ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	Fritz EGGER GmbH & Co. OG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Valid to	01.03.2027

EGGER Design Flooring

Fritz EGGER GmbH & Co. OG Holzwerkstoffe

Institut Bauen und Umwelt e.V.

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1. General Information

Fritz EGGER GmbH & Co. OG
Holzwerkstoffe

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

Declaration number
EPD-EGG-20220009-IBC1-EN

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

Issue date
02.03.2022

Valid to
01.03.2027

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

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

EGGER Design Flooring

Owner of the declaration
FRITZ EGGER GmbH & Co. OG
Holzwerkstoffe
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6380 St. Johann in Tirol
Austria

Declared product / declared unit
1 m² EGGER Design Flooring (6.85 kg/m²) with a moisture content of 6%

Scope:
This document applies to the average Design Flooring manufactured by Egger Holzwerkstoffe Wismar GmbH & Co. KG at the plant in Wismar (Germany).

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

Matthias Klingler
(Independent verifier)

2. Product

2.1 Product description/Product definition

EGGER Design Flooring is a semi-rigid, decorative floor covering in the form of a flooring board or tile with a multi-layer composition. A high-density wood fibre board is used as coreboard. The coreboard is laminated on both sides with melamine resin impregnated paper (uni brown on the bottom, decor look on the top). A thin recycled cork layer is laminated on the underside, which serves as an integrated impact sound. The wear layer is formed by a transparent film laminated onto the decor coating and sealed with a UV-curing protective lacquer. The edges of the product are processed and allow the form-locking joining of the product to form a larger unit by means of a circumferential tongue and groove profile. The product is declared in accordance with the *EN 16511* product standard and classified in the use classes defined there.

Regulation (EU) no. 305/2011 (CPR) applies to bringing the product into circulation in the EU/EFTA (with the exception of Switzerland). The product requires a declaration of performance taking into account *DIN EN 16511:2014+A1:2019*, *Loose-laid panels - Semi-rigid multilayer modular floor covering (MMF) panels with wear resistant top layer* and CE marking. Relevant national determinations apply to use. A declaration of performance is available and can be downloaded from www.egger.com.

2.2 Application

EGGER Design Flooring is used for interior applications in new constructions or renovations, with floating installation on screed or other subfloors such as wood, tiles, PVC. Optional bonding to the substrate is possible. Installation must be performed according to the installation instructions and state-of-the-art technology.

2.3 Technical Data

Structural engineering data

Name	Value	Unit
Product thickness	7.5	mm
Grammage	6500 - 6900	g/m²
Abrasion Class	33	-
Length of the surface layer	1292	mm

Width of the surface layer (2 formats)	193 - 246	mm
Density	825 - 855	kg/m³
Layer thickness (Top layer)	-	mm

The performance values of the product correspond to the declaration of performance with regard to its essential characteristics in accordance with *DIN EN 16511:2014+A1:2019, Loose-laid panels - Semi-rigid multilayer modular floor covering (MMF) panels with wear resistant top layer.* Download here at www.egger.com.

2.4 Delivery status

The smallest possible delivery unit consists of a flooring board package with eight flooring boards. The following packaging units are available:
Package dimensions

- Classic: 1305 x 205 x 60 mm
  (8 flooring boards per package = 13.4 kg)
- Large: 1305 x 250 x 60 mm
  (8 flooring boards per package = 16.8 kg)

Pallet dimension

- Classic: 1305 x 820 x 990 mm
  (14 layers of 4 packages = 56 packages / pallet)
- Large: 1305 x 780 x 990 mm
  (14 layers of 3 packages = 42 packages / pallet)

2.5 Base materials/Ancillary materials

EGGER Design Flooring consists of 67% renewable and 33% fossil raw materials. The composition is as follows:

- 62% dried wood fibres (HDF coreboard), of which 98% by-products from the sawmill and 2% industrial waste wood
- 20% binding agents (HDF core board), melamine-urea-formaldehyde binding agent (aminoplast hardens completely and is chemically stable bonded)
- 5% decorative wear layer (polypropylene, PVC-free)
- 4% laminated coreboard, of which 43% paper and 57% melamine-formaldehyde resin (aminoplast hardens completely and is chemically stable bonded)
- 3% hotmelt binding agent for wear layer and integrated impact sound (polyurethane hotmelt)
- 3% impact sound (cork, 18% recycled content)
- 2% hydrophobing agent (HDF coreboard)
- < 1 % hardener (HDF coreboard), ammonium sulphate
- < 1 % wear layer finish, polyurethane varnish

Data concerning the types of wood used and the wood origins
Download the current manufacturer's declaration on the origin of wood: www.egger.com/umwelt

Information on chemicals
1) The product contains substances on the *ECHA List* of substances of very high concern (date 27.06.2018) above 0.1% by weight: no.

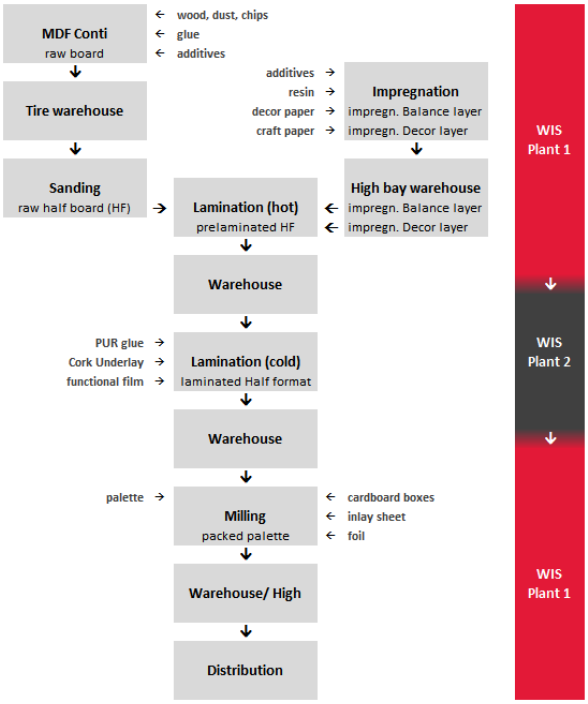
2) The product contains other CMR substances of category 1A or 1B that are not on the candidate list, above 0.1 by weight % in at least one sub-product: no.

3) Biocidal products have been added to this building product or it has been treated with biocidal products (this refers to treated goods within the meaning of the Biocidal Products Regulation (EU) No. 528/2012): no.

Download the current certification concerning the use of SVHC substances: www.egger.com/umwelt

2.6 Manufacture

Industrial waste wood and residual products from the sawmill (hackchips, sawdust) form the basis for the coreboard, which is glued together using additives and urea-melamine-formaldehyde glue. After production, the HDF boards are stored in a conditioning hall and then sanded. This is followed by the coating with melamine resin impregnated papers on the top and bottom sides. They are then stored and transported to the upgrading plant (Plant 2), which is about 2 km away. In Plant 2, the upper, transparent film layer and the lower cork layer are laminated. The protective film layer is finished with a UV-curing protective lacquer. The boards are then transported back to Plant 1. Back in Plant 1, the upgraded half-formats are finished on the profiling line into flooring boards with a circumferential tongue-and-groove profile, packed, stored and delivered to the customers.



2.7 Environment and health during manufacturing

Waste resulting from the production process is recycled or used for heat generation in neighbouring production lines so that there is no waste resulting from the core process. The production facility has a

biomass power plant. Waste water from production is treated internally and returned to the production cycle. Noise-intensive plant components such as the chip removal are encapsulated through structural measures. The quality management system is certified according to *ISO 9001*. The environmental and energy management system is certified according to *ISO 14001* and *ISO 50001*.
Current actions are available in the EGGER Sustainability Report at www.egger.com/umwelt.

2.8 Product processing/Installation

Installation:
The cutting and fitting of the individual panels can be performed with all conventional tools, for example a jigsaw or a handheld circular saw. The finest possible toothing should be selected and suitability for wood processing is required. Alternatively, using so-called “laminate punches or shears” is also a possibility.

Occupational safety and environmental protection:
In the course of processing and installing Egger Design Flooring, compliance with the safety regulations commonly applicable to processing is required (safety goggles, face mask in case of dust development). Remaining sawdust should be vacuumed off. Observe all liability insurance association determinations for commercial processing operations.

Waste material and packaging:
Residual material (trimmings and packaging materials) produced on the construction site must be sorted by waste classes and collected.

2.9 Packaging
The packaging of the flooring boards consists of cardboard and PE film that can be included in differentiated recycling.
Larger packaging units are stacked on wooden pallets and secured with PET packaging strips. The pallets can be re-used. The packaging strip can be included in differentiated recycling.

2.10 Condition of use
Thermosetting binding agents and saturating resins are used in the manufacturing process. When heat is applied, they are cross-linked three-dimensionally by an irreversible polycondensation reaction. The bonding agents and resins are chemically stable and mechanically bonded to the wood under normal conditions. The adhesives used for laminating the cork and the wear layer are hot-melt adhesives that are firmly cross-linked into the product matrix when in use. The lacquer system used for surface finishing is cured under ultraviolet light and is chemically stable and firmly bonded to the wear layer in the state of use.

2.11 Environment and health during use

Environmental protection:
There is no risk of water, air or ground contamination given currently available knowledge assuming intended use is observed.

Health aspects:
There are currently no known health hazards or effects to be expected from normal use, i.e. in accordance with the intended uses, of EGGER Design Flooring. Natural wood constituents may be released in small quantities. With the exception of minor amounts of formaldehyde in quantities that are harmless to health, no emissions of hazardous substances can be detected. For emission values see proofs under section 7.

2.12 Reference service life
The *BBSR Table* gives a general useful life of 20 years for floor coverings of component group 352.711.

Due to the comparatively high resistance of the Design Flooring, EGGER grants a warranty period of 25 years for the declared product when used in private living areas. In the commercial sector, the warranty period granted by EGGER is generally 5 years.

In order to increase the service life of the floor covering, the manufacturer's instructions in accordance with the warranty and care instructions must be observed. The manufacturer also provides a repair kit which enables the repair of small damaged areas. Instructions for replacing individual elements are also available. The documents are available for download at www.egger.com or on the manufacturer's social media channels.

2.13 Extraordinary effects

Fire

Fire protection

Name	Value
Building material class	Cfl
Burning droplets	D0
Smoke gas development	S1

Water
Beyond the usual purpose, EGGER Design Flooring is suitable for use in bathrooms, kitchens and hotel room bathrooms with normal use. There is no warranty against permanent exposure to water. Damaged areas can easily be replaced locally. In the case of flooding, substances within the wood may be washed out in low quantities.

Mechanical destruction
The fracture pattern of EGGER Design Flooring shows a relatively brittle behaviour. As the product consists mainly of wood fibres and cork, possible sources of injury are to be classified as low (cut edges etc.).
The abrasion and impact stress classification is defined in the product standard (see section 2.1).

2.14 Re-use phase
Reuse: With careful, cautious dismantling, EGGER Design Flooring can be reused for the same application after the end of the use phase. The requirement is for the flooring to have been installed floating and that the profiles are damaged during dismantling and transport.

2.15 Disposal
Waste code: 170201/030105 according to *AVV*
Material utilisation: Material utilisation is not feasible according to current knowledge.

Energy recovery: Given the high calorific value of approx. 17 MJ/kg, energy utilisation is recommended. They may only be burned in suitable and legally permitted facilities. Local determinations are available from the relevant authorities.
Packaging: The transport packaging paper/cardboard and film can be collected separately and recycled appropriately. Retrieval of the packaging material can be arranged with the manufacturer in individual cases.

2.16 Further information
Further information can be found on the manufacturer's website at www.egger.com.

3. LCA: Calculation rules

3.1 Declared Unit
This environmental product declaration refers to a declared unit of 1 m² EGGER Design Flooring with an average weight per unit area of 6.85 kg/m² and a delivery moisture content of 6%.

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Grammage	6.85	kg/m^2
Gross density	-	kg/m^3
conversion factor [Mass/Declared Unit]	6.85	-

The EGGER Design Flooring is manufactured in the Wismar plant in Germany. The calculation of the declared unit was surface-weighted. This is based on the averaging of HDF boards, which was according to dimensional weight. The average for the impregnation used for coating was also based on annual production. Given that in this case the quantities of melamine and urea saturating resin depends on the product, the quantities used for the calculation reflect an annual average pro rata.

3.2 System boundary
The LCA of the EGGER Design Flooring includes a cradle-to-gate consideration of the occurring environmental impact with the modules C1-C4 and module D (A1-A3, +C, +D). The following life cycle phases are taken into account in the analysis:

Module A1– A3 | Production stage
The product stage includes the cost of raw material procurement (cork, wood semi-finished products, producing the glue system, additives, etc.), as well as related transport relative to the production plant in Wismar. Within the plant boundaries, HDF board production (Conti), HDF finishing incl. sanding line, lamination, profiling, coating and packaging of the product are considered. Thermal energy, compressed air and water are provided by central suppliers at the Wismar site. The electrical energy used is obtained from the German power grid. Both internal wood waste and scrap wood sourced externally are used in the in-house biomass power plant. The system boundary for the scrap wood used in the production is set after sorting and chopping. It is assumed that the end of the waste status has been reached. The system boundary for secondary raw materials according to *EN 15804* applies.

Module C1 | Dismantling / Demolition
Manual dismantling was assumed for the EGGER flooring. The associated efforts are negligible, which means that no environmental impact from the dismantling of the products is declared.

Module C2 | Transport to waste treatment
Module C2 includes transport to waste treatment. For this purpose, transport by lorry over a distance of 50 km is used as a representative scenario.

Module C3 | Waste processing
The wood product and with it the material-inherent properties leave the product system as secondary fuel in module C3. Furthermore, chopping after product disassembly is also considered.

Module C4 | Disposal
The scenario used declares the energy recovery of the wood products, which means that no environmental impact from the waste treatment of the products in C4 are to be expected.

Module D | Credits and charges beyond the limits of the product system
The energy utilisation of the product at the end of its life cycle is described in Module D, including energetic substitution potential as a European average scenario

3.3 Estimates and assumptions
Assumptions and estimates are used in the absence of a representative background data set to represent the environmental impact of certain raw materials. All assumptions are supported with detailed documentation and correspond to the best possible representation of reality given the available data. A generic data set from the *GaBi* Database for spruce roundwood was used as background data set for roundwood. A large part of the wood processed by EGGER represents coniferous fibrewood.
For other wood types used, the data set for spruce roundwood should be considered as an approximation. The present simplification thus corresponds to the best possible approach given the existing data basis. The regional applicability of the background data sets used refers to average data for Germany and Europe.

3.4 Cut-off criteria
All inputs and outputs for which data are available and from which a significant contribution can be expected are included in the LCA model.
Missing data are populated when a data basis is available using conservative assumptions for average data or generic data and are documented accordingly. Only data with a contribution of less than 1% were removed. Neglecting these data can be justified by the limited effect to be expected. Thus, no processes, materials or emissions were neglected that are expected to make a significant contribution to the environmental impact of the products under consideration. It can be assumed that the data were recorded in full and that the total sum of the neglected

input flows does not exceed 5% of the energy and mass input.

3.5 Background data

Secondary data are included to represent the background system in the LCA model. These are taken, on the one hand, from the *GaBi* database 2021.2 and, on the other hand, from recognised literature sources (e.g. *Rüter & Diederichs 2012)*.

3.6 Data quality

The data was collected via spreadsheets specifically created by EGGER. Questions were answered through an iterative process in writing via e-mail, phone, or in web meetings. Given the intense discussion concerning a representation of material and energy flows in the company that is as close as possible to reality, led by EGGER and Daxner & Merl, the high quality of collected foreground data can be assumed. A consistent and uniform calculating procedure was applied in line with *ISO 14044*.

When selecting the background data, the technological, geographical, and time-related representativeness of the data basis was taken into consideration. When specific data was missing, generic data sets or a representative average were used. The *GaBi* background data sets are not older than ten years.

3.7 Period under review

As part of the collection of the foreground data, the life cycle of the flooring production was recorded for the production year 2020. Central suppliers at the site were mapped based on data for the reference year 2018. The data on glue production is based on the year 2017. The data are based on the annual volumes used and produced.

3.8 Allocation

The carbon content and primary energy content of the products have been balanced on the basis of their inherent material characteristics
in line with underlying physical relationships.

Allocation within the forestry chain is based on the publication of *Hasch 2002* and its update by *Rüter & Albrecht 2007*.

In addition to roundwood, sawmill by-products such as offcut, sawdust and hackchips from the neighbouring sawmill are used for floor production. A price allocation according to *Rüter & Diederichs 2012* was used to calculate the environmental impact of these by-products from the sawing system. The carbon content and primary energy content of the products were excluded from the price allocation and accounted for according to the material-inherent properties. External recycled wood enters the energy recovery process at the site without any encumbrances.

The bark of the purchased roundwood is sold as a by-product. Due to the low sales revenue, no allocation is applied to attribute environmental impact to the main and by-products. The carbon content and primary energy content of the products were nevertheless accounted for according to the material's inherent properties.

The thermal and electrical energy generated in the CHP plants (combined heat and power) is allocated according to exergy.

3.9 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.

4. LCA: Scenarios and additional technical information

Characteristic product properties
Information on biogenic Carbon
The biogenic carbon content quantifies the amount of biogenic carbon in the declared building product.

Information describing the biogenic carbon content at the plant gate

Name	Value	Unit
Biogenic Carbon Content in product	2.17	kg C

The packaging amounts to far less than 5% of the product mass. This means that the biogenic carbon stored in the packaging does not have to be declared in the EPD.

Reference utilisation duration

Name	Value	Unit
Reference service life	n/a	a
(according to ISO 15686-1, -2, -7 and -8)		
Life Span (according to BBSR)	20	a
Life Span (according to BBSR)	20	a
Declared product properties (at the gate) and finishes	Class of use 33 according to EN 16511	-
Design application parameters (if instructed by the manufacturer), including the references to the appropriate practices and application codes	see warranty and care instructions at www.egger.com	-
An assumed quality of work, when installed in accordance with the manufacturer's instructions	floating installation according to installation instructions and the general rules of technology, bonding optional	-
Outdoor environment,	not relevant, given	-

(for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature	use in interiors	
Indoor environment (for indoor applications), e.g. temperature, moisture, chemical exposure	see warranty and care instructions at www.egger.com	-
Usage conditions, e.g. frequency of use, mechanical exposure	Class of use 33 according to EN 16511	-
Maintenance e.g. required frequency, type and quality and replacement of components	regular visual inspection and replacement in case of damage, care according to warranty and care instructions	-

End of life cycle (C1-C4)

Name	Value	Unit
Energy recovery [moisture 6 %]	6.85	kg

Reuse, recuperation and recycling potential (D), relevant scenarios

Name	Value	Unit
Net flow in module D [balance moisture 6 %]	6,07	kg/m²
Moisture during thermal utilisation [scenario assumption]	6	%
Processing rate	100	%
Efficiency of the system	61	%

The product reaches the end of the waste status after it is removed from the building, transported for preparation, and the chopping of the product. For the end of life of EGGER products, energy recovery as secondary fuel is assumed. Energetic utilisation takes place in a biomass power plant.
System-specific figures correspond to a European average scenario (EU28), given that the main sales market of EGGER products is focussed on Europe.
The scenario foresees a processing rate of the products after removal from the building of 100%. This assumption must be adapted accordingly after using the results in the context of the building. A constant moisture content of 6% is assumed for the end of life of the product. This value may fluctuate significantly depending on the storage of the product prior to energetic utilisation.

5. LCA: Results

The following table contains the LCA results for a declared unit of 1 m³ EGGER Design Flooring with an average weight per unit area of 6.85 kg/m² (about 6% moisture).

Important remark:
EP-freshwater: This indicator has been calculated as "kg P eq" as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml).

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² Design Flooring (6,85 kg/m²)

Core Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Global warming potential - total	[kg CO_2-Eq.]	2.52E+0	0.00E+0	2.07E-2	8.03E+0	0.00E+0	-2.40E+0
Global warming potential - fossil fuels	[kg CO_2-Eq.]	1.05E+1	0.00E+0	2.06E-2	5.45E-2	0.00E+0	-2.37E+0
Global warming potential - biogenic	[kg CO_2-Eq.]	-7.96E+0	0.00E+0	-2.44E-5	7.97E+0	0.00E+0	-2.88E-2
GWP from land use and land use change	[kg CO_2-Eq.]	1.35E-2	0.00E+0	1.67E-4	7.71E-5	0.00E+0	-4.15E-3
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	8.59E-12	0.00E+0	4.04E-18	1.30E-15	0.00E+0	-6.92E-14
Acidification potential, accumulated exceedance	[mol H^+-Eq.]	2.41E-2	0.00E+0	6.79E-5	1.13E-4	0.00E+0	4.18E-3
Eutrophication, fraction of nutrients reaching freshwater end compartment	[kg P-Eq.]	3.30E-5	0.00E+0	6.08E-8	1.46E-7	0.00E+0	-7.84E-6
Eutrophication, fraction of nutrients reaching marine end compartment	[kg N-Eq.]	1.03E-2	0.00E+0	3.12E-5	2.69E-5	0.00E+0	8.85E-4
Eutrophication, accumulated exceedance	[mol N-Eq.]	9.62E-2	0.00E+0	3.48E-4	2.83E-4	0.00E+0	1.05E-2
Formation potential of tropospheric ozone photochemical oxidants	[kg NMVOC-Eq.]	2.41E-2	0.00E+0	6.12E-5	7.31E-5	0.00E+0	3.87E-3
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	8.44E-6	0.00E+0	1.82E-9	1.60E-8	0.00E+0	-9.65E-7
Abiotic depletion potential for fossil resources	[MJ]	2.41E+2	0.00E+0	2.73E-1	9.70E-1	0.00E+0	-9.11E+1
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	[m³ world-Eq deprived]	2.03E-1	0.00E+0	1.90E-4	8.74E-3	0.00E+0	-1.22E-1

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Design Flooring (6,85 kg/m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	5.06E+1	0.00E+0	1.57E-2	8.10E+1	0.00E+0	-2.38E+1
Renewable primary energy resources as material utilization	[MJ]	8.48E+1	0.00E+0	0.00E+0	-8.05E+1	0.00E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	1.35E+2	0.00E+0	1.57E-2	4.47E-1	0.00E+0	-2.38E+1
Non-renewable primary energy as energy carrier	[MJ]	2.00E+2	0.00E+0	2.74E-1	4.14E+1	0.00E+0	-9.11E+1
Non-renewable primary energy as material utilization	[MJ]	4.15E+1	0.00E+0	0.00E+0	-4.05E+1	0.00E+0	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	2.41E+2	0.00E+0	2.74E-1	9.70E-1	0.00E+0	-9.11E+1
Use of secondary material	[kg]	1.09E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	[MJ]	1.36E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	7.13E+1
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.59E+1
Use of net fresh water	[m³]	3.13E-2	0.00E+0	1.80E-5	4.35E-4	0.00E+0	-1.52E-2

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Design Flooring (6,85 kg/m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	[kg]	3.44E-6	0.00E+0	1.44E-11	2.56E-10	0.00E+0	-1.53E-8
Non-hazardous waste disposed	[kg]	4.91E-1	0.00E+0	4.30E-5	6.87E-4	0.00E+0	2.56E-3
Radioactive waste disposed	[kg]	4.19E-3	0.00E+0	4.97E-7	1.44E-4	0.00E+0	-7.66E-3
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	6.85E+0	0.00E+0	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m² Design Flooring (6,85 kg/m²)

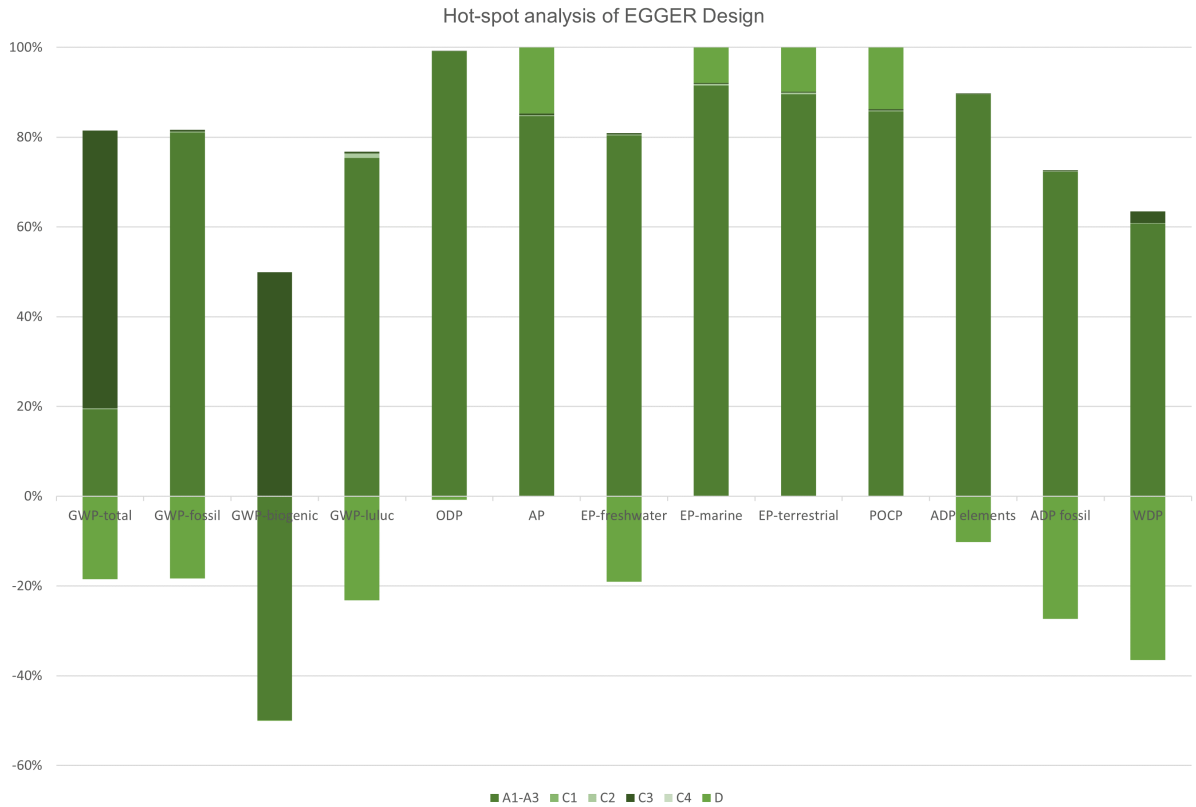
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Potential incidence of disease due to PM emissions	[Disease Incidence]	2.68E-7	0.00E+0	3.86E-10	9.56E-10	0.00E+0	-1.43E-8
Potential Human exposure efficiency relative to U235	[kBq U235-Eq.]	4.38E-1	0.00E+0	7.26E-5	2.37E-2	0.00E+0	-1.26E+0
Potential comparative toxic unit for ecosystems	[CTUe]	7.17E+1	0.00E+0	2.02E-1	4.08E-1	0.00E+0	-2.17E+1
Potential comparative toxic unit for humans - cancerogenic	[CTUh]	2.91E-8	0.00E+0	4.09E-12	1.15E-11	0.00E+0	-1.07E-10
Potential comparative toxic unit for humans - not cancerogenic	[CTUh]	1.35E-7	0.00E+0	2.40E-10	4.36E-10	0.00E+0	2.31E-8
Potential soil quality index	[-]	7.27E+2	0.00E+0	9.38E-2	3.06E-1	0.00E+0	-1.65E+1

Limitation note 1 - applies to the indicator “Potential effect from human exposure to U235”
This impact category mainly addresses the possible effect of low dose ionising radiation on human health in the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents and occupational exposure, nor does it consider the disposal of radioactive waste in underground facilities. Potential ionising radiation from soil, radon and some building materials is also not measured by this indicator.

Limitation note 2 - applies to the indicators: “Potential for Abiotic Resource Depletion for Non-Fossil Resources”, “Potential for Abiotic Resource Depletion for Fossil Fuels”, “Water Depletion Potential (User), depletion-weighted water consumption” “Potential Ecosystem Toxicity Comparison Unit”, “Potential Human Toxicity Comparison Unit - Carcinogenic Effect”, “Potential Human Toxicity Comparison Unit - Non-Carcinogenic Effect”, “Potential Soil Quality Index“.
The results of this environmental impact indicator need to be used with caution as the uncertainties in these results are high or as there is limited experience with the indicator.

6. LCA: Interpretation

The following interpretation includes a summary of the LCA results relative to a declared unit of 1 m³ average EGGER Design Flooring.



The global warming potential (GWP) in the production phase (module A1-A3) of EGGER Design Flooring is the result of the greenhouse-reducing effect due to the removal of carbon dioxide from the atmosphere during the growth of renewable raw materials and the greenhouse gas emissions from the further processing of the products or the production of the preliminary products.

In the case of material use of wood or cork in production, the storage effect of carbon dioxide from the growth process is included in the calculation in the form of biogenic carbon (negative global warming potential, see GWP-biogenic). This does not have a greenhouse effect as long as it is stored in the product. Only once the product is utilised energetically at the end of its life (Module C3), the stored carbon is released into the atmosphere as carbon dioxide

emissions and contributes to the global warming potential. The energy recovery of scrap wood was modelled CO2 neutral.

The negative values in Module D can be explained through the fact that the energy generated by the energetic utilisation of the product is able to replace the combustion of fossil fuels. In this way, more emissions of (mainly fossil) fuels are avoided than those emitted through the use of the energy stored in the wood.

In the production phase (modules A1-A3), the provision of electricity for the various processing steps, the production of the UMF glue system (urea-melamine-formaldehyde) and the upstream emissions from the production of the hot-melt adhesive and the impregnates used are the most significant factors influencing the environmental profile of the products. All versions produced were included in the average analysis of this EPD in the form of a weighted annual average. The basis for this is a high data quality at product group level in EGGER's controlling systems, which enables a targeted consideration of diverse designs.

The specific composition of the products considered depends on various factors such as the raw density of the half-formats, the thickness of the boards and the respective application. By calculating the area-weighted averages of the respective product families on the basis of the quantities actually sold and the specific consideration of the various subgroups, a good representativeness of the LCA results can be assumed.

7. Requisite evidence

7.1 Formaldehyde emissions

The formaldehyde measurement is carried out annually at the development and testing laboratory in Dresden (EPH) as part of the TÜV Proficert monitoring. The floor covering test of the EGGER Design Flooring is carried out according to *ISO 16000-3*.

Beyond the annual monitoring test, the rawboards used are continuously monitored in the internal laboratory.

Name	Value	Unit
Formaldehyde after 3 days	15	mg/m³
Formaldehyde after 7 days	< 6	mg/m³

The requirements according to *AgBB Scheme* 2018 of < 0.060 mg FO/m³ were undercut after three and seven days, thus fulfilling the requirements of the health assessment of building products.

7.2 VOC emissions

The emission measurement is carried out annually at the development and testing laboratory in Dresden (EPH) as part of the TÜV Proficert monitoring. The floor covering test of the EGGER Design Flooring is carried out according to *ISO 16000-9*.

Beyond the annual monitoring test, the rawboards used are continuously monitored in the internal laboratory.

Name	Value	Unit
CVOC (C6-C16)	262	µg/m³
SVOC (C16-C22)	<5	µg/m³
VOC without LIC	<5	µg/m³
R value (dimensionless)	0,524	
Carcinogenics*	n.d.	

n.d. - not detected

*according to EU category 1A and 1B according to *CLP Regulation* (EC) no. 1272/2008

The material fulfils the requirements of the principles for the health assessment of building products after three, seven days as well as the demolition criteria after 28 days (*AgBB Scheme* 2018*, LCI List*).

7.3 Additional information on the pre-treatment of the ingredients

No post-consumer recycling wood is used in the product. There is no reason to assume that the product is polluted by recycled ingredients from the preliminary processing.

8. References

Standards

EN 15804
EN 15804:2019-04+A2, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

EN 16511
DIN EN 16511: 16511+:2014, Loose-laid panels - Semi-rigid multilayer modular floor covering (MMF) panels with wear resistant top layer.

ISO 9001
ISO 9001:2015-09, Quality management systems — Requirements.

ISO 14001
ISO 14001:2015-09, 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.

ISO 14044
ISO 14044:2006-10, Environmental management — Life cycle assessment — Requirements and guidelines.

ISO 15686
ISO 15686:2011-05; Buildings and constructed assets - Service life planning.

ISO 16000-3
DIN ISO 16000-3:2011-10, Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air - Active sampling method.

ISO 16000-9
DIN ISO 16000-9:2008-04, Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and equipment pieces- Emission test chamber procedure.

ISO 50001
ISO 50001:2018-08, Energy management systems — Requirements with guidance for use.

Additional bibliography

AgBB Scheme
AgBB 2018, Indoor air quality requirements in buildings: Health assessment of emissions of volatile organic compounds (VVOC, VOC and SVOC) from building products, Committee on Health-related Assessment of Building Products (AgBB).

AVV
Regulation on the European Waste Catalogue (Waste Regulation) of 10 December 2001 (Federal Official Journal I p. 3379), last modified on 4 July 2020.

BBSR Table
BNB useful lives of building components (2017), Useful lives of building components for life cycle analyses according to the Sustainable Building Assessment System (BNB), 2017, BBSR Germany 2017.

CLP Regulation
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

ECHA List
List of substances of very high concern candidate for authorisation, published in accordance with Article 59(10) of the REACH Regulation.

GaBi
GaBi 10, DB 2021.2. Software-System and Database for Life Cycle Engineering. Stuttgart, Leinfelden-Echterdingen: Sphera Solutions GmbH, 1992-2021. Available in: http://documentation.gabi-software.com.

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Ökologische Betrachtung von Holzspan und Holzfaserplatten (Ecological Evaluation of Particleboard and Wood Fibreboard, dissertation, Hamburg University – revised 2007: Rüter, S. (BFH HAMBURG; Holztechnologie), Albrecht, S. (Uni Stuttgart, GaBi).

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

LCI List
LCI values list (lowest concentration of interest), AgBB - Assessment scheme for VOCs from building products; as of August 2018 Part 3: LCI values.

PCR Part A
Product category rules for building-related products and services. PART A: Calculation rules for the ecological balancing and requirements towards the project report according to EN 15804+A2:2019. Version 1.0. Berlin: Institut Bauen und Umwelt e.V. (eds.),
2020.

PCR: Floor coverings
Product category rules for building-related products and services. PART B: Requirements of EPD floor coverings. Version 1.2. Berlin: Institut Bauen und Umwelt e.V., 02.2018.

Rüter & Diederichs 2012

Life cycle assessment basic data for building products made of wood. Working report from the Institute of Wood Technology and Wood Biology No. 2012/1. Hamburg: Johann Heinrich von Thünen-Institut.

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