

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Parador GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-PAR-20240253-IBC2-EN
Issue date	12.11.2024
Valid to	11.11.2029

Laminate flooring
Parador GmbH

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



1. General Information

Parador GmbH

Programme holder
IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number
EPD-PAR-20240253-IBC2-EN

This declaration is based on the product category rules:
Floor coverings, 01.08.2021
(PCR checked and approved by the SVR)

Issue date
12.11.2024

Valid to
11.11.2029


Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)


Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Laminate flooring

Owner of the declaration
Parador GmbH
Millenkamp 7-8
48653 Coesfeld
Germany

Declared product / declared unit
The declared unit is 1 m² of the laminate flooring including packaging materials of the weighted average according to the production quantity.

Scope:
This EPD applies to the production of laminate flooring in the German production plant of Parador GmbH in Coesfeld. All product types manufactured in the period 01.04.2022 - 31.03.2023 were taken into account.
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+A2. In the following, the standard will be simplified as *EN 15804*.

The standard EN 15804 serves as the core PCR	
Independent verification of the declaration and data according to ISO 14025:2011	
☐	internally
☒	externally


Mrs Kim Allbury,
(Independent verifier)

2. Product

2.1 Product description/Product definition

Parador laminate flooring is part of the group of hard flooring elements characterized by a highly abrasion-resistant top layer suitable for floating installation using a patented click connection. An individual look is achieved by the printed and impregnated decor paper. A special manufacturing process creates a texture on the surface. Laminate floorings are available in various plank formats, which are contoured on the long and short sides with a highly precise click connection. The finished planks are packed in boxes and in pe-foil at the factory to protect them from damage. The respective production shares of all laminate flooring produced at the Coesfeld plant is included in the calculation of averages. Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 14041:2004+AC:2005+AC:2006*, Resilient, textile and laminate floor coverings – Essential characteristics.

2.2 Application

Laminate floorings are suitable for floating installation indoors in new buildings as well as for renovations. They can be installed on screed as well as other mineral subfloors, wood, tiles or PVC. The principles of proper installation can be found in the enclosed installation instructions or in the Guide for Laminate flooring.

To be found here:

<https://parador.de/en/services/downloads/laminate-flooring> and there under the heading and there under the heading 'Guide'.

2.3 Technical Data

Structural data

The performance values of the product according to the declaration of performance shall apply with regard to its essential characteristics according to *EN 13329:2017-12*.

Constructional data

Name	Value	Unit
Surface weight	6400-9000	g/m ²
Abrasion Class	AC3-AC5	-
Type of manufacture	DPL	-
Thickness of the element	7 - 9	mm
Length of the surface layer	853 - 2200	mm
Width of the surface layer	143 - 400	mm
Density	850 - 900	kg/m ³

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 14041:2004+AC:2005+AC:2006*, Resilient, textile and laminate floor coverings – Essential characteristics.

- Further technical information can be found at: <https://parador.de/en/services/downloads/laminate-flooring>

2.4 Delivery status

Laminate flooring is delivered in the following condition:

Product features	
Formats / Dimensions	according to current price lists
Usage classes	31 - 33
Wear layer	AC3 - AC5, melamine resin overlay
Decor layer	various decors on resin impregnated paper
Core board	HDF / Thickness: 6,6 - 8,8mm
Backing	resin impregnated paper
Overall thickness	6,8 - 9,0mm
Weight	6,4- 9,0kg
All figures ± 10%	

2.5 Base materials/Ancillary materials

The main product components show the following weighted average percentage by mass:

Component	Value	Unit
High density fiberbaord	93	%
Decor paper	2	%
Overlay	2	%
Backing paper	3	%
Varnish	< 1	%
Waterproofing of edge	< 1	%

HDF board

The core board is a high-density fibreboard (HDF board). All core boards come from *PEFC* certified stocks (*PEFC*; Chain of Custody).

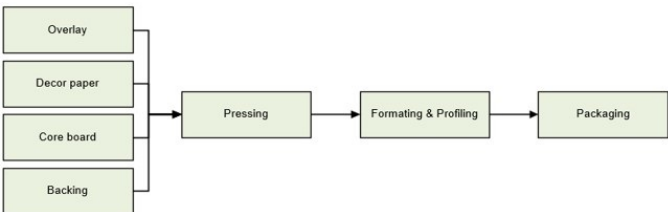
This product/article/at least one partial article contains substances listed in the candidate list (date: 23.01.2024) exceeding 0.1 percentage by mass: no.

This product/article/at least one partial article contains other *CMR* substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: no.

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the *(EU) Ordinance on Biocide Products No. 528/2012*): no.

2.6 Manufacture

Illustration of the Direct Pressed Laminate flooring (DPL) manufacturing process:



The overlay, decor paper, core board (HDF), and backing materials are thermally pressed together in one production step in a short-cycle press. Through an irreversible polycondensation reaction during compression, the impregnating resin (melamine-urea-formaldehyde) is three-

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dimensionally cross- linked under thermal input. The chemically stable binding agents are thus firmly bound in the wood.

After pressing, the semi-finished formats acclimatize to ambient temperature. After an acclimatization period, the semi-finished formats are cut according to the product formats and given a lengthways and crossways profile. After quality control of the individual laminate flooring elements, they are packed in half-shell cartons and shrink-wrapped.

These individual packaging units are stacked on pallets according to the different formats. All processes are continually inspected and documented as part of the in-house Factory Production Control (FPC).

2.7 Environment and health during manufacturing

Due to the manufacturing conditions, no health protection measures are necessary beyond those required by law or other regulations. A risk and stress analysis (risk assessment) was carried out and necessary measures have been derived. The workplace limit values (according to *TRGS 900*) are clearly never reached at any point of production.

The Coesfeld and Güssing sites are *ISO 14001* certified and validated according to the European Eco-Management and Audit System *EMAS* which audits both the environmental and the energy-related aspects of the sites and requires them to undergo continual improvement.

2.8 Product processing/Installation

You will need the following tools and aids for installing Parador laminate flooring: tape measure or hinged ruler, cutter, pencil, handsaw, Parador spacer wedges, Parador MultiTool, hammer, drill, and jigsaw, crosscut saw, or circular saw. Depending on the application, further tools and materials may be required: "gun" for construction adhesive; metal saw for aluminium profiles; Parador Glue D3. The usual safety precautions (e.g. safety goggles and dust mask when sawing) must be observed. The resulting sawdust should be extracted. The provisions of the employers' liability insurance association apply for industrial processing.

The residual material and packaging must be disposed of separately according to waste category. Further information can be found in the installation instructions enclosed with the product or in the Laminate Flooring advice section, which is available for download from the Parador website.

2.9 Packaging

The packaging consists of a cardboard box and perforated PE film. These packaging materials must be collected separately and recycled in accordance with local regulations. In Germany and Austria, the films must be returned to the Dual System. Cardboard boxes must be placed in paper/cardboard/cardboard box collection points.

2.10 Condition of use

Wood is a hygroscopic material, i.e. it can absorb and release moisture. When using wood it is therefore important to ensure a balanced room climate to prevent dimensional changes. The indoor climate should be maintained throughout the year at a temperature of approx. 20 °C and a relative humidity between 35 - 60 %.

Parador products must be cleaned and cared for in accordance with the Laminate Flooring advice section.

2.11 Environment and health during use

There are no known negative effects between product, environment, and health. Risks to water, air, and soil cannot occur when used as intended. Emissions of pollutants are well below the legal limits. In terms of emission behaviour, laminate floors meet the award criteria of *DE-UZ176 (Blue Angel)* "Contract 27259" and *eco-INSTITUT-Label* "ID 1112-12656-001".

2.12 Reference service life

The Sustainable Building Assessment System (/BNB/) takes a useful life of 20 years as a basis under code no. 352.711. Description of the influences on the ageing of the product when applied in accordance with the rules of technology.

2.13 Extraordinary effects

Fire

The following building material class according to *EN 13501-1* is adhered to in the area of fire protection:

Fire protection

Name	Value
Building material class	Cfl
Smoke gas development	s1
Burning droplets	N.r.

N.r.: not relevant for floor coverings

Water

An edge swell protection exists against short-term exposure to water. Laminate flooring is not resistant to permanent exposure to water. However, a dangerous impact on the environment is not to be expected when exposed to water.

Mechanical destruction

Mechanical destruction can result in sharp-edged fractures, which can pose a risk of injury.

In case of a hole/impression damage in the top layer, it can be repaired with appropriate hard waxes or surface pens. If the damage is too great, individual planks in the area can also be replaced.

2.14 Re-use phase

In case of selective dismantling, the product can easily be reused even after the end of the useful life.

2.15 Disposal

According to *AltholzV*, *AVV 17 02 01* and *AVV 20 01 38*, placing old wood in a landfill is prohibited.

Residues and wastes from laminate flooring must be recycled in accordance with *AVV 17 02 01* and *AVV 20 01 38*. If repeated use of the product as flooring is no longer possible, then the high heating value of approx. 17 MJ/kg means that it can be thermally recycled to generate heat and electricity.

Open burning or burning in a chimney is not possible as the combustion of treated wood and plastics results in harmful emissions. Incineration should therefore take place in a plant with a connected flue gas cleaning system, such as a waste incineration plant.

Old wood category A II applies: glued, painted, coated, varnished, or otherwise treated old wood without organohalogen compounds in the coating and without wood preservatives.

2.16 Further information

Additional information about the company and other products as well as information brochures – including *EMAS*

Environmental Statement – can be downloaded at: www.parador.de/en.

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1 m² of the laminate flooring including packaging materials of the weighted average according to the production quantity.

Declared unit

Name	Value	Unit
Declared unit	1	m ²
Laminate flooring	7.46	kg/m ²
Layer thickness	0.008	m
Packaging materials	0.09	kg
Grammage	7.46	kg/m ²
Total weight	7.55	kg

3.2 System boundary

Type of EPD:

From the cradle to the factory gate with options, modules C1-C4 and module D and additional modules (A4-A5 and B2-B3).

Modules A1-A3

At the production stage, the procurement of raw materials including the corresponding upstream chains, the necessary transport to the plant and the energy required for the production of the the energy required to produce the laminat floor coverings. To model the extraction of raw materials up to the production of the preliminary products (A1), generic generic data sets are used to model the system boundaries system boundaries (cradle to gate) for the input materials. Transport (A2) to the plant is covered by generic data records. are covered. The manufacturing phase (A3), which includes extrusion in particular, is mapped with manufacturer-specific material and energy mapped with manufacturer-specific material and energy data, whereby the upstream are again mapped using generic data sets. The production waste is mapped until it is completely treatment or until the end-of-waste status (EoW) is reached.

Module A4

In Module A4, transport to the construction site is analysed on the basis of the average distances to the customers.

Module A5

In Module A5, the packaging that is generated during of the assembly component on the construction site are utilised for energy (polyethylene film) or recycling (cardboard packaging). The transport costs for disposal are also taken into account in module A5, the benefits and burdens in module D. The resulting benefits from cardboard recycling were cut off due to a lack of data.

Module B2

Module B2 covers the cleaning of the laminate flooring, including the necessary auxiliary materials as well as the treatment of the waste and wastewater.

Module B3

Module B3 deals with the repair of the laminate flooring including the treatment of the resulting waste.

Module C1

Module C1 describes the expenses after end of product life for

dismantling or demolishing the product from the building. In this case, it can be assumed that that the dismantling is carried out manually. No processes are therefore considered/modelled in module C1.

Module C2

In Module C2, the transports to the disposal processes are considered.

Module C3

Module C3 covers the necessary processes for waste treatment at the end of the product life cycle. A construction waste processing plant is considered here.

Module C4

Module C4 describes the landfilling of the product at the end of the life cycle.

3.3 Estimates and assumptions

The individual layers of the laminate flooring were modelled on the basis of averaged data provided by suppliers. The energy requirement of the production facilities was determined on the basis of manufacturer data of the production facilities and internal energy analyses by Parador. In order to take all loads into account, waste treatment rates of 100% were assumed for packaging materials on the construction site (module A5) and for the product in the end of life stage (module C3). An average distance of 75 km was estimated as the average distance to a waste disposal plant.

3.4 Cut-off criteria

The decor print was excluded due to the extremely small amount of ink applied to the decor medium, as neither adequate data sets nor official empirical values or estimates exist.

No manufacturer data on energy consumption and waste generation in production related to the manufacture of the individual product layers (upstream) is available for the purchased individual layers. Generic data sets were therefore used for the upstream production processes. The use of adhesive labels and the modelling of procurement transports for packaging were however omitted completely.

Pallets for transport in A4 were also excluded, as they do not have a significant mass fraction in the analysed product system of 1 m² laminate flooring due to the fact that they are reused.

It can be assumed that the sum of the omitted mass fractions does not exceed 5% of the results in the impact categories.

3.5 Background data

The background database Managed LCA Content (*LCA for Experts software* database) Content Version 2023.2 was used.

3.6 Data quality

The primary data was provided by Parador GmbH and checked for plausibility. The quality and representativeness of the foreground data collected can therefore be regarded as high.

The data quality of the background data used was data was rated as good in terms of technical, geographical and temporal representativeness was rated as good. The majority of the background data used originates from the reference year 2022.

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The potential environmental impacts largely result from the background data and the preliminary products.

3.7 Period under review

The life cycle assessment is based on data from the period 01.04.2022 to 31.03.2023.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Germany

3.9 Allocation

All required energy, raw materials and supplies could be clearly assigned to the declared products.

Benefits from the treatment of packaging in module A5 were allocated to module D. Only the net flows were considered for material benefits. The burdens from the treatment of the packaging are allocated to module A5

3.10 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. The background database used is the Managed LCA Content (Content Version 2023.2)

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	2.77	kg C
Biogenic carbon content in accompanying packaging	0.03	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

Installation in the building (A5)

During installation, it can be expected that approx. 5% more material will be needed than is theoretically required to cover the surface due to cutting waste and remaining planks. However, this fact is not taken into consideration in the results of this EPD. Instead, the user can adjust the results by a corresponding factor.

Name	Value	Unit
Packaging waste	0.09	kg

Maintenance (B2)

Scenario:

- vacuuming 10 times per month
- wet cleaning 10 times per month

The values presented in the table correspond to the reference service life of 1 m² of laminate flooring. The LCA results for this module are derived from the quantities used over the course of one year.

Name	Value	Unit
Information on maintenance	final cleaning, sweeping, vacuuming, mopping	-
Maintenance cycle	2400	Number/RSL
Water consumption	0.0003264	m ³
Electricity consumption	3.55	kWh
Cleaning product	960	ml/10 litres of water

Repair (B3)

Scenario:

- maintenance and inspection process every 5 years
- no water or energy use

The table shows data for the reference service life of 1 m² of

laminate flooring. The LCA results for this module are derived from the quantities used over the course of one year.

Name	Value	Unit
Information on the repair process	removal of: scratches, cracks and open gaps	-
Information on the inspection process	damage check, humidity check, temperature check	-
Repair cycle	4	Number/RSL
Auxiliary Repair stick, repair wax, white glue	0.04	kg
Material loss Only excess or overused material of the repair stick, repair wax, white glue	0.004	kg

Reference service life

Name	Value	Unit
Reference service life	20	a

Source:

BNB-Leitfaden /BNB Nutzungsdauern von Bauteilen/BNB (Guide /BNB Service life of components/.)

End of Life (C1-C4)

Name	Value	Unit
Energy recovery	7.46	kg

For end of life modelling it was assumed that 100% of laminate flooring to be disposed of would be used for energy recovery if reinstallation was no longer possible. Recycling of the materials is not possible because the different layers are irreversibly connected to each other.

The end of life processes are modelled with datasets representing the European average. Intra-European transports and recycling quotas were taken into account.

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

Name	Value	Unit
Combustible material	7.46	kg
R1 factor waste incineration plant	> 60	%
Lower heating value	17	MJ/kg

Module D shows both the possible potentials and avoided burdens from energy recovery of the product at the end of life stage (resulting from module C3), for the packaging materials (resulting from module A5) and from repair waste (B3).

5. LCA: Results

The LCIA results for 1 m² of the declared product are shown below. It should be considered that the LCIA results are only relative statements that do not make statements about endpoints of impact categories, threshold exceedance, safety margins, or risks.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR 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	X	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² laminate flooring

Parameter	Unit	A1-A3	A4	A5	B2	B3	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	-4.65E+00	2.11E-01	1.63E-01	4.77E-04	3.59E-04	0	4.83E-02	1.04E+01	0	-2.93E+00
GWP-fossil	kg CO ₂ eq	5.6E+00	2.1E-01	5.31E-02	4.76E-04	3.59E-04	0	4.79E-02	2.34E-01	0	-2.93E+00
GWP-biogenic	kg CO ₂ eq	-1.03E+01	0	1.1E-01	0	0	0	0	1.02E+01	0	0
GWP-luluc	kg CO ₂ eq	6.54E-03	5.82E-04	9.03E-06	5.18E-08	1.06E-07	0	4.46E-04	2.59E-05	0	-1.92E-04
ODP	kg CFC11 eq	3.37E-11	1.82E-14	2.6E-15	8.79E-15	9.31E-16	0	6.27E-15	1.23E-12	0	-2.32E-11
AP	mol H ⁺ eq	1.8E-02	5.43E-03	9.82E-06	1.02E-06	7E-07	0	4.05E-04	5.98E-03	0	-3.68E-03
EP-freshwater	kg P eq	2.92E-05	2.62E-07	4.13E-09	1.86E-09	6.55E-10	0	1.76E-07	3.21E-07	0	-4.79E-06
EP-marine	kg N eq	9.02E-03	1.34E-03	3.3E-06	2.44E-07	1.66E-07	0	2.02E-04	2.84E-03	0	-1.07E-03
EP-terrestrial	mol N eq	7.25E-02	1.47E-02	4.9E-05	2.54E-06	1.81E-06	0	2.23E-03	3.28E-02	0	-1.15E-02
POCP	kg NMVOC eq	1.83E-02	3.7E-03	7.47E-06	6.5E-07	6.22E-07	0	3.79E-04	7.31E-03	0	-2.99E-03
ADPE	kg Sb eq	5.44E-07	5.5E-09	8.73E-11	7.37E-11	1.57E-09	0	3.19E-09	1.16E-08	0	-2.12E-07
ADPF	MJ	1.21E+02	2.65E+00	1.94E-02	1E-02	1.05E-02	0	6.56E-01	3.67E+00	0	-5.41E+01
WDP	m ³ world eq deprived	6.28E-01	1E-03	4.82E-03	1.06E-04	2.48E-05	0	5.82E-04	1.26E+00	0	-2.81E-01

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; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² laminate flooring

Parameter	Unit	A1-A3	A4	A5	B2	B3	C1	C2	C3	C4	D
PERE	MJ	5.36E+01	6.99E-02	3.21E+00	5.99E-03	9.05E-04	0	4.77E-02	1.18E+02	0	-1.59E+01
PERM	MJ	1.21E+02	0	-3.21E+00	0	0	0	0	-1.18E+02	0	0
PERT	MJ	1.74E+02	6.99E-02	2.54E-03	5.99E-03	9.05E-04	0	4.77E-02	7.7E-01	0	-1.59E+01
PENRE	MJ	1.21E+02	2.66E+00	2.54E-01	1E-02	1.05E-02	0	6.59E-01	3.73E+00	0	-5.41E+01
PENRM	MJ	2.94E-01	0	-2.35E-01	0	0	0	0	-5.9E-02	0	0
PENRT	MJ	1.21E+02	2.66E+00	1.95E-02	1E-02	1.05E-02	0	6.59E-01	3.67E+00	0	-5.41E+01
SM	kg	0	0	0	0	0	0	0	0	0	1.31E-02
RSF	MJ	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0
FW	m ³	3.14E-02	7.84E-05	1.14E-04	4.84E-06	1.85E-06	0	5.23E-05	2.97E-02	0	-1.29E-02

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+A2: 1 m² laminate flooring

Parameter	Unit	A1-A3	A4	A5	B2	B3	C1	C2	C3	C4	D
HWD	kg	7.58E-08	8.34E-12	1.81E-13	-7.85E-13	6.82E-13	0	2.04E-12	2.43E-10	0	-2.84E-09
NHWD	kg	1.11E-01	2.96E-04	2.09E-04	7.48E-06	2.4E-05	0	1E-04	9.2E-02	0	-2.68E-02
RWD	kg	4.59E-03	3.72E-06	3.98E-07	1.59E-06	8.41E-08	0	1.23E-06	1.73E-04	0	-4.21E-03
CRU	kg	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	8.63E-02	0	0	0	0	0	0	0
MER	kg	0	0	0	0	2E-05	0	9.98E-01	0	0	0

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EEE	MJ	0	0	1.11E-01	0	2.8E-05	0	0	1.39E+01	0	1.4E+01
EET	MJ	0	0	1.98E-01	0	5.26E-05	0	0	2.47E+01	0	2.49E+01

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; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m² laminate flooring

Parameter	Unit	A1-A3	A4	A5	B2	B3	C1	C2	C3	C4	D
PM	Disease incidence	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IR	kBq U235 eq	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SQP	SQP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

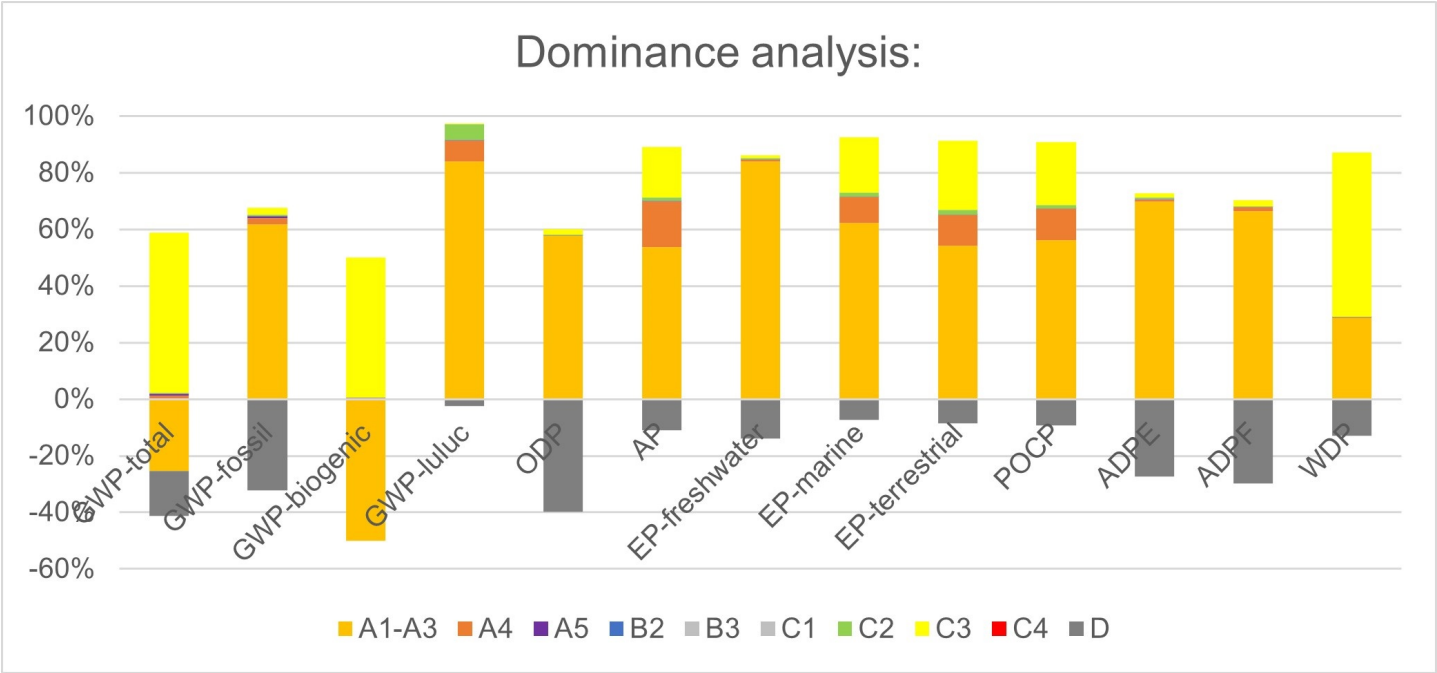
PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator 'Potential Human exposure efficiency relative to U235'. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

ENVIRONMENTAL IMPACTS



The dominance analysis shows that overall, the production phase (modules A1-A3) is dominating most of the potential environmental impacts over the life cycle. In most environmental categories, the high-density fiberboard (HDF) dominates the environmental impact of 1 m² of laminate flooring.

Global warming potential (GWP-total): A1-A3 reflects the material bonding of the CO₂ potential in the material, C3 its release in a waste incineration plant. Neither the transports nor the installation on site have a

significant effect on the overall result.

Range of results

One of the main factors contributing to the variance in LCIA results across laminate flooring products is HDF-board. Variations in the thickness, density, and composition of HDF boards lead to differing material inputs, energy consumption, and environmental impacts. Specifically, products with thicker or denser HDF boards tend to exhibit higher environmental impacts due to increased resource use and energy intensity during manufacturing.

7. Requisite evidence

PARADOR

7.1 VOC emissions Testing laboratory:

eco-INSTITUT Germany GmbH Schanzenstraße 6-20
Carlswerk 1.19 51063 Cologne, Germany

Test report: 57535-A001-A002-L dated 15.08.2022

Test method: Emission analysis according to *EN 16516* Results overview (3 days)

Results overview (3 days):		
Designation	Value	Unit
HCHO	9	µg/m ³
TVOC	6	µg/m ³
TSVOC	< 5	µg/m ³
KMR1	< 1	µg/m ³

7.2 Additional information on the pre-treatment of components

No post-consumer recycled wood is used in the product. There is no reason to assume that the product contains impurities from the pre-treatment of recycled ingredients.

7.3 Fire behaviour

Testing laboratory:

TFI Aachen GmbH Charlottenburger Allee 41 52068 Aachen, Germany

Test report: 441773-06 (dated 17.03.2015) / 23-000451-01

dated 26.05.2023

Test method: Fire behaviour classification according to *EN 13501-1:2010*

Certificate *DE-UZ 176* (Blue Angel)

Parador laminate flooring carries the "Blue Angel" eco-label on the basis of the /Label Use Contract No. 27259/ of RAL gGmbH, Fränkische Straße 7, 53229 Bonn, Germany, and the Federal Environment Agency, because it is a low emissions product.
https://parador.de/en/pcms/downloads/downloadfile/file_id/1005/

Certificate *eco-INSTITUT* Label

According to the test criteria of the *eco-INSTITUT* label (status: 08/2024) of eco-INSTITUT Germany GmbH, Schanzenstrasse 6-20, Carlswerk Kupferzug 1.19, 51063 Cologne, Germany, Parador laminate flooring may carry the eco-Institut label with ID 1112-12656-001.
https://parador.de/en/pcms/downloads/downloadfile/file_id/929/

Certificate *PEFC*

With certificate no. *BMCERT-PEFC-COC-00076* of 01/2023 it is confirmed that the procedures for the production of Parador laminate flooring (if listed) meet the requirements of standards Chain of Custody of Forest and Trees Based Products - Requirements PEFC ST 2002:2020& PEFC Trademark Rules - Requirements PEFC ST 2001:2020.
https://parador.de/en/pcms/downloads/downloadfile/file_id/778/

Certificate *EMAS*

With the registration in the *EMAS* register under the number: DE-156-00107 of 10 November 2015, Parador GmbH is entitled to use the *EMAS* logo.
https://parador.de/en/pcms/downloads/downloadfile/file_id/777/

8. References

Standards

ISO 9001

DIN EN ISO 9001:2015-11, Quality management Systems - Requirements.

EN 13329

DIN EN 13329:2024, Laminate floor coverings - Specifications, requirements and test methods.

EN 13501-1

DIN EN 13501-1:2019-05, Classification of construction products and types of construction according to their reaction to fire - Part 1: Classification using the results of tests on the reaction to fire of construction products

ISO 14001

DIN EN ISO 14001:2015, Environmental management systems - Requirements with guidance for use.

ISO 14025

DIN EN ISO 14025:2011-10, Environmental labels and declarations – Type III environmental declarations – Principles and procedures. EN 14041 DIN EN 14041:2018-05, Resilient, textile, laminate and modular multilayer floor coverings - Essential characteristics.

EN 16516

DIN EN 16516:2020-10, Construction products: Assessment of release of hazardous substances - Determination of emissions to indoor air.

Further literature

AgBB

Requirements for indoor air quality in buildings: health assessment of emissions of volatile organic compounds (VOC, VOC, and SVOC) from building products. AltholzV Ordinance on requirements for the utilisation and disposal of waste wood (Waste Wood Ordinance) of 15 August 2002 (BGBl. I p. 3302), which was last amended by Article 120 of the Ordinance of 19 June 2020 (BGBl. I p. 1328).

AVV

Waste Catalogue Regulation (AVV) of 10 December 2001 (Federal Law Gazette I p. 3379), which was last amended by Article 2 of the Regulation, dated 30 June 2020 (Federal Law Gazette I p. 1533).

BNB

BNB Code No. 352.711 Useful lives of building components for life cycle analyses according to the evaluation system for sustainable building, 2017: Linoleum, laminate, PVC, plastic engineered wood flooring, cork, rubber, sports hall coverings. Berlin: Federal Ministry of the Interior, for Building and Home Affairs.

DE-UZ 176

Blue Angel eco-label for low-emission floor coverings on the basis of the Label Use Contract No. 27259 of RAL gGmbH, Fränkische Straße 7, 53229 Bonn, Germany, and the Federal Environment Agency.

ECHA

List of Candidate Substances of Very High Concern (ECHA Candidate List), dated 19 January 2021, published in accordance with Article 59 (10) of the REACH Regulation. Helsinki: European Chemicals Agency. EMAS Regulation (EC) No. 1221/2009 of the European Parliament and of the Council on the voluntary participation by organisations in a community system for environmental management and environmental auditing and repealing Regulation (EC) No. 761/2001, as well as the decisions of the Commission 2001/681/EC and 2006/193/EC. <https://www.emas.de/home>

eco-INSTITUT

Emission analysis of laminat flooring. ID 1112-12656-001. Cologne: eco-INSTITUT Germany GmbH. 08.2024

IBU 2021 Institut Bauen und Umwelt e.V.: General guide for the EPD programme of the Institut Bauen und Umwelt e.V. (IBU). Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021. www.ibu-epd.com

LCA for Experts

10.9: Software and Database for Life Cycle Engineering and the databases (service pack 2023.2), Sphera Solutions GmbH, Leinfelden-Echterdingen, 2024.

PEFC

Chain of Custody of Forest and Trees Based Products - Requirements PEFC ST 2002:2020 & PEFC Trademark Rules - Requirements PEFC ST 2001:2020 - Production and distribution of laminate, resilient flooring, engineered wood flooring, ceilings and other wood products; Parador Certificate No.: BMCERT-PEFC-COC- 00076; Latvia, Riga: BM Certification Ltd., 01.2023.

PCR Part A

Product category rules for building-related products and services. Part A: Calculation rules for the LCA and requirements for the project report according to EN 15804+A2:2019, version

1.3. Berlin: Institut Bauen und Umwelt e.V. (ed.), 31.08.2022.

PCR: Floor coverings

PCR instruction texts for building-related products and services. Part B: Requirements of the EPD for floor coverings, version V6. Berlin: Institut Bauen und Umwelt e.V. (publ.), 20.06.2023

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. <https://eur-lex.europa.eu/legalcontent/DE/TXT/PDF/?uri=CELEX:02011R0305-20210716&from=ENV0C-Verordnung>

Regulation (EU) No. 528/2012

Regulation (EU) No. 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the availability on the market and use of biocide products.

Test report 57535-A001-A002-L Emission analysis of laminat flooring according to EN 16516. Cologne: eco-INSTITUT Germany GmbH. 15.08.2022.

Test report: 441773-06

Classification of laminate flooring for reaction to fire according to EN 13501-1:2010. TFI Aachen GmbH Charlottenburger, Aachen. 17.03.2015.

Test report: 23-000451-01 Classification of laminate flooring for reaction to fire according to EN 13501-1:2010. TFI Aachen GmbH Charlottenburger, Aachen. 26.05.2023.

Test report: 57362-003

Gas chromatographic determination of plasticisers in consumer articles by GC/MSD Cologne: eco-INSTITUT Germany GmbH. 17.05.2022.



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