ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	Unilin BV, division flooring
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-UNI-20230478-IBC1-EN
Issue date	15.01.2024
Valid to	14.01.2029

Multi-layer parquet flooring

Unilin BV, division flooring

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1. General Information

Unilin BV, division flooring

Programme holder

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

Declaration number

EPD-UNI-20230478-IBC1-EN

This declaration is based on the product category rules:

Floor coverings, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

15.01.2024

Valid to

14.01.2029

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

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

Multi-layer parquet flooring

Owner of the declaration

Unilin BV, division flooring
Ooigemstraat 3
8710 Wielsbeke
Belgium

Declared product / declared unit

1m² of Multilayer parquet flooring (representing weighted average on sales with average thickness of 13.25 mm and average mass of 9.55 kg/m²).

Scope:

This declaration is an environmental product declaration according to *ISO 14025* - Type III and *EN 15804+A2* describing the environmental performances of 1m² of a 3-layer parquet flooring produced by Unilin BV, division Flooring in the production plant in Malaysia - Syarikat Malaysia Wood Industries Sdn. Bhd, 864 - V Syarikat.

The product is available with 3 brand names:

- Quickstep
- Pergo
- Unilin

In this EPD the LCA results for HDF or Hevea core products average sales are declared (average mass of 9,55 kg/m² and average thickness of 13,25 mm).
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*.

Verification

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

Dr. Frank Werner,
(Independent verifier)

2. Product

2.1 Product description/Product definition

This environmental product declaration refers to the production of 1m² multi-layer parquet flooring (MLP).

The multilayer parquet is produced in the Unilin production facilities in Malaysia and meets the requirements of *EN 14342* and *EN 13489*. The panels have a mechanical and patented connection (uniclic and multifit).
The surface layer of the product consists of layers UV-curing acrylic layer or layers of UV-curing oil.
The multi-layer parquet contains at least 70% PEFC certified wood.
For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration *EN 14342:2013, Wood flooring - Characteristics, evaluation of conformity and marking* and the CE-marking.
For the application and use the respective national provisions apply.

2.2 Application

The multi-layer parquet floorings are intended to be used indoors, in new buildings as well for renovation purposes. The parquet meets the requirements of *EN 13489* and *EN 14342*. The flooring can be used in residential applications. For commercial areas conditional use is possible according to the manufacturer's instructions.

2.3 Technical Data

Constructional data

Name	Value	Unit
Product minimum thickness	12	mm
Product maximum thickness	14	mm
Product minimum mass	7,7	kg/m²
Product maximum mass	11.8	kg/m²
Product minimum density	600	kg/m³
Product maximum density	850	kg/m³

The density of the parquet flooring panels is between 600 and 850 kg/m3.

- Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to *EN 14342:2013 Wood flooring and parquet — Characteristics, evaluation of conformity and marking* and the CE marking.
- Voluntary data: The product complies with the requirements of the following standard, too *EN 13489: Wood Flooring - Multi-layer parquet elements*. For the application and use the respective national provisions apply.

2.4 Delivery status

Typical standard dimensions are as follows (length - width - thickness)

- 1820mm x 145mm x 14mm
- 1820mm x 190mm x 14mm
- 2200mm x 220mm x 14mm
- 2400mm x 260mm x 14mm
- 580mm x 145mm x 14mm
- 1050mm x 310mm x 14mm
- 2200mm x 190mm x 14mm
- 1820mm x 145mm x 12,5mm
- 1820mm x 190mm x 12,5mm

2.5 Base materials/Ancillary materials

The multilayer flooring elements have the composition presented below:

- Wood layers (surface + Core layer solid or HDF + backing) : 94% - 96%
- Glue : 3% - 5%
- Finishing : 1%

Core layer
The core of the multilayer flooring elements consists of wooden core boards of a High-density fiberboard or wood.

Surface layer
On top of the core board, serving as the visible side of the panel after installation, is a layer of solid wood. The surface layer is glued to the core.

Backing layer
The bottom part of the parquet panels is a thin layer of solid wood. This layer is added for dimensional stability.

Glue
The surface layer and the backing is glued to the substrate with low emitting urea-formaldehyde resins.

Finishing
The surface layer is sanded, eventually provided with a bevel and finished with UV-curing acrylic lacquers or natural or mineral oils.
The Uniclic/multifit systems are designed to ensure a strong connection between the Multi-layer parquet flooring elements.

This product contains substances listed in the Candidate List of Substances of Very High Concern for Authorisation *REACH* (date: 16.11.2023) exceeding 0.1 percentage by mass: **NO**

This product 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

At the production site in Malaysia core, surface and backing layers are glued together in a hot press. The next step is sawing the planks to lamellas. Then panels are sanded, profiled (applying the tongue and groove), finished with lacquer or oil, and packed.
In production a certified *ISO 9001* quality control is in place.

All production machines comply with all regulations in place. The machines are optimized in respect to energy consumption and are equipped with all necessary equipment for safety precautions, dust extraction and noise reduction.

2.7 Environment and health during manufacturing

The constitutional valid regulations and provisions of the national law are observed and respected.
All coatings and adhesives are water-based solvent free. All wood waste and cutting and sanding dust is fully heat-recycled.
Water: There is no wastewater.
Soil: There is no impact on soil.
Air: The constitutional valid regulations are observed.

The emissions to air are far below the legally required thresholds.

In production certified *ISO 14001* environmental management system is in place.

2.8 Product processing/Installation

Installation

The flooring panels are mechanically clicked together without using glue. The installation can be floating or glued down. In case of a floating installation an appropriate underlay must be used in order to achieve leveling effect, thermal or acoustical insulation and/or protection against rising moisture. The following type of underlay materials can be used:

- Polyolefin foams
- wood fibre panels
- Polyethylene damp proof membranes

In case of glueing down it is strongly recommended to use hybrid elastic mono component-polymer glue which is solvent-free and water-free.
The materials used as underlay or glue are not considered in this study.
Appropriate measures for protection against saw dust must be taken.
Information about the installation of Multilayer parquet flooring can be downloaded from the website https://www.unilin.com/en/flooring. On this website additional technical information (technical data sheets) is available as well.

2.9 Packaging

A well-defined number of multilayer parquet flooring panels are packed together, putting them with the surface layer onto each other. For some of the formats, the packs are edge-protected using cardboard and are shrink-wrapped in PE foil. For the remaining formats, the panels are packed in a 6-sided cardboard box without shrinkable PE-foil. The packaging materials are fully recyclable.
The packs are palletized on wooden pallets using wood from controlled origin. The pallets can be re-used (Euro pallets) or recycled as wood category 03 01 05 according to the European Waste Catalogue.

2.10 Condition of use

A thermosetting binding agent and saturating resin are used for the production of the flooring panels. When heat and pressure are applied during the pressing phase, this is 3D crosslinked by an irreversible polycondensation reaction. Under normal conditions, the binding agent and saturating resin are both chemically stable and mechanically firmly bonded to the wood parts.

2.11 Environment and health during use

All multi-layer parquet floorings of Unilin comply with the health, safety and energy-saving requirements as described in the harmonised standard *EN 14342*, type 3. All panels are CE marked.
Once the flooring has been installed only very low emissions of volatile compounds occur (see chapter 7 of this EPD). These emissions originate from the wood.
Floorings with a lacquered surface do not need to be re-lacquered in domestic use and normal conditions of use. In case of oiled floors, special periodic maintenance with oilcare and re-oiling should be done following the manufacturer maintenance instructions and in function of the intensity of use and the protection in place on the access to outside.

2.12 Reference service life

The BBSR Table gives a general useful life of **40 years** for floor coverings of component group 352.812. Due to the comparatively high resistance of the Multilayer parquet flooring, Unilin grants an additional **warranty** (based on the floor owner life according to the manufacturer's warranty conditions) for the declared product. In order to increase the life duration of the floor covering, the manufacturer's instructions concerning warranty and care must be observed, available for download at www.unilin.com/en/flooring. The use stage is declared in this EPD for a one year usage.

2.13 Extraordinary effects

Fire

In function of the composition of the parquet panel the fire class according to *EN 13501-1* is Cfl-s1 or Dfl-s1.
The core board is determinative in this respect

- panels are classified as Cfl-s1

The fire classification goes for glued down installation and for floating installation on the associated Quick-Step or Pergo underlays.

Fire protection

Name	Value
Building material class	Cfl/Dfl
Smoke gas development	s1

Water

In case of a floating installation an appropriate DPM (damp proof membrane) needs to be installed in order to hold back potential rising dampness. Most underlays of the Unilin Multi-layer parquet flooring sales program have a built-in DPM and do not need an extra DPM. The DPM is not a part of this study.
In case of a leak or a flood where the flooring has been soaked for a longer period of time (days) the flooring will most probably be considered a total loss. In case of short or shorter time of exposure and after drying, no visible damage may be expected. If the water came under the floorcovering (floating installation) it may be necessary to un-click the planks/tiles and let them dry. The subfloor will most probably also be wet and should be given the time to come to equilibrium moisture content before re-installation of the dry panels. Some of Unilin Multi-layer parquet ranges offer a special water resistance and a watertight connection between panels. During the installation, the periphery needs to be treated with a foam strip and a special sealant to avoid infiltration. In case of water spillage on the surface, it will evaporate before having the chance to penetrate between panels.

Mechanical destruction

Small(er) damages in the flooring surface can be repaired using coloured solvent-free melt waxes. In case of more severe damage the damaged panels can be replaced. The damaged panels go into the normal end-of-life treatment.

2.14 Re-use phase

A multi-layer parquet floorcovering which is not at the end-of-life stage and which is floating, may be un-installed and be re-used as parquet floor.
At the end of life stage, the panels can be used as biomass and be recycled for example in wood based panels. The panels are shredded and reused as raw material in wood-based panels. It can also be incinerated in power plants.

2.15 Disposal

Post-installation and post-consumer flooring panels are considered as wood waste. The European Waste Code *EWC* is 030105. It can be disposed in any regulated municipal waste collection point as wood waste.

2.16 Further information

All information about the product composition, technical performance, instructions for installation and maintenance, precautionary instructions for use, CE-marking and relevant DOP (declaration of performance) documents, are available either in the packs or can be found on the homepage www.unilin.com/en/flooring or can be requested at Unilin BV division flooring info@unilin.com.

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1 m² of parquet floor covering representing sales average for both HDF or Hevea core products (average mass of 9,55 kg/m² and average thickness of 13,25 mm).

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	m^2
Layer thickness	0.01325	m
Grammage	9.55	kg/m^2

3.2 System boundary

Type of EPD according to *EN 15804*: cradle to grave.

The **production stage** includes all relevant processes from "cradle to factory gate" within the cut-off rules. This includes for example the extraction and manufacture of all raw materials and their delivery to the production site. The top layer and back layer material is dried in Europe and then transported to Malaysia. the manufacturing of the floorcovering panels from raw material to storage and transport. Packaging is included.

The **constructional process** stage includes the delivery of the parquet floor covering to the point of installation (A4). The transport distance from the plant in Malaysia to the European market via the plant of UNILIN in Wielsbeke and more generally the weighted average distance to worldwide market is considered in this EPD A significant volume is transported directly to Australia from Malaysia without going through Europe. Installation stage (A5) is declared, accounting for electricity consumption, product installation losses, and packaging waste.

The **use stage** (B2) includes the cleaning of the parquet for 1 year. The cleaning
frequencies are described in chapter 4. Provision of water, cleaning agent and electricity for the cleaning of the floor covering is considered, incl. wastewater treatment.

Product end-of-life (C1-C3) comprises the product dismantling, transportation, and energy recovery in combined heat and power (CHP) plant. In module C3 the release of biogenic CO2 is declared according to *EN 16485*.

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 state. It is assumed that post-consumer flooring waste is incinerated as waste in a combined heat and power (CHP) plant. Loads from material incineration and resulted benefits from recovered energy are declared within module D.

3.3 Estimates and assumptions

No additional estimates or assumptions had to be made beyond the information stated in clauses 3 and 4.

3.4 Cut-off criteria

In the assessment, all available data from production process are considered, i.e. all raw materials used, utilised thermal energy, and electric power consumption using LCI datasets. Thus material and energy flows contributing less than 1% of mass or energy are also considered. All reported data are considered and modelled using LCI data.

No flows were cut-off that are known to have significant environmental impacts.

3.5 Background data

The used background data are from SimaPro version 9 software and the ecoinvent version 3.8 background database.

3.6 Data quality

The used data refer to the year 2021. The data of the foreground processes is based on input-output analyses at the Malaysian production site and Belgian distribution facilities. The primary data collection was done thoroughly, all flows were considered.

3.7 Period under review

The period under review is 2021.

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: Global

3.9 Allocation

The overall production of UNILIN comprises further products beside the product considered in this study. Data for thermal and electrical energy as well as auxiliary material refers to the declared product. During data collection the allocation is done via area (m²).
For information on allocation within the background database, refer to ecoinvent documentation.

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.
Background database is as described in chapter 3.5.

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	4.1	kg C
Biogenic carbon content in accompanying packaging	0.24	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

The following technical information is a basis for the declared modules. Scenarios correspond to the worldwide production and consumption.

Transport to the construction site (A4)

Product shipping stage A4 represents weighted average based on worldwide sales.

Name	Value	Unit
Transport distance by boat	12400	km
Transport distance by truck	875	km
Capacity utilisation (including empty runs) for truck	67	%

Installation in the building (A5)

Name	Value	Unit
Electricity consumption	0.04	kWh
Product installation losses	4.0	%
Product packaging waste	0.24	

Maintenance (B2)

Maintenance scenario:

- 1 vacuum cleaning per week
- 1 wet cleaning per month (with detergent)
- 1 oil car 3 times per year

Name	Value	Unit
Water consumption	1.33	kg/m²/year
Detergent	0.0133	kg/m²/year
Oil for care	0.0100	kg/m²/year
Electricity consumption (European mix)	0.54	kWh/m²/year

Reference service life

Name	Value	Unit
Reference service life	40	a

End of Life (C1-C4)

Name	Value	Unit
Collected separately waste type (wood waste)	8.8	kg
Energy recovery from waste	8.8	kg

100% of floor covering is incinerated in a combined heat and power (CHP) plant.

Benefits and loads beyond the product system (D)

As per *IBU* PCR Part A, recovered heat is assumed to substitute to heat generation from natural gas furnace for the calculation of benefits and loads beyond the product system (module D). Produced electricity is assumed to substitute to grid mix.

5. LCA: Results

The LCA results for the MLP-flooring declared in this EPD refer to a MLP-flooring with a thickness of 13.25 mm, which meets the requirements of *EN 14342*.
The results for module B2 refer to a period of one year.

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	MNR	MNR	MNR	MND	MND	X	X	X	X	X

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

Parameter	Unit	A1	A2	A3	A4	A5	B2	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	-1.18E+01	1.16E+00	6.91E+00	2.62E+00	1.73E+00	2.39E-01	0	6.6E-02	1.52E+01	0	-1.11E+01
GWP-fossil	kg CO_2 eq	3.31E+00	1.16E+00	7.6E+00	2.61E+00	8.37E-01	2.34E-01	0	6.59E-02	2.14E-01	0	-1.11E+01
GWP-biogenic	kg CO_2 eq	-1.52E+01	2.92E-04	-7.39E-01	6.92E-04	8.86E-01	1.29E-03	0	2.14E-05	1.5E+01	0	-8.87E-03
GWP-luluc	kg CO_2 eq	1.5E-02	9.29E-04	4.29E-02	1.45E-03	2.45E-03	3.61E-03	0	2.55E-05	1.02E-04	0	-4.19E-03
ODP	kg CFC11 eq	6.29E-06	2.43E-07	4.74E-07	5.71E-07	3.08E-07	1.77E-08	0	1.66E-08	7.3E-09	0	-1.52E-06
AP	mol H^+ eq	2.46E-02	2.78E-02	3.67E-02	4.26E-02	5.68E-03	1.33E-03	0	2.12E-04	1.3E-02	0	-1.68E-02
EP-freshwater	kg P eq	1.76E-04	5.56E-06	3.99E-04	1.46E-05	2.73E-05	2.51E-05	0	4.74E-07	2.68E-05	0	-1.83E-04
EP-marine	kg N eq	6.23E-03	6.26E-03	5.17E-03	1.03E-02	1.28E-03	2.2E-04	0	4.66E-05	5.75E-03	0	-3.39E-03
EP-terrestrial	mol N eq	7.42E-02	6.98E-02	5.64E-02	1.14E-01	1.45E-02	2.03E-03	0	5.18E-04	6.76E-02	0	-3.78E-02
POCP	kg NMVOC eq	2.31E-02	1.86E-02	1.67E-02	3.08E-02	4.07E-03	5.59E-04	0	2.04E-04	1.56E-02	0	-1.22E-02
ADPE	kg Sb eq	4.46E-05	2.18E-06	1.2E-05	6.91E-06	2.91E-06	2.41E-06	0	1.64E-07	3.5E-06	0	-5.54E-06
ADPF	MJ	7.4E+01	1.58E+01	8.87E+01	3.71E+01	9.21E+00	4.98E+00	0	1.08E+00	3.42E+00	0	-2E+02
WDP	m^3 world eq deprived	4.06E+00	3.83E-02	1.53E+00	9.29E-02	2.38E-01	6.83E-02	0	3.72E-03	5.48E-02	0	-4.53E-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 Multi-layer parquet flooring

Parameter	Unit	A1	A2	A3	A4	A5	B2	C1	C2	C3	C4	D
PERE	MJ	5.5E+01	1.42E-01	1.25E+01	4.16E-01	1.57E+01	1.02E+00	0	1.38E-02	1.56E+02	0	-7.26E+00
PERM	MJ	1.56E+02	0	6.51E+00	0	-6.38E+00	1.54E-03	0	0	-1.54E+02	0	0
PERT	MJ	2.11E+02	1.42E-01	1.91E+01	4.16E-01	9.29E+00	1.02E+00	0	1.38E-02	2.46E+00	0	-7.26E+00
PENRE	MJ	5.27E+01	1.58E+01	8.6E+01	3.71E+01	1.2E+01	4.33E+00	0	1.08E+00	2.4E+01	0	-2E+02
PENRM	MJ	2.13E+01	0	2.62E+00	0	-2.81E+00	6.37E-01	0	0	-2.06E+01	0	0
PENRT	MJ	7.4E+01	1.58E+01	8.87E+01	3.71E+01	9.21E+00	4.97E+00	0	1.08E+00	3.42E+00	0	-2E+02
SM	kg	2.61E-04	0	7.17E-02	0	2.88E-03	5.74E-04	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
FW	m^3	1.09E-01	1.2E-03	7.26E-02	3.23E-03	8.13E-03	4.31E-03	0	1.26E-04	9.06E-03	0	-3.19E-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 Multi-layer parquet flooring

Parameter	Unit	A1	A2	A3	A4	A5	B2	C1	C2	C3	C4	D
HWD	kg	1.33E-01	1.66E-02	4.1E-01	3.09E-02	3.59E-02	6.23E-03	0	7.48E-04	6.68E-02	0	-5.12E-02
NHWD	kg	2.4E+00	4.79E-01	5.74E+00	1.38E+00	4.24E-01	9.36E-02	0	1.07E-01	1.66E-01	0	-5.85E-01
RWD	kg	2.84E-04	1.08E-04	6.4E-05	2.54E-04	3.12E-05	3.44E-05	0	7.33E-06	3.61E-05	0	-3.61E-04
CRU	kg	0	0	0	0	0	0	0	0	0	0	0

MFR	kg	9.42E-04	0	7.93E-04	0	6.94E-05	7.44E-04	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	2.31E-01	0	1.88E-01	0	2.04E+00	2.59E-03	0	0	1.4E+01	0	0
EET	MJ	4.46E-01	0	3.63E-01	0	3.93E+00	5E-03	0	0	1.35E+02	0	0

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 Multi-layer parquet flooring

Parameter	Unit	A1	A2	A3	A4	A5	B2	C1	C2	C3	C4	D
PM	Disease incidence	6.67E-07	5.65E-08	1.29E-07	1.53E-07	4.4E-08	4.57E-09	0	7.7E-09	2.54E-07	0	-5.21E-08
IR	kBq U235 eq	2.22E-01	6.76E-02	5.16E-02	1.6E-01	2.21E-02	4.15E-02	0	4.69E-03	6.75E-02	0	-3.78E-01
ETP-fw	CTUe	2.09E+01	4.82E+00	3.3E+01	1.21E+01	3.25E+00	8.56E-01	0	3.58E-01	5.06E+00	0	-7.42E+00
HTP-c	CTUh	2.04E-08	7.37E-10	2.84E-09	1.27E-09	1.3E-09	1.17E-10	0	2.3E-11	2.5E-09	0	-1.33E-09
HTP-nc	CTUh	5.81E-08	5.95E-09	5.93E-08	1.81E-08	6.9E-09	3.11E-09	0	7.37E-10	7.1E-08	0	-1.91E-08
SQP	SQP	9.99E+02	6.1E+00	7.9E+01	1.73E+01	4.43E+01	1.14E+00	0	1.24E+00	1.01E+00	0	-1.19E+01

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

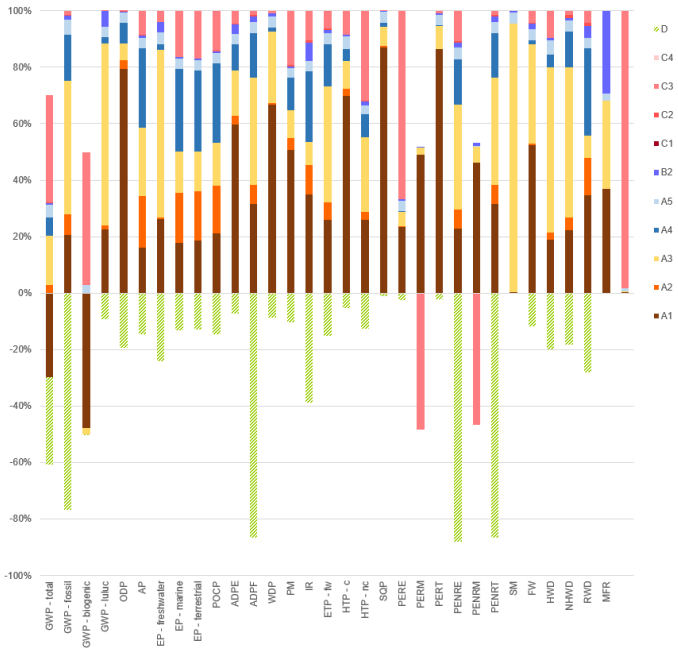

Figure : Indicator results of multi-layer parquet floor covering over its life cycle

Benefits and burdens beyond the system boundary (module D) vary from a few percent to more than 80% of the impacts over the product life cycle (modules A-C) and relate to the energy recovery from waste processing in a combined heat and power plant that is considered to substitute natural gas (heat) and electricity grid mix.

The largest part of environmental impacts is caused during production (modules A1-A3) and at waste processing (module C3); comparably small impacts are caused during the transport of the product to the construction site.

Maintenance (module B2) is presented for 1 year of product use, so its impact can be significant over the reference service life depending on the considered indicator.
All the other modules related to the product life cycle are not significant.

7. Requisite evidence

7.1 PEFC Certificate

The product fulfills the requirements according to *PEFC ST 2002:2010: Chain of Custody of Forest Based Products - Requirements* second edition. CTIB - TCHN - Hof ter Vleest dreef 3 - 1070 Brussels Belgium

7.2 Formaldehyde emissions

Determination of the formaldehyde emissions of a multi-layer parquet flooring performed according to the latest versions of *EN 16516* and *ISO 16000* series (part 3, 6 and 9) and to AgBB-Scheme. – Servaco/Normec Product Testing - Honderweg 13 - 9230 Wetteren - Belgium. Emission test report of Unilin sample Engineered wood flooring (new combinations)' nr SPT2021-R195 from November 9th 2021.

Name	Value	Unit
Formaldehyde CAS 50-00-0	24	µg/m3

7.3 VOC emissions

Determination of the VOC emissions of a multi-layer parquet flooring performed according to the latest versions of *EN 16516* and *ISO 16000* series (part 3, 6 and 9) and to AgBB-Scheme. – Servaco/Normec Product Testing - Honderweg 13 - 9230 Wetteren - Belgium. Emission test report of Unilin sample Engineered wood flooring (new combinations)' nr SPT2021-R195 from November 9th 2021.

- Compliant with AgBB-Scheme 2018 and 2021
- Compliant with M1 Emission Classification of Building Materials (Testing protocol 15.11.2017)
- Compliant with the French VOC-Regulation: A+

VOC EMISSION RESULTS (AgBB) AFTER 3 days

Name	Value	Unit
TVOC	540	µg/m3
R (dimensionless)	1,427	-
VOC without LCI	21	µg/m3
Carcinogenic Substances	1	µg/m3

VOC EMISSION RESULTS (AgBB) AFTER 28 days

Name	Value	Unit
TVOC	280	ug/m3
R (dimensionless)	0,376	-
VOC without LCI	0	ug/m3
Carginogenic Substances	0	ug/m3

8. References

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ISO 14040:2006
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Chain of custody ofForest based Product - Requirements - /PEFC ST 2002:2010. Rapportnumber CTIB-TCHN 0380. CTIB-TCHN - Hof ter Vleest dreef 3 - 1070 Brussels- Belgium.

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