | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 7.45E+0 |
| Use of renewable secondary fuels | [MJ] | 0.00E+0 | 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 | 0.00E+0 |
| Use of net fresh water | [m³] | 3.51E-2 | 1.25E-4 | 1.24E-3 | 9.39E-4 | 0.00E+0 | -2.67E-2 |

**RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1m² DPL Floor Covering (8 mm)**

| Parameter | Unit | A1-A3 | A4 | A5 | B2 | C3 | D |
|---|---|---|---|---|---|---|---|
| Hazardous waste disposed | [kg] | 5.62E-5 | 6.06E-7 | 3.76E-8 | 6.34E-7 | 0.00E+0 | -4.76E-5 |
| Non-hazardous waste disposed | [kg] | 1.18E-1 | 1.82E-4 | 5.98E-3 | 1.24E-2 | 0.00E+0 | 1.42E-2 |
| Radioactive waste disposed | [kg] | 4.77E-3 | 1.74E-6 | 7.63E-6 | 1.27E-4 | 0.00E+0 | -1.30E-2 |
| Components for re-use | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Materials for recycling | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Materials for energy recovery | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 7.45E+0 | 0.00E+0 |
| Exported electrical energy | [MJ] | 0.00E+0 | 0.00E+0 | 6.71E-1 | 0.00E+0 | 0.00E+0 | 3.60E+1 |
| Exported thermal energy | [MJ] | 0.00E+0 | 0.00E+0 | 1.56E+0 | 0.00E+0 | 0.00E+0 | 4.31E+1 |

## 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

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

**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

**EN 14041**
EN 14041:2004/AC 2006: 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**
thinkstep AG: GaBi Software-System and Database for the Life Cycle Engineering, Copyright, TM. Stuttgart, Echterdingen 1992-2015

**REACH**
Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals

**Regulation (EU) No 305/2011**
Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

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

**General principles**
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www.bau-umwelt.de

**ISO 14025**
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**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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