ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	Fritz EGGER GmbH & Co. OG Holzwerkstoffe
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
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Issue date	27.03.2019
Valid to	26.03.2024

Egger Laminate Flooring

Fritz EGGER GmbH & Co. OG Holzwerkstoffe

www.ibu-epd.com / https://epd-online.com

1. General Information

Fritz EGGER GmbH & Co. OG
Holzwerkstoffe

Programme holder
IBU - Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-EGG-20180194-IBC1-DE

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

Issue date
27.03.2019

Valid to
26.03.2024

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

Dr. Alexander Röder
(Managing Director IBU)

EGGER Laminate Flooring

Owner of the declaration
FRITZ EGGER GmbH & Co. OG
Holzwerkstoffe
Weiberndorf 20
6380 St. Johann in Tirol
Österreich

Declared product / declared unit
1 m² Laminate Flooring (6.93 kg/m²)

Scope:
This document applies to the average Laminate 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.

Verification

The standard /EN 15804/ serves as the core PCR
Independent verification of the declaration and data according to /ISO 14025:2010/
☐ internally ☒ externally

Dr. Frank Werner
(Independent verifier appointed by SVR)

2. Product

2.1 Product description / Product definition

Egger Laminate Flooring marketed under the dealer's brands Egger Pro (EPL), Egger Home (EHL) and Egger Basic (EBL) are hard floor elements with a highly abrasion-resistant surface layer, which are installed using a click connection glueless and floating on the floor. Laminate flooring is categorised in various application classes – a description of the classes is found in the requirements of /DIN EN 13329/.

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 in accordance with /EN 13329/ Laminate Flooring and the CE mark. Relevant national regulations apply to use. A declaration of performance is available under /DOP/ FL001 and /DOP/ FL004 and can be downloaded from www.egger.com.

The production conditions in Wismar are representative for the other plants. They correspond to the technologies used in all locations of the EGGER Flooring Division.

2.2 Application

Laminate flooring is used for interior applications in new construction or renovations, with floating installation on screed or other sub floors such as wood, tiles or PVC. Installation must be performed according to the installation instructions and state-of-the-art technology.

Download installation instructions, e-Learning modules, and installation videos from www.egger.com

2.3 Technical Data

Structural engineering data

Name	Value	Unit
Product thickness	6 - 12	mm
Grammage	6400 - 10803	g/m²
Abrasion Class	31 - 33	-
Type of manufacture	DPL	-
Length of the surface layer	1291 - 2050	mm
Width of the surface layer	135 - 327	mm
Density	900 - 920	kg/m³
Layer thickness (Top layer)	-	mm

The performance values of the product according to the declaration of performance concerning its key features in line with /EN 13329/, Laminate Flooring. Download see “Declaration of Performance DPL-AS Flooring DoP FL001” and
“Declaration of Performance DPL Flooring DoP FL004” from www.egger.com

Voluntary data for the product: See “Technical data sheets” at www.egger.com (not part of the CE certification).

2.4 Delivery status

Egger Laminate Flooring is available in the versions described below:

column 1: General requirements (EN13329, schedule 1)

	test method					
format		Classic	Kingsize	Large	Medium	Long
class of use		31, 32, 33	32, 33	32	32, 33	32
product structure		DPL	DPL	DPL	DPL	DPL
thickness of the element	EN13329	6, 7, 8,10, 12 mm	8 mm	8 mm	8, 10 mm	10 mm
thickness of silenzio® special cellulose		2.0 ± 0.2 mm	-	-	-	-
length of the surface Just clic		1,292 ± 0.5 mm	-	-	-	
length of the surface Unifit		1,291 ± 0.5 mm	1,291 ± 0.5 mm	1,291 ± 0.5 mm	1,291 ± 0.5 mm	2,050 ± 0.3 mm
width of the surface Just clic		192 ± 0.1 mm	-	-	-	-
width of the surface Unifit		193 ± 0.5 mm	327 ± 0.5 mm	246 ± 0.5 mm	135 ± 0.5 mm	245 ± 0.1 mm
light fastness						
Blue wool scale B02	EN20105	≥ level 6	≥ level 6	≥ level 6	≥ level 6	≥ level 6
grey wool scale A02	EN20105	≥ level 4	≥ level 4	≥ level 4	≥ level 4	≥ level 4
static indentation with a straight steel cylinder ø11,30 mm (constant pressure)	EN433	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
surface soundness	EN13329	≤ 1.25 N/mm³	≤ 1.25 N/mm³	≤ 1.25 N/mm³	≤ 1.25 N/mm³	≤ 1.25 N/mm³

2.5 Base materials / Ancillary materials

Product composition when ready for delivery

- 6 - 7 % surface made of impregnated paper (paper impregnated with MF and UF resins, see below)
- 92 - 94 % coreboard made of HDF (high-density fibreboard, see below)
- <1 % bottom side made of balancer paper
- <0.1 % other material (thermoplastic glue, joint varnish, inlay)

Composition of semi-finished products

Impregnated paper:

- 2 - 15 % corundum
- 35 - 58 % paper (decorative and overlay paper)
- 40 - 60 % impregnation resin (melamine formaldehyde and urea formaldehyde resin)

HDF board:

- 80 - 85 % wood fibre
- 10 - 15 % UMF adhesive system (urea-melamine-formaldehyde
- 4 - 6 % water (wood moisture)
- <1 % wax (paraffin emulsion)
- <1 % hardener (ammonium sulphate)

Data concerning the types of wood used and the wood origins

Download of current manufacturer’s declaration of wood origins: www.egger.com/environment

Chemicals legal information

1) The product contains substances of the /candidate list (date 27.06.2018)/ above 0.1 weight %:

- no

2) The product contains additional CMR substances of the category 1A or 1B that are not on the candidate list, above 0.1 weight %:

- 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/environment

2.6 Manufacture

Structure of the production process:

Production of HDF rawboards:

1. Peeling logs
2. Chipping the wood to produce chips
3. Cooking the chips
4. Defibration in the refiner
5. Application of resin to the fibres
6. Drying the fibres to approximately 9 – 10 % residual moisture
7. After resin application and drying, spreading the fibres onto a forming belt
8. Compression of the fibre mat in a continuously operating hot press
9. Cutting and trimming the fibre strand into rawboard formats
10. Cooling the rawboards in star coolers
11. Piling into large stacks
12. Sanding the upper and lower sides after the climatisation phase.

Production of the impregnated papers:

1. Applying impregnation resin (MF/UF) to the paper in the line
2. Drying the impregnated paper in heated dryers

3. Formatting the endless paper by means of a cross-cutter, followed by stacking on pallets.

Production of the laminated half formats:

1. Laying the impregnated papers onto the upper and lower sides of the HDF board
2. Pressing the impregnated papers with the HDF board in the Conti or short-cycle press, which is fitted with pressing strips and sheets
3. Sorting by quality and stacking, including climatisation.

Production of laminate flooring boards:

1. Cutting the laminated half formats into raw floor boards using a circular saw with multiple blades
2. Profiling the long and short sides of the raw floor board formats
3. Application of underlay to dampen impact sound to the reverse side if applicable / coating the bevels if applicable
4. Quality control and packaging in cartons, stacking and wrapping in film.

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 the /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

Trimming, adapting and fitting the individual panels can be performed with all conventional tools, such as a jigsaw or 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 Laminate 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 regulations 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 Laminate Flooring boards consists of cardboard and PE film that can be included in differentiated recycling. Packages made of several cardboards 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

During pressing as part of the manufacturing process, the bonding agent and the saturating resin are cross-linked in three dimensions by an irreversible polycondensation reaction with the addition of heat. The bonding agents and resins are chemically stable and mechanically bonded to the wood under normal conditions.

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 no known health hazards or effects to be expected from normal use, i.e. in accordance with the intended uses, of EGGER Laminate 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 reference use duration of the declared product is of 5 years.
The period of use for private residential applications, depending on the product group and according to our guarantee terms, is between 7 and 25 years.
In commercial applications, the period of use is generally 5 years.
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.egger.com

2.13 Extraordinary effects

Fire

Fire

Name	Value
Building material class	Cfl
Burning droplets	D0
Smoke gas development	s1

Water
Laminate flooring is not resistant to constant water exposure. Defective areas are easy to replace locally. In the case of flooding, substances within the wood may be washed out in low quantities.

Mechanical destruction
The fracture pattern of laminate flooring shows relatively brittle behaviour, with the possibility of sharp edges where the boards break (risk of injury).
Abrasion and impact resistance classification: See Section 2.1. Product description

2.14 Re-use phase

Reuse: With careful dismantling, laminate flooring may be reused for the same application at the end of the usage phase. The requirement is for the flooring to have been installed floating and that the profiles are not damaged during dismantling and transport.

2.15 Disposal

Waste code: 170201/030105 lt. /AVV/
Material utilisation: Material utilisation is not feasible according to current knowledge.
Energy utilisation: 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 stipulations 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

www.egger.com

3. LCA: Calculation rules

3.1 Declared Unit

This environmental product declaration is based on a declared unit of 1 m2 EGGER Laminate Flooring with an average surface weight of 6.93 kg/m² and a delivery moisture of approximately 7 %.

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Conversion factor to 1 kg	1.443	-
Areal reference	6.93	kg/m²

EGGER Laminate Flooring is made at the Wismar (DE) plant. The surface weight of the laminate flooring was calculated 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 based on annual production. Given that the quantities of melamine and urea saturating resin depends on the product, the quantities used for the calculation reflect the annual average.

3.2 System boundary

The LCA of the average EGGER Laminate Flooring includes a *cradle-to-gate* consideration of environmental impact with options. The following life cycle phases are taken into account in the analysis:

Module A1-A3 | Product stage
The product stage includes the upstream burdens of raw material procurement (roundwood, production of the glue system, additives, etc.), as well as related transport to the production plant in Wismar. Within the plant boundaries, the HDF board production, the preparation of the adhesive system used, and the processing of impregnation resins, the production of impregnation, the lamination, as well as the finishing and packaging are considered. The provision of thermal and electric energy takes place in the Wismar plant via its own biomass power plant. Both internal wood waste and scrap wood sourced externally are used there. 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 C3 | Waste processing
Module C3 declares the biogenic carbon dioxide emissions from energetic treatment at the end of the product life. Furthermore, chopping after product disassembly is also considered.

Module D | Credits and charges outside the System boundaries
The energetic treatment 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 case of a lack of representative background data 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.

3.4 Cut-off criteria

All inputs and outputs for which data are available are included in the LCA model.
Missing data were approximated when suitable data were available using conservative assumptions for average data or generic data and are documented accordingly. Only data with a contribution of less than 1 % were cut-off. Neglecting these data can be justified by the lack of background data sets and the limited effect to be expected.
The total amount of the neglected input flows is not higher than 5 % of the energy and weight 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 /GaBi 8/ and, on the other hand, from recognised literature sources /Rüter & Diederichs, 2012/.

3.6 Data quality

The data is collected via data collection sheets especially adapted by EGGER. Questions were answered through an iterative process in writing via e-mail, phone, or in person. Given the discussion concerning a representation of material and energy flows 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/.
Within the framework of this LCA, emissions from drying and pressing were assessed on the basis of available measurement data.
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 seven years.

3.7 Period under review

As part of the collection of the foreground data, the life cycle of EGGER Laminate Flooring was recorded for the production year 2017. The data are based on the annual volumes used and produced.

3.8 Allocation

The carbon dioxide 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 forest supply chain is based on the publication of /Hasch 2002/ and its update by /Rüter & Albrecht 2007/.

For HDF production, sawing by-products were also used in addition to roundwood. A price allocation according to /Rüter & Diederichs 2012/ was used to calculate the environmental impact of these by-products from the sawing system. The thermal and electrical energy generated in the combined heat and power systems is allocated according to exergy. For the bark used as by-product, no allocation was applied given its low contribution to operating income.

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.

The Gabi background database was used to calculate the LCA.

4. LCA: Scenarios and additional technical information

The *end-of-life* scenario applied in this LCA study is based on the following assumptions:

Integration into building (A5)

The end-of-life of packaging materials is not declared in module A5.

Name	Value	Unit
Product packaging for waste processing on the construction site (cardboard)	0.0986	kg
Product packaging for waste processing on the construction site (plastic)	0.0086	kg
Product packaging for waste processing on the construction site (wooden pallet)	0.0065	kg

Utilisation (B1) see chapter 2.12 Utilisation

Reference utilisation duration

Name	Value	Unit
Reference service life	5	a
Declared product properties (at the gate) and finishes	according to EN13329 und CE 14041, see Technical Data Sheet - www.egger.com	-
Design application parameters (if instructed by the manufacturer), including the references to the appropriate practices and application codes	see installation instructions, warranty conditions -	-
Indoor environment (for indoor applications), e.g. temperature, moisture, chemical exposure	see installation instructions, warranty conditions - www.egger.com	-
Usage conditions, e.g. frequency of use, mechanical exposure	according to the use class, see technical data sheet - www.egger.com	-
Maintenance e.g. required frequency, type and quality and replacement of components	according to warranty, care instructions - www.egger.com	-

End of life cycle (C1-C4)

Name	Value	Unit
Energy recovery [Energy recovery [balance moisture 12 %]	7.32	kg

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

Name	Value	Unit
Net flow in module D [balance moisture 12 %]	5.42	kg
Moisture in the case of therm. utilisation	12	%
Processing rate	100	%
Efficiency of the system	68	%

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. Energy utilisation as secondary fuel is assumed for the EGGER Laminate Flooring end of life. Energetic treatment takes place in a biomass power plant. System-specific figures correspond to a European average scenario (EU28), given that the sales market of EGGER flooring is focussed on Europe. The scenario foresees a processing rate of the Laminate Flooring after removal from the building of 100%. This assumption must be adapted accordingly after using the results in the context of the building. A balance moisture of 12% must be assumed at the product's end of life. This value may fluctuate significantly depending on the storage of the product prior to energetic treatment.

5. LCA: Results

The following table contains the LCA results for a declared unit of 1 m2 average EGGER Laminate Flooring with a surface weight of 6.93 kg/m² (approximately 7 % moisture).

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

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	MND	MND	X	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² Laminat-Fußboden (6,93 kg/m²)

Parameter	Unit	A1-A3	C3	D
Global warming potential	[kg CO_2-Eq.]	-6.01E+0	1.02E+1	-4.86E+0
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	7.73E-12	2.70E-13	-1.28E-11
Acidification potential of land and water	[kg SO_2-Eq.]	8.89E-3	1.58E-4	-3.42E-4
Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	2.62E-3	1.57E-5	2.14E-5
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	1.41E-3	1.08E-5	9.65E-4
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	8.29E-7	3.09E-8	-1.55E-6
Abiotic depletion potential for fossil resources	[MJ]	8.87E+1	6.48E-1	-6.39E+1

RESULTS OF THE LCA - RESOURCE USE: 1 m² Laminat-Fußboden (6,93 kg/m²)

Parameter	Unit	A1-A3	C3	D
Renewable primary energy as energy carrier	[MJ]	8.08E+1	0.00E+0	-1.99E+1
Renewable primary energy resources as material utilization	[MJ]	1.03E+2	-1.03E+2	0.00E+0
Total use of renewable primary energy resources	[MJ]	1.84E+2	4.17E-1	-1.99E+1
Non-renewable primary energy as energy carrier	[MJ]	7.37E+1	0.00E+0	-8.59E+1
Non-renewable primary energy as material utilization	[MJ]	1.77E+1	-1.77E+1	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	9.14E+1	1.11E+0	-8.59E+1
Use of secondary material	[kg]	4.00E-2	0.00E+0	0.00E+0
Use of renewable secondary fuels	[MJ]	3.15E+1	0.00E+0	1.01E+2
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	1.74E+1
Use of net fresh water	[m³]	9.95E-3	5.68E-4	-2.01E-2

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² Laminat-Fußboden (6,93 kg/m²)

Parameter	Unit	A1-A3	C3	D
Hazardous waste disposed	[kg]	1.77E-5	5.21E-10	-3.10E-8
Non-hazardous waste disposed	[kg]	2.72E-2	7.82E-4	2.00E-3
Radioactive waste disposed	[kg]	1.05E-3	1.84E-4	-8.74E-3
Components for re-use	[kg]	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	[kg]	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	6.93E+0	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	0.00E+0

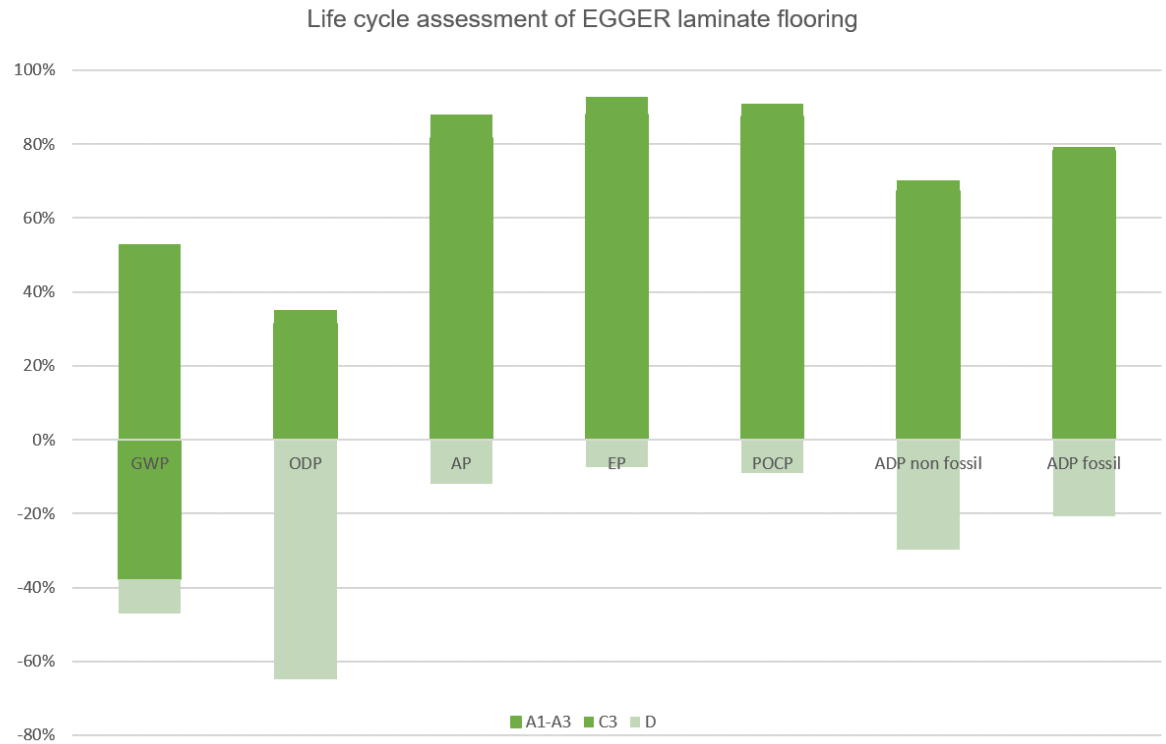
6. LCA: Interpretation

The following interpretation includes a summary of the LCA results relative to a functional unit of 1m2 average laminate flooring.

The global warming potential (GWP) during the production phase **(Module A1-A3)** of the EGGER Laminate Flooring results in total in a negative value. This is due to the use of wood as raw material in the production. During tree growth, the wood stores carbon dioxide as biogenic carbon (negative greenhouse potential) and does therefore not contribute to global warming as long as it is stored in the product. The stored carbon leaves the product system during the energetic treatment at the end of the product life cycle **(Module C3)** as a material-inherent characteristic of the secondary fuel.

The energy utilisation 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 treatment of the product potentially replaces 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. The environmental impacts **(AP, EP, POCP)** in Module D mainly result from emissions from the biomass combustion.



The global warming potential **(GWP)** during the production phase (Module A1-A3) of the EGGER Laminate Flooring mainly results from the HDF board production as well as the impregnated papers used for coating. Particularly the upstream environmental impact of the raw materials used for the adhesive system of the HDF boards represents the main driver. The production of impregnated papers is also responsible for a large part of the environmental impact of the laminate flooring. This applies analogously to the use of fossil resources **(ADP fossil)**.

The energy provision at the Wismar plant is based on biomass. Due to the carbon stored in the wood, the combustion of the biomass for heat and power production is considered carbon-neutral. In this context, it must be taken into account that a carbon-neutral assessment of the energy utilisation of the raw material is only valid when the wood stems from sustainable forestry.

As such, the energy provision in the EGGER production has a comparatively low effect on greenhouse gas emissions.

The main drivers of acidification potential **(AP)** and eutrophication potential **(EP)** are also marked by the production of the adhesive system used for the HDF board. Moreover, direct process emissions on site, which result from the energetic treatment of wooden waste for electrical and thermal energy, play an important role. Air emissions, such as nitrogen oxides and sulphur dioxide are decisive in this regard. The eutrophication potential **(EP)** results are also considerably dominated by the production of melamine impregnation resin.

The potential formation of tropospheric ozone photochemical oxidants **(POCP)** is mainly influenced by the direct emissions from the production of the adhesive system and the HDF boards. Furthermore, emissions from power and heat production in the biomass boilers and the production of impregnated papers also play a role.

The results for the potential degradation of the stratospheric ozone layer (**ODP**) indicate a significant contribution of the additive used for the impregnation as well as the production of the decorative papers. Following the prohibition of ozone-depleting substances according to the Montreal Protocol, there was a fast decrease in their use. Given the year of the data set (2011) used to represent the additive, the relevance of the result is limited.

When it comes to the abiotic depletion potential for non-fossil resources(**ADP elementary**), the supply chain of the urea and the melamine used represents the main driver.

The use of renewable primary energy (**PERT**) mainly results from the material utilisation of the biomass in the product, as well as the use of biomass for the provision of electric as well as thermal energy in the plant's own combined heat and power plants.

The use of non-renewable primary energy (**PENRT**) mainly refers to the fossil fuels utilised in the production of adhesive components and resins.

When comparing the previous EPD for EGGER Laminate Flooring with this updated version, there is a decrease in the environmental impact of almost all categories considered. The factor 100 difference for the potential degradation of the ozone layer (**ODP**) is particularly high. This is due to the update of background data and the resulting decrease of potential impact over the years. In the case of **POCP**, the decrease is explained by the lower process emission in production.

The adhesive production also has a lower comparative impact in the update when it comes to acidification (**AP**) and eutrophication (**EP**).

The primary energy demand (**PE**) as well as the abiotic depletion potential for fossil resources (**ADP fossil**) are comparatively constant.

7. Requisite evidence

7.1 Formaldehyde
Testing institute: Fraunhofer Institut für Holzforschung Wilhelm-Klauditz-Institut WKI
Test report: /MAIC-2018-1512/ of 11.4.2018
Test object: Emission assessment and evaluation of a floor covering sample according to the AgBB/DIBt scheme and the French “ARRÊTÉ relatif à l'étiquetage des produits de constructionou de revêtement de mur ou de sol et des peintures et vernis sur leurs émissions de polluants volatils' (DEVL1104875A)”
Sample: Laminate Flooring DPL NK 33 12 mm
Test method: /DIN EN ISO 16000/ part 3, 6, 9 and 11
Result:
DIBt parameter:
<0.060 mg formaldehyde / m3 after 3 days
<0.060 mg formaldehyde / m3 after 7 days
The investigated material meets the requirements of the principles for the health assessment of building products after three days, as well as the demolition criteria after seven days (/AgBB scheme 2015/, /NIK list 2015/)

7.2 Additional information on formaldehyde monitoring:
In addition to the punctual testing of VOC and formaldehyde emissions from the flooring, the HDF rawboard use is monitored continuously according to the formaldehyde emissions class E1. The current E1 confirmation of our monitoring institute is available if needed via the dealer or the sales contact.

7.3 Additional information regarding the preliminary treatment of ingredients
No post-consumer recycling wood is used in the product. There is no reason to assume that the product is contaminated with treatment residues from recycled ingredients. Sample tests performed in the past on PCP/Lindan, EOX, and heavy metals (Eluate analysis) confirm this.

7.4 VOC
Testing institute: Fraunhofer Institut für Holzforschung Wilhelm-Klauditz-Institut WKI
Test report: /MAIC-2018-1512/ of 11.4.2018
Test object: Emission assessment and evaluation of a floor covering sample according to the AgBB/DIBt scheme and the French “ARRÊTÉ relatif à l'étiquetage des produits de constructionou de revêtement de mur ou de sol et des peintures et vernis sur leurs émissions de polluants volatils' (DEVL1104875A)”
Sample: Laminate Flooring DPL NK 33 12mm
Method: /DIN EN ISO 16000/ part 3, 6, 9 and 11
Result:

AgBB results overview after 7 days

Name	Value	Unit
TVOC (C6-C16)	41	µg/m³
Summe SVOC (C16-C22)	0	µg/m³
R (dimensionless)	0.116	
VOC without LCI	0	µg/m³
Carcinogenics	0	µg/m³

Carcinogen substances could not be identified in the chamber air with a detection threshold of 1ug/m3. The investigated material meets the requirements of the principles for the health assessment of construction products after three days, as well as the abort criteria after seven days (AgBB scheme 2015, NIK list 2015).

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