

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

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)
Declaration number	EPD-EGG-20210050-IBC1-EN
Issue date	21.05.2021
Valid to	14.04.2026

EGGER Laminate Flammex
Fritz EGGER GmbH & Co. OG Holzwerkstoffe

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



1. General Information

Fritz EGGER GmbH & Co. OG

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number

EPD-EGG-20210050-IBC1-EN

This declaration is based on the product category rules:

Laminates, 12.2018
(PCR checked and approved by the SVR)

Issue date

21.05.2021

Valid to

14.04.2026



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



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

EGGER Laminate Flammex

Owner of the declaration

Fritz EGGER GmbH & Co. OG Holzwerkstoffe
Weiberndorf 20
6380 St. Johann in Tirol
Austria

Declared product / declared unit

One square meter of EGGER Laminate Flammex with an average grammage of 1044 g/m².

Scope:

This document refers to the laminate produced by EGGER Kunststoffe GmbH & Co.KG (a subsidiary of Fritz EGGER GmbH & Co. OG) in the Gifhorn plant (Germany). It is an average EGGER Laminate Flammex.

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 14025:2010*

☐ internally ☒ externally



Juliane Franze
(Independent verifier)

2. Product

2.1 Product description/Product definition

EGGER Laminate Flammex is a versatile decorative material which is processed in combination with classic wood-based materials such as MDF (medium density fibreboard), HDF (high density fibreboard) and chipboard or other core materials to form so-called laminate composite elements.

Laminates consist of paper webs, impregnated with heat-setting resins. They have a multiple layer structure, which consists of a decorative melamine resin impregnated paper and one or more phenolic resin impregnated kraft core paper. These papers are then pressed together under high pressure and heat.

The laminate quality Flammex can be classified according to the *ÖNORM EN 438-1* as laminate type *F* – flame-retardant. In case of fire, the Laminate Flammex meets the special requirements of building materials class B1 per *DIN 4102-1* and the French fire behaviour category M1 per *NF P 92-501*. The laminate structure, the resin and paper quality, the surface texture, the use of special overlays and the press parameters during production determine the laminate

quality and therefore the subsequent use or area of application.

The declared product is an area-weighted average of the various EGGER products in this product family.

The respective national regulations at the place of use apply to the use of the product, in Germany for example the building regulations of the federal states, and the technical directives based on these regulations.

2.2 Application

Laminates are non load-bearing and only serve as lamination materials. EGGER laminates are only suitable for indoor applications. The laminate quality Flammex is used primarily for laminating doors, partition walls, and where flame-retardant elements are required.

2.3 Technical Data

EGGER Laminate Flammex is tested according to the testing procedure described in *EN 438-2* and complies with the requirements stipulated in *EN 438-3*. The technical data sheet "EGGER Laminate Flammex" contains detailed information concerning quality

Laminate Flammex HGF

Name	Value	Unit
Density	≥ 1350	kg/m ³
Resistance to abrasion * according to EN 438-2	≥ 150	U
Resistance to scratches (smooth surfaces) according to EN 438-2	2	Rating
Impact resistance (small sphere) according to EN 438-2	≥ 20	Newton
Lightfastness according to EN 438-2	4 - 5	Grey scale
Formaldehyde emissions according to EN 717-1	Below the detection limit	µg/m ³
Dimensional deviation Length and width tolerance according to EN 438-2	+10 / -0	mm
Dimensional deviation Thickness tolerance according to EN 438-2	± 0.10	mm

* Initial abrasion point IP

Performance values of the product in relation to its characteristics according to the applicable technical provision (no CE marking).

2.4 Delivery status

EGGER Laminates Flammex are delivered as dimensioned or rolled goods depending on customer requirements and the laminate thickness.

Delivery format - sheet:

- Min. length: 800 mm
- Maximum length: 5,600 mm (220.47")
- Maximum width: 1,310 mm
- Range of nominal thicknesses:
0.60 and 0.80 mm

Delivery format - roll:

- Max. roll length: 400 m
- Max. roll width: 1,310 mm
- Nominal thickness: 0.60 mm

This Environmental Product Declaration is valid for the nominal thicknesses 0.60 and 0.80 mm.

2.5 Base materials/Ancillary materials

Name	Value	Unit
Paper content	62	%
Resin content	37	%
Additive	1	%

EGGER Laminates Flammex consist of:

- decor paper (50 - 25 g/m²)
- soda kraft paper (60 - 150 g/m²)
- backing paper (50 - 100 g/m²)
- overlay paper (20 - 25 g/m²)
- melamine-formaldehyde resin
- phenol-formaldehyde resin

The product contains substances on the *ECHA List* of substances of very high concern - SVHC (date 25.06.2020) above 0.1% by weight: no.

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.

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.

2.6 Manufacture

EGGER laminates are only produced using a continuous process. Dual-belt presses allow the continuous production of various laminate thicknesses and grades. This grade or type of laminate production is generally known as CPL (Continuous Pressed Laminates). Depending on the pressure during production, EGGER laminates are produced in accordance with or based on *EN 438-3*.

The laminates consist of layers of cellulose fibre webs (usually paper) that are impregnated with curable resins. The one-sided outer layer(s) with decorative colours or patterns is (are) impregnated with melamine-based resins. The core layers are impregnated with phenolic resins. Applying heat and pressure causes the resins to flow and subsequently cure. Cross-linking of the resins, reinforced by the cellulose fibres of the papers, results in a very dense material with a sealed surface.

2.7 Environment and health during manufacturing

EGGER Gifhorn is certified according to *ISO 45001* "Management systems for safety and health at work". The standard *ISO 45001* imposes requirements on the company in order to align the processes for sustainable improvement in occupational health and safety.

The manufacturing plant is certified in line with the international environmental standard *ISO 14001*. The management system includes the continuous improvement of the ecobalance, the continuous reduction of environmental crises, as well as the implementation of environmental protection measures. Due to the manufacturing conditions no measures for health protection are necessary over and above the legislative and other regulations. Values are well below the OEL (occupational exposure limits) according to the Ordinance on Hazardous Substances (Germany) in all areas of the plant.

Air: The exhaust air that is created in relation to the product is purified according to the legislative regulations. Emissions are significantly below the *TG Air* (Technical Guideline for Keeping Air Clean).

Water/soil: There is no impact on water or soil. Waste water from the production process is cleaned internally and fed into the sewer system.

Noise protection measurements showed that all the values determined within and outside of the production plant were far below the minimum requirements applicable for Germany. Sections of the plant where high noise levels are produced have been shielded by suitable construction measures.

2.8 Product processing/Installation

The product is used for the lamination of classical wood-based materials, such as MDF (medium density fibreboard), HDF (high density fibreboard) and chipboard. It may be processed with conventional urea-formaldehyde resin glue and dispersion glue in presses (flat, short cycle and dual-belt presses) using the hot or cold process.

Conventional wood processing machines such as a panel saw, table saw, circular saw or jigsaw may be used to cut laminates to size. Panel saws or bench circular saws are generally used to cut the worktops to size.

In principle, all persons transporting and / or handling laminates should wear personal protective equipment such as gloves, safety footwear and suitable work clothing.

Health risk due to dust generation

Dust may be generated during processing. There is a risk sensitising the skin and respiratory tract. Depending on the processing and the particle size, especially in the case of inhalation of dust, there may be further health hazards. The generation of dust must be taken into account when assessing the risks at the workplace. Particularly in the case of machining processes (e.g. sawing, planning, milling), effective extraction must be used in accordance with the applicable occupational health and safety regulations. Suitable breathing protection has to be worn if no adequate extraction system is in place.

Fire and explosion hazard

Dust generated during processing can lead to fire and explosion hazards. Applicable safety and fire protection regulations must be observed.

Extensive information and processing recommendations are available under www.egger.com/laminate.

2.9 Packaging

The laminates are packaged and delivered as formatted or rolled goods on non-returnable or returnable wood pallets. Other packaging materials include: Wood-based materials, PE film, and PET packaging strips. Wood-based materials and plastic components may be reused thermally after use.

2.10 Condition of use

No changes in the basic composition are to be expected during the period of use.

2.11 Environment and health during use

Environmental protection: When the described products are used properly in accordance with the area of application, there is no risk of water, air or ground contamination according to the current state of knowledge.

Health protection: No impairment of or damage to health is to be expected when laminates are used normally and in accordance with the intended purpose. With the exception of minor amounts of formaldehyde in quantities that are harmless to health, no emissions of hazardous substances can be detected

2.12 Reference service life

The service life of the laminate Flammex depends on the area of application in the specific project, taking into account the use class according to *EN 1995-1-1*, *DIN 68800-2* and appropriate maintenance.

EGGER Laminates Flammex are used as composite elements in interior design (see 2.3). For general fixtures/furnishing systems, the *BBSR Table* "Useful

lives of components for life cycle analyses according to the BNB" gives a range of 10 to 40 years (KG 371-378). These useful lives are based on empirical values and are used to develop forecast scenarios for further LCAs. No binding statements (warranties, construction contracts, expert opinions, etc.) can be derived from the data.

2.13 Extraordinary effects

Fire

The laminate quality Flammex can be classified according to the standard *EN 438-1* as laminate type F – flame-retardant. In case of fire, the Laminate Flammex meets the special requirements of building materials class B1 per *DIN 4102-1* and the French fire behaviour category M1 per *NF P 92-501*. The laminate is considered building material and is used for laminated composite boards. Flame-retardant glues, such as resorcinol resin glues, must be used for gluing.

Fire protection

Name	Value
Building material class DIN 4102-1	B1
Building material class NF P 92-501	M1

EGGER laminate bonded board Flammex CE is flame-retardant and classified as B- S1, d0 according to *EN 13501-1*.

Water

No substances of content that could be hazardous to water are washed out. All leachable substances are significantly below legal thresholds. Laminates are not resistant against continuous exposure to water (standing water).

Mechanical destruction

No hazardous substances are released during mechanical destruction. The fracture pattern of laminates indicates brittle characteristics. The fracture edges are sharp so that wearing protective gloves is essential.

2.14 Re-use phase

Since laminates are usually used as composite materials, reuse is not possible as a rule. Reclamation for energy generation (in approved facilities): Due to the high heating value of approximately 14-15 MJ/kg, reclamation for the generation of process energy and electricity (combined heat and power plants) is possible.

2.15 Disposal

Energetic recovery or disposal (waste code according to *EAK*: 17 02 01/03).

Packaging: Transport packaging can be collected separately and recycled appropriately. In some cases, external disposal can be arranged with the manufacturer.

2.16 Further information

Extensive information and processing recommendations are available under www.egger.com/laminate.

3. LCA: Calculation rules

3.1 Declared Unit

This environmental product declaration refers to a declared unit of one square meter of EGGER Laminate Flammex produced with an average grammage of 1044 g/m².

Declared unit

Name	Value	Unit
Declared unit	1	m ²
Grammage	1.044	kg/m ²

EGGER Laminate Flammex is made at the Gifhorn (DE) plant. The calculation of the declared density of the laminate was carried out on an surface-weighted basis.

3.2 System boundary

The LCA of the average EGGER Laminate Flammex 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 production stage includes the expenses for the supply of raw materials (cellulose pulp webs - usually paper such as kraft, decorative and parchment paper, production of the basic chemicals used as well as components for phenolic and melamine resin impregnation, auxiliary materials, etc.) as well as the associated transports related to the production site in Gifhorn. Within the plant boundaries, the impregnation of the papers with melamine and phenolic resins, the pressing process in the double belt presses, formatting and reverse side sanding including packaging are taken into account. The electrical energy used is obtained from the German power grid. Thermal energy is provided by natural gas as an energy source.

Module C1 | Dismantling / Demolition

Manual dismantling was assumed for the laminates. 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 scenario used declares the energy recovery of the laminates. Corresponding environmental impacts are considered in Module C4.

Module C4 | Disposal

Module C4 declares the emissions from the energy recovery of the laminates after removal in a waste incineration plant as a fictitious scenario. In reality, the product is always removed together with other wood-based materials, for example, and recycled accordingly.

Module D | Credits and charges beyond the limits of the product system

In Module D, the substitution potentials for heat and electricity from energy recovery of the product in Module C4 are described in the form of 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 were populated when a data basis was 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. Expenses for machinery and infrastructure were not taken into account.

3.5 Background data

Secondary data are included to represent the background system in the LCA model. These are taken from the *GaBi* Database 2020, SP40, developed by thinkstep AG.

3.6 Data quality

The quality of the foreground data is assessed as very good due to the comprehensive product-specific evaluation options from the controlling systems of EGGER.

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 person. 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 was recorded for the production year 2018. The data are based on the annual volumes used and produced.

3.8 Allocation

The mapping of upstream processes in the supply chain is largely done by using *GaBi* background data sets.

In addition to the laminates under consideration, other products are also manufactured at the Gifhorn site. The delimitation of the material flows between the different laminates is based on the evaluations from EGGER's controlling system. The associated expenses can be easily distinguished from the production of the other products. The energy input, laminate waste, packaging and waste water are

recorded under a common item. The allocation to the individual products is based on the square metres produced.

Low-quality residual materials are recycled for energy recovery. The resulting electrical and thermal energy is charged within module A1-A3. The energy released during waste incineration can be considered equivalent to the required thermal and electrical process energy. This also applies to the electrical and thermal energy from the energy recovery of the products at the end of their life (module C4 and D, respectively).

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 life cycle assessment.

4. LCA: Scenarios and additional technical information

Characteristic product properties

Information on biogenic Carbon

Information describing the biogenic carbon content at the plant gate

Name	Value	Unit
Biogenic carbon content (in the product)	0.268	kg C
Stored carbon dioxide (in the product)	0.98	kg C

Since the end-of-life of the product packaging is not declared in module A5, its carbon uptake is not included in modules A1-A3.

The following technical information represents the basis for the declared module or can be used for the development of specific scenarios in the context of a building evaluation if modules are not declared (MND).

Biogenic carbon in the product

The biogenic carbon content quantifies the amount of biogenic carbon in the declared building product.

Name	Value	Unit
Biogenic carbon content (in the product)	0.268	kg/m ²
Stored carbon dioxide (in the product)	0.98	kg/m ²

Since the end-of-life of the product packaging is not declared in module A5, its carbon uptake is not included in modules A1-A3.

Integration into building (A5)

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

Name	Value	Unit
Packaging (PE)	0.000962	kg/m ²
Packing (pallet)	0.0668	kg/m ²

Maintenance (B2)

Name	Value	Unit
Information on maintenance	-	-
Maintenance cycle	-	Number/R SL
Water consumption	-	m ³
Auxiliary	-	kg
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Material loss	-	kg

Repair (B3)

Name	Value	Unit
Information on the repair process	-	-
Information on the inspection process	-	-
Repair cycle	-	Number/R SL
Water consumption	-	m ³
Auxiliary	-	kg
Other resources	-	kg
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Material loss	-	kg

Replacement (B4)/Conversion/Renovation (B5)

Name	Value	Unit
Replacement cycle	-	Number/R SL
Electricity consumption	-	kWh
Litres of fuel	-	l/100km
Replacement of worn parts	-	kg

Reference utilisation duration

The product is tested according to the normative product requirements. When used according to the rules and the state of the art, the reference service life corresponds to 10-40 years. These periods are to be used for further calculations and do not constitute manufacturer's guarantees.

Name	Value	Unit
Reference service life	10 - 40	a
Life Span (Life Span)	10 - 40	a
Life Span (Life Span)	10 - 40	a
Declared product properties (at the gate) and finishes	Properties according to EN 438	-

Detailed data sheets on chemical resistance, cleaning and use recommendations are available for download at www.egger.com/laminate.

Operational energy (B6) and water consumption (B7)

Name	Value	Unit
Water consumption	-	m ³
Electricity consumption	-	kWh
Other energy carriers	-	MJ
Equipment output	-	kW

End of life cycle (C1-C4)

Name	Value	Unit
Energy recovery in einer MVA	1.044	kg

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

Name	Value	Unit
Thermal value	14-15	MJ/kg

5. LCA: Results

The following table contains the life cycle assessment results for a declared unit of 1 m² EGGER Laminate Flammex with an average grammage of 1044 g/m².

Disclaimer:

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 Laminate Flammex (1044 g/m²)

Core Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Global warming potential - total	[kg CO ₂ -Eq.]	2.70E+0	0.00E+0	6.29E-3	0.00E+0	1.52E+0	-6.49E-1
Global warming potential - fossil fuels	[kg CO ₂ -Eq.]	3.58E+0	0.00E+0	6.25E-3	0.00E+0	6.59E-1	-6.47E-1
Global warming potential - biogenic	[kg CO ₂ -Eq.]	-8.78E-1	0.00E+0	-1.04E-5	0.00E+0	8.57E-1	-1.52E-3
GWP from land use and land use change	[kg CO ₂ -Eq.]	2.03E-3	0.00E+0	5.03E-5	0.00E+0	3.68E-5	-4.53E-4
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	5.49E-12	0.00E+0	1.14E-18	0.00E+0	3.43E-16	-6.75E-15
Acidification potential, accumulated exceedance	[mol H ⁺ -Eq.]	9.85E-3	0.00E+0	2.11E-5	0.00E+0	3.31E-4	-9.06E-4
Eutrophication, fraction of nutrients reaching freshwater end compartment	[kg P-Eq.]	1.61E-5	0.00E+0	1.89E-8	0.00E+0	6.22E-8	-8.34E-7
Eutrophication, fraction of nutrients reaching marine end compartment	[kg N-Eq.]	4.56E-3	0.00E+0	9.53E-6	0.00E+0	1.12E-4	-2.34E-4
Eutrophication, accumulated exceedance	[mol N-Eq.]	2.83E-2	0.00E+0	1.06E-4	0.00E+0	1.49E-3	-2.51E-3
Formation potential of tropospheric ozone photochemical oxidants	[kg NMVOC-Eq.]	9.32E-3	0.00E+0	1.87E-5	0.00E+0	3.01E-4	-6.74E-4
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	8.11E-6	0.00E+0	5.03E-10	0.00E+0	5.23E-9	-1.06E-7
Abiotic depletion potential for fossil resources	[MJ]	6.82E+1	0.00E+0	8.29E-2	0.00E+0	5.25E-1	-1.10E+1
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	[m ³ world-Eq deprived]	3.68E-2	0.00E+0	6.06E-5	0.00E+0	1.75E-1	-6.71E-2

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Laminate Flammex (1044 g/m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	1.15E+1	0.00E+0	4.80E-3	0.00E+0	1.01E-1	-2.40E+0
Renewable primary energy resources as material utilization	[MJ]	9.01E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	2.05E+1	0.00E+0	4.80E-3	0.00E+0	1.01E-1	-2.40E+0
Non-renewable primary energy as energy carrier	[MJ]	5.90E+1	0.00E+0	8.33E-2	0.00E+0	5.25E-1	-1.10E+1
Non-renewable primary energy as material utilization	[MJ]	9.20E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	6.82E+1	0.00E+0	8.33E-2	0.00E+0	5.25E-1	-1.10E+1
Use of secondary material	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	[MJ]	4.02E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m ³]	1.35E-2	0.00E+0	5.59E-6	0.00E+0	4.14E-3	-2.78E-3

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Laminate Flammex (1044 g/m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	[kg]	6.02E-7	0.00E+0	3.85E-9	0.00E+0	1.25E-9	-4.38E-9
Non-hazardous waste disposed	[kg]	7.34E-1	0.00E+0	1.32E-5	0.00E+0	8.90E-2	-5.07E-3
Radioactive waste disposed	[kg]	7.84E-4	0.00E+0	1.53E-7	0.00E+0	2.47E-5	-8.19E-4
Components for re-use	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.74E+0	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	4.95E+0	0.00E+0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m² Laminate Flammex (1044 g/m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Potential incidence of disease due to PM emissions	[Disease Incidence]	9.41E-8	0.00E+0	1.19E-10	0.00E+0	2.54E-9	-7.70E-9
Potential Human exposure efficiency relative to U235	[kBq U235-Eq.]	9.33E-2	0.00E+0	2.26E-5	0.00E+0	3.57E-3	-1.34E-1
Potential comparative toxic unit for ecosystems	[CTUe]	3.24E+1	0.00E+0	6.21E-2	0.00E+0	3.11E-1	-2.37E+0
Potential comparative toxic unit for humans - cancerogenic	[CTUh]	7.37E-10	0.00E+0	1.28E-12	0.00E+0	1.66E-11	-1.03E-10
Potential comparative toxic unit for humans - not cancerogenic	[CTUh]	4.31E-8	0.00E+0	7.39E-11	0.00E+0	1.34E-9	-3.81E-9
Potential soil quality index	[-]	1.38E+2	0.00E+0	2.91E-2	0.00E+0	1.35E-1	-1.72E+0

Limitation note 1 - applies to the IRP indicator:

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 indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP:

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

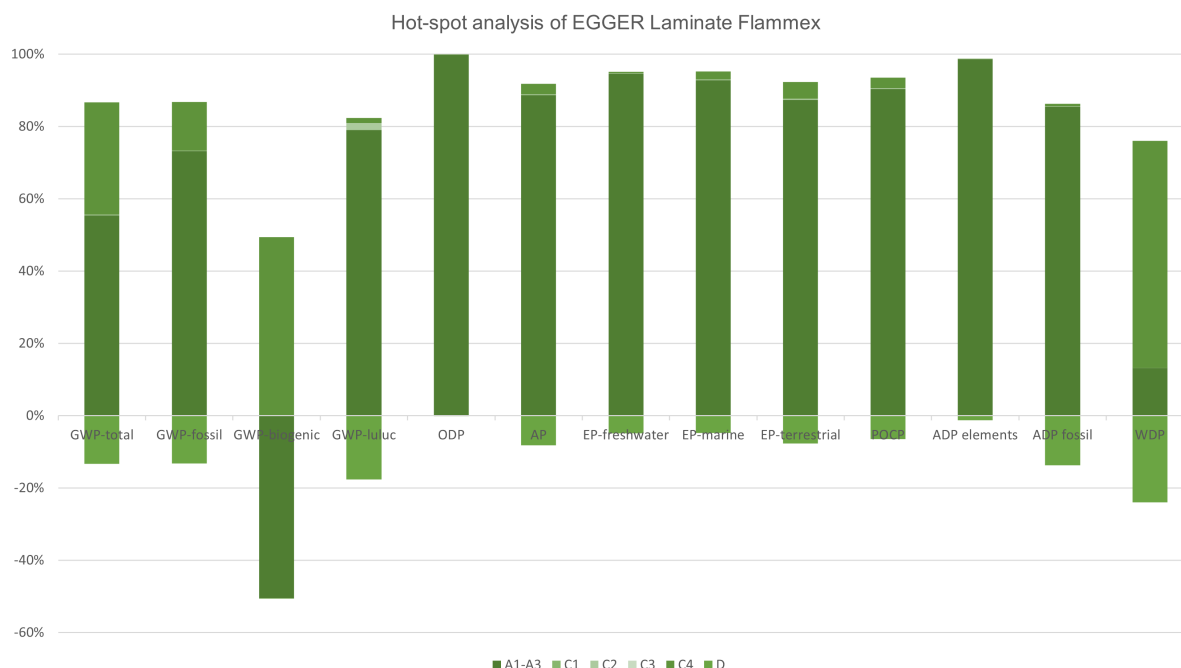
The following interpretation includes a summary of the LCA results relative to a declared unit of 1m³ laminate Flammex.

The production phase (modules A1-A3) is the dominant factor in the environmental profile of the laminate Flammex. An exception here is the potential water consumption, in which especially the water demand (WDP) in combustion (module C4) makes a significant contribution.

In addition to the dominance of the production phase, the analysis of the potential contribution to climate change (GWP) also shows a recognisable contribution of greenhouse gas emissions (mainly carbon dioxide) from energy recovery at the end of life of the product in

a waste incineration plant. During energy recovery, the stored biogenic and fossil carbon is released into the atmosphere in the form of carbon dioxide emissions and contributes to potential climate warming. In the case of biogenic emissions from paper recycling, this is the carbon stored from the atmosphere during tree growth. Over the entire life cycle, this results in a balanced CO₂ balance for the biogenic carbon stored in the product.

The negative values in Module D can be explained through the fact that the energy generated by the energy utilisation of the product is able to replace the combustion of fossil fuels. Thus, Module D declares the substitution potential for heat from natural gas and electricity from the European electricity mix.



The dominance analysis of the production phase of the laminate Flammex identifies the upstream chain of the resins used and the paper production as significant drivers in the environmental profile of the product. In particular, potential stratospheric ozone depletion (ODP), potential acidification (AP), potential eutrophication of freshwater (EP-freshwater) and land (EP-terrestrial), potential formation of ground-level ozone (POCP) and elemental resource use (ADPE) are dominated by environmental impacts from paper production.

The global warming potential (GWP-total) from the production phase (modules A1-A3) of the laminate Flammex can be largely attributed to the emissions from the production of the resin used. The negative contribution of the papers in the biogenic emissions (GWP-biogenic) is due to the carbon sequestration effect in the upstream chain during tree growth. Potential GHG emissions from land use change are predominantly dominated by electricity supply.

Looking at the potential removal of water, the combustion of 3rd grade products is the driving factor. The use of renewable primary energy (PERT) is mainly due to the material use of renewable raw materials in the paper components of the product.

If the contribution of non-renewable primary energy (PENRT) is considered, it is mainly used for the fossil fuels utilised in the production of adhesive components and resins.

The specific composition of the products considered depends on various factors such as the thickness of the substructure, the decor and the respective application. By calculating the area-weighted grammages 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.

For the conversion to specific products, it can be assumed that the environmental impact is roughly proportional to the grammage of these.

The results of the previous EPD for EGGER Laminate Flammex (EPD-EGG-20150066-IBA1-DE) are not directly comparable with the present, updated version due to the update of the underlying methodology according to *EN 15804+A2*.

7. Requisite evidence

7.1 Specific formaldehyde migration

Measurement centre: WESSLING

GmbH, Altenberge, D

Test report: Nr. CAL21-049932-1/tec of 1.4.2021

Test basis: Measurement of specific migration according to *DIN CEN/TS 13130-23*. Limits according to the *BedGgstV2005* and *EU Directive 10/2011/EC*.

Test conditions: Acetic acid 3 % (w/w) 2 h, 40 °C O:V / S:V = 0.88 dm²: 146 ml

Result: The measured values were <0.8 mg/kg in both the first and the third extract with 3% acetic acid. The limit value of 15 mg/kg is complied with.

7.2 Melamine

Measurement authority: WESSLING

GmbH, Altenberge, D

Test report: No. CAL21-049932-1/tec of 1.4.2021

Test basis: Measurement of specific migration according to *DIN CEN/TS 13130-27*. Limits according to the *BedGgstV2005* and *Article 2 EU Directive 10/2011/EC*.

Test conditions: Acetic acid 3 % (w/w) 2 h, 40 °C O:V / S:V = 0.88 dm²: 146 ml

Result: The measured values were <1 mg/kg in both the first and the third extract with 3% acetic acid. The limit value of 2.5 mg/kg is complied with.

7.3 Total migration

Measurement centre: WESSLING

GmbH, Altenberge, D

Test report: No. CAL21-049932-1/tec of 1.4.2021

Test basis: Measurement according to the *EN 1186* series of standards, limits according to the *BedGgstV* and *EU Directive 10/2011/EC*.

Result: According to Article 12 of Regulation (EU) No 10/2011, substances may only be transferred from a plastic food contact material to food up to a maximum

amount of 10 mg/dm² of the food contact material. This limit is complied with by the tested sample.

7.4 Eluate Analysis

Measurement authority: WESSLING

GmbH, Altenberge, D

Test report: No. CAL20-187472 -2a/tec of 13.01.2021

Testing method: Measurement according to *EN 71-3, Safety of toys - Part 3: Migration of specific elements*.

Result: The limit values of all elements determined according to the standard are far undercut.

7.5 Phenol

Testing institute: Fraunhofer Institut für Holzforschung WKI, Braunschweig, D

Test report: No. MAIC-2021-0094 of 12.01.2021

Testing method: Measurement according to *EN 16516*.

Result: The phenol concentration in the test chamber was below 2 µg/m³ after 3 days, 3 µg/m³ after 7 days and 7 µg/m³ after 28 days. Overall, the values are below the limits of all evaluation parameters of the *AgBB* scheme.

7.6 Formaldehyde emissions

Measurement centre: EPH Dresden, D

Test report: No. 2520582 of 16.12.2020

Testing method: Measurement according to *EN 717-1*, Emission chamber test of wood-based materials/products.

Result: The formaldehyde emission of the test specimen is below the detection limit. The values are far below the limits of the *ChemVerbotsV*.

8. References

Standards

CEN/TS 13130-23

DIN CEN/TS 13130-23:2005-05, Materials and articles in contact with foodstuffs – Plastics substances subject to limitation – Part 23: Determination of formaldehyde and hexamethylenetetramine in test foodstuffs.

CEN/TS 13130-27

DIN CEN/TS 13130-27:2005-05, Materials and articles in contact with foodstuffs – Plastics substances subject to limitation – Part 27: Determination of 2,4,6-triamino-1,3,5-triazine in test foodstuffs.

DIN 4102-1

DIN 4102-1:1998-05, Fire behaviour of building materials and elements - Part 1: Classification of building materials Requirements and testing

EN 71-3

DIN EN 71-3: 2019-08, Safety of toys - Part 3: Migration of certain elements.

EN 438-1

DIN EN 438-1:2016-06, High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 1: Introduction and general information.

EN 438-2

DIN EN 438-2:2019-03, High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 2: Determination of properties.

EN 438-3

DIN EN 438-3:2016-08, High-pressure decorative laminates (HPL) - Sheets based on thermosetting resins (usually called laminates) - Part 3: Classification and specifications for laminates less than 2 mm thick intended for bonding to supporting substrates.

EN 717-1

DIN EN 717-1:2005-02-01, Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emissions according to the test chamber method.

EN 1186

DIN EN 1186:2002-07, Materials and articles in contact with foodstuffs - Plastics.

EN 13501-1

DIN EN 13501-1:2020-01-15, Fire classification of construction products and building elements - Part 1: classification with the results of tests on the reaction to fire of building products.

EN 13986

DIN EN 13986:2015-06-01, Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking.

EN 15804

DIN EN 15804:2012+A2:2019, Sustainability of construction works - Environmental product declarations - Core rules for the product category of

construction products.

ISO 14001

DIN EN 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

DIN EN 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 45001

DIN ISO 45001:2018-03, Occupational health and safety management systems - Requirements with guidance for use.

NF P 92-501

NF P 92-501:1995-12-01, Safety against fire - Building materials - Reaction to fire tests - Radiation test used for rigid material or for rigidised building materials (glue coatings) in all thicknesses and for flexible materials with thickness of more than 5mm.

Additional bibliography

AgBB

German committee for health-related evaluation of building products (AgBB): Approach to health assessment of emissions of volatile organic compounds (VOCs and SVOCs) from building products.

AGW

Occupational exposure limit according to the German Ordinance on Hazardous Substances.

BBSR Table

Useful lives of building components for life cycle analyses according to the Sustainable Building Assessment System (BNB). 24.02.2017.

BedGgstV

German Commodities Ordinance, last amendment of 24 February 2016, reference Federal Official Journal I p. 198, 201.

Biocidal Products Ordinance

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

ChemVerbotsV

Chemicals Prohibition Ordinance, Ordinance on Prohibitions and Restrictions on the Placing on the Market and on the Supply of Certain Substances,

Mixtures and Products under the Chemicals Act of 20 January 2017, last amendment of 19 June 2020
Federal Official Journal I p. 1328, 1363.

EWC

European Waste Catalogue, Ordinance on the European Waste Catalogue (Waste Catalogue Ordinance - AVV), reference Federal Official Journal I 2001, 3379.

ECHA List

List of Substances of Very High Concern (SVHC) Candidate for Authorisation (ECHA Candidate List), dated 25.06.2020, published in accordance with Article 59(10) of the REACH Regulation. Helsinki: European Chemicals Agency.

EU Directive 10/2011/EC

Commission Regulation (EU) No 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food.

GaBi

GaBi 9, Software-System and Database for Life Cycle Engineering. DB v8.7 SP 40. Stuttgart, Echterdingen: Sphera, 1992-2020. Available in:
<http://documentation.gabi-software.com>.

German Ordinance on Protection against Hazardous Substances (Gefahrstoffverordnung - GefStoffV)

IBU 2016

Institut Bauen und Umwelt e.V.: General EPD Programme Guidance of the Institut Bauen und Umwelt e.V.. (IBU). Version 1.1, Berlin: Institut Bauen und Umwelt e.V., 2016. www.ibu-epd.com.

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: Laminates

Product category rules for building-related products and services. PART B: Requirements of EPD laminates. Version 1.1. Berlin: Institut Bauen und Umwelt e.V., 10.12.2018.

TA Air

Technical Guideline for Keeping Air Clean (TA Air), First General Administrative Provision on the Federal Pollution Control Act 2002.

VDI Guideline 3485

VDI 3485, date of issue: 1988 -12, Measuring gaseous emissions; Measuring phenols; p-nitroaniline procedure.

**Publisher**

Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 3087748- 0
Fax +49 (0)30 3087748- 29
Mail info@ibu-epd.com
Web www.ibu-epd.com

**Programme holder**

Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Tel +49 (0)30 - 3087748- 0
Fax +49 (0)30 – 3087748 - 29
Mail info@ibu-epd.com
Web www.ibu-epd.com

**Author of the Life Cycle Assessment**

Daxner & Merl GmbH
Lindengasse 39/8
1070 Wien
Austria

Tel +43 676 849477826
Fax +43 42652904
Mail office@daxner-merl.com
Web www.daxner-merl.com

**Owner of the Declaration**

Fritz EGGER GmbH & Co. OG
Weiberndorf 20
6380 St. Johann in Tirol
Austria

Tel +43 (0)50 600-0
Fax +43 (0)50 600-10111
Mail info-sjo@egger.com
Web www.egger.at