# 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-20210048-IBC1-EN |
| Issue date | 21.05.2021 |
| Valid to | 14.04.2026 |

## EGGER Laminate Micro

## Fritz EGGER GmbH & Co. OG Holzwerkstoffe

Institut Bauen und Umwelt e.V.

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

ECO PLATFORM EPD EN 15804 VERIFIED

# 1. General Information

| Fritz EGGER GmbH & Co. OG | EGGER Laminate Micro |
|---|---|
| **Programme holder**<br>IBU – Institut Bauen und Umwelt e.V.<br>Panoramastr. 1<br>10178 Berlin<br>Germany | **Owner of the declaration**<br>Fritz EGGER GmbH & Co. OG<br>Holzwerkstoffe<br>Weiberndorf 20<br>6380 St. Johann in Tirol<br>Austria |
| **Declaration number**<br>EPD-EGG-20210048-IBC1-EN | **Declared product / declared unit**<br>One square meter of EGGER Laminate Micro with an average grammage of 238 g/m². |
| **This declaration is based on the product category rules:**<br>Laminates, 12.2018<br>(PCR checked and approved by the SVR) | **Scope:**<br>This document applies to the laminate manufactured by EGGER Kunststoffe GmbH & Co. KG in its Gifhorn (Germany) plant. It is an average EGGER Laminate Micro. |
| **Issue date**<br>21.05.2021 | 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.<br>The EPD was created according to the specifications of *EN 15804+A2*. In the following, the standard will be simplified as *EN 15804*. |
| **Valid to**<br>14.04.2026 | **Verification**<br>The standard *EN 15804* serves as the core PCR<br>Independent verification of the declaration and data according to *ISO 14025:2010*<br>☐ internally ☒ externally |
| Dipl. Ing. Hans Peters<br>(chairman of Institut Bauen und Umwelt e.V.) | Juliane Franze<br>(Independent verifier) |
| Dr. Alexander Röder<br>(Managing Director Institut Bauen und Umwelt e.V.)) | |

# 2. Product

### 2.1 Product description/Product definition

EGGER Laminate Micro 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 multilayer structure and consist of melamine resin impregnated decorative paper and a backing paper, which are laminated under high pressure and heat. 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 Micro is used for coating and / or sheathing door elements, kitchen and bathroom fronts, window sills, transition strips as well as cornice and light panel profiles.

### 2.3 Technical Data

EGGER Laminate Micro is tested according to the testing procedure described in *EN 438-2*. The technical sheet "EGGER Laminate Micro" contains detailed information concerning quality features and product characteristics.

**Technical data**

| Name | Value | Unit |
|---|---|---|
| Density | ≥ 1350 | kg/m³ |
| Resistance to abrasion * according to EN 438 | ≥ 150 | U |
| Resistance to abrasion* without overlay according to EN 438 | < 50 | U |
| Resistance to scratches textured surfaces according to EN 438 | 3 | Rating |
| Resistance to scratches smooth surfaces according to EN 438 | 2 | Rating |
| Lightfastness according to EN 438 | 4 - 5 | Grey scale |
| Formaldehyde emissions according to EN 717-1 | Below the detection limit | µg/m³ |
| Dimensional deviation Width tolerance | +10 / -0 | mm |
| Dimensional deviation Thickness tolerance | +0.1 / -0.05 | 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 Laminate Micro is supplied exclusively as a roll.
Form of delivery “Roll”:

- Roll lengths: 200, 400 and 600 m
- Max. roll width: 1,300 mm
- Range of nominal thicknesses: 0.15 and 0.20 mm

This Environmental Product Declaration is valid for the nominal thicknesses 0.15 and 0.20 mm.

## 2.5 Base materials/Ancillary materials

EGGER Laminates Micro with a nominal thickness of 0.15 or 0.20 mm consist of:
- decor paper (50 – 125 g/m²)
- backing paper (50 – 100 g/m²)
- overlay paper (20 – 25 g/m²)
- melamine-formaldehyde resin
- phenol-formaldehyde resin

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

The product EGGER Laminate Micro 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 EGGER Laminate Micro 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 Laminate Micro is 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 Laminate). EGGER Laminate Micro is produced following *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. 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.

**Air:** The exhaust air that is created in relation to the product is purified according to the legislative regulations. Emissions are significantly below the *TA 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

EGGER Laminate Micro can be used for the lamination and lining of classic wood-based materials such as MDF (Medium density fibreboard), HDF (Hich denisty fibreboard) and chipboard as well as PVC coreboards. Due to the low thickness, EGGER Laminate Micro can only be delivered and processed as rolled goods. Whether wood-based material or PVC coreboards are used, this laminate quality can be readily processed in combination with select glue systems and on suitable production equipment. Special equipment that supports automated production is required for processing.
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.

Detailed processing recommendations can be found in the "Processing instructions EGGER Laminate Micro".

### 2.9 Packaging
The laminates are packaged and delivered on nonreturnable

or returnable wood pallets (waste code number according to EWC: 15 01. 03). Other packaging materials include:
- cardboard (15 01 01)
- wood-based materials (15 01 03)
- PE film and PET strapping (15 01 02)

The packaging must be separated according to type after use and handed over to an authorised disposal company.
Cardboard, wood and plastic components can be recycled materially or energetically.

### 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 Micro 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 Micro 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**
EGGER Laminate Micro complies with interior finishing requirements in the case of fire: low smoke formation, no melting, and no burning droplets. The laminate is a coating material used for manufacturing joining elements, assignment to a building material class depends on the support material used.

**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 15-16 MJ/kg, reclamation for the generation of process energy and electricity (combined heat and power plants) is possible.

### 2.15 Disposal
Energetic utilization or disposal (waste code according to European Waste Catalogue *EWC*: 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 Micro produced with an average grammage of 238 g/m².

**Declared unit**

| Name | Value | Unit |
|---|---|---|
| Declared unit | 1 | $m^2$ |
| Grammage | 0.238 | $kg/m^2$ |

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

### 3.2 System boundary

The LCA of the average EGGER Laminate Micro 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 LCA.

## 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) | 0.068 | kg C |
| Stored carbon dioxide (in the product) | 0.25 | 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) | 0.068 | kg/m² |
| Stored carbon dioxide (in the product) | 0.25 | kg/m² |

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) | 0.000951 | kg/m² |
| Packing (pallet) | 0.0668 | kg/m² |

**Maintenance (B2)**

| Name | Value | Unit |
|---|---|---|
| Information on maintenance | - | - |
| Maintenance cycle | - | Number/RSL |
| 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/RSL |
| 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/RSL |
| 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 (according to BBSR) | 10 - 40 | a |
| Life Span (according to BBSR) | 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 Energy recovery in an MVA | 0.238 | kg |

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

| Name | Value | Unit |
|---|---|---|
| Nettofluss in Modul D [Ausgleichsfeuchte von XX %] | XXX | XXX |
| Feuchte bei thermischer Verwertung | XXX | % |
| Heizwert Holz [Ausgleichsfeuchte von XX%] | XXX | MJ/kg |

## 5. LCA: Results

The following table contains the life cycle assessment results for a declared unit of 1 m² EGGER Laminate Micro with an average grammage of 238 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 Micro (238 g/m²)**

| Core Indicator | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| Global warming potential - total | [kg $CO_2$-Eq.] | 7.26E-1 | 0.00E+0 | 1.43E-3 | 0.00E+0 | 3.44E-1 | -1.44E-1 |
| Global warming potential - fossil fuels | [kg $CO_2$-Eq.] | 9.48E-1 | 0.00E+0 | 1.43E-3 | 0.00E+0 | 1.31E-1 | -1.44E-1 |
| Global warming potential - biogenic | [kg $CO_2$-Eq.] | -2.24E-1 | 0.00E+0 | -2.38E-6 | 0.00E+0 | 2.14E-1 | -3.38E-4 |
| GWP from land use and land use change | [kg $CO_2$-Eq.] | 8.85E-4 | 0.00E+0 | 1.15E-5 | 0.00E+0 | 8.00E-6 | -1.01E-4 |
| Depletion potential of the stratospheric ozone layer | [kg CFC11-Eq.] | 1.18E-12 | 0.00E+0 | 2.60E-19 | 0.00E+0 | 7.59E-17 | -1.50E-15 |
| Acidification potential, accumulated exceedance | [mol $H^+$-Eq.] | 2.18E-3 | 0.00E+0 | 4.82E-6 | 0.00E+0 | 7.80E-5 | -2.01E-4 |
| Eutrophication, fraction of nutrients reaching freshwater end compartment | [kg P-Eq.] | 4.51E-6 | 0.00E+0 | 4.32E-9 | 0.00E+0 | 1.39E-8 | -1.85E-7 |
| Eutrophication, fraction of nutrients reaching marine end compartment | [kg N-Eq.] | 9.93E-4 | 0.00E+0 | 2.17E-6 | 0.00E+0 | 2.67E-5 | -5.21E-5 |
| Eutrophication, accumulated exceedance | [mol N-Eq.] | 6.57E-3 | 0.00E+0 | 2.43E-5 | 0.00E+0 | 3.51E-4 | -5.58E-4 |
| Formation potential of tropospheric ozone photochemical oxidants | [kg NMVOC-Eq.] | 2.05E-3 | 0.00E+0 | 4.27E-6 | 0.00E+0 | 7.17E-5 | -1.50E-4 |
| Abiotic depletion potential for non-fossil resources | [kg Sb-Eq.] | 1.81E-6 | 0.00E+0 | 1.15E-10 | 0.00E+0 | 1.16E-9 | -2.36E-8 |
| Abiotic depletion potential for fossil resources | [MJ] | 1.53E+1 | 0.00E+0 | 1.89E-2 | 0.00E+0 | 1.18E-1 | -2.44E+0 |
| Water (user) deprivation potential, deprivation-weighted water consumption (WDP) | [$m^3$ world-Eq deprived] | 1.02E-2 | 0.00E+0 | 1.38E-5 | 0.00E+0 | 4.02E-2 | -1.49E-2 |

**RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Laminate Micro (238 g/m²)**

| Indicator | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| Renewable primary energy as energy carrier | [MJ] | 2.86E+0 | 0.00E+0 | 1.09E-3 | 0.00E+0 | 2.25E-2 | -5.33E-1 |
| Renewable primary energy resources as material utilization | [MJ] | 2.80E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 |
| Total use of renewable primary energy resources | [MJ] | 5.66E+0 | 0.00E+0 | 1.09E-3 | 0.00E+0 | 2.25E-2 | -5.33E-1 |
| Non-renewable primary energy as energy carrier | [MJ] | 1.34E+1 | 0.00E+0 | 1.90E-2 | 0.00E+0 | 1.18E-1 | -2.44E+0 |
| Non-renewable primary energy as material utilization | [MJ] | 1.84E+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] | 1.53E+1 | 0.00E+0 | 1.90E-2 | 0.00E+0 | 1.18E-1 | -2.44E+0 |
| 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] | 2.80E-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 | [$m^3$] | 3.53E-3 | 0.00E+0 | 1.27E-6 | 0.00E+0 | 9.50E-4 | -6.17E-4 |

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Laminate Micro (238 g/m²)**

| Indicator | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| Hazardous waste disposed | [kg] | 1.33E-7 | 0.00E+0 | 8.78E-10 | 0.00E+0 | 2.67E-10 | -9.73E-10 |
| Non-hazardous waste disposed | [kg] | 1.54E-1 | 0.00E+0 | 3.01E-6 | 0.00E+0 | 1.89E-2 | -1.13E-3 |
| Radioactive waste disposed | [kg] | 3.38E-4 | 0.00E+0 | 3.50E-8 | 0.00E+0 | 5.64E-6 | -1.82E-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 | 6.09E-1 | 0.00E+0 |
| Exported thermal energy | [MJ] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0 | 1.10E+0 | 0.00E+0 |

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m² Laminate Micro (238 g/m²)**

| Indicator | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| Potential incidence of disease due to PM emissions | [Disease Incidence] | 1.96E-8 | 0.00E+0 | 2.72E-11 | 0.00E+0 | 5.72E-10 | -1.71E-9 |
| Potential Human exposure efficiency relative to U235 | [kBq U235-Eq.] | 3.57E-2 | 0.00E+0 | 5.16E-6 | 0.00E+0 | 8.20E-4 | -2.98E-2 |
| Potential comparative toxic unit for ecosystems | [CTUe] | 5.07E+0 | 0.00E+0 | 1.41E-2 | 0.00E+0 | 6.80E-2 | -5.26E-1 |
| Potential comparative toxic unit for humans - cancerogenic | [CTUh] | 1.53E-10 | 0.00E+0 | 2.92E-13 | 0.00E+0 | 3.63E-12 | -2.28E-11 |
| Potential comparative toxic unit for humans - not cancerogenic | [CTUh] | 8.65E-9 | 0.00E+0 | 1.68E-11 | 0.00E+0 | 2.79E-10 | -8.48E-10 |
| Potential soil quality index | [-] | 4.29E+1 | 0.00E+0 | 6.64E-3 | 0.00E+0 | 3.05E-2 | -3.83E-1 |

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.

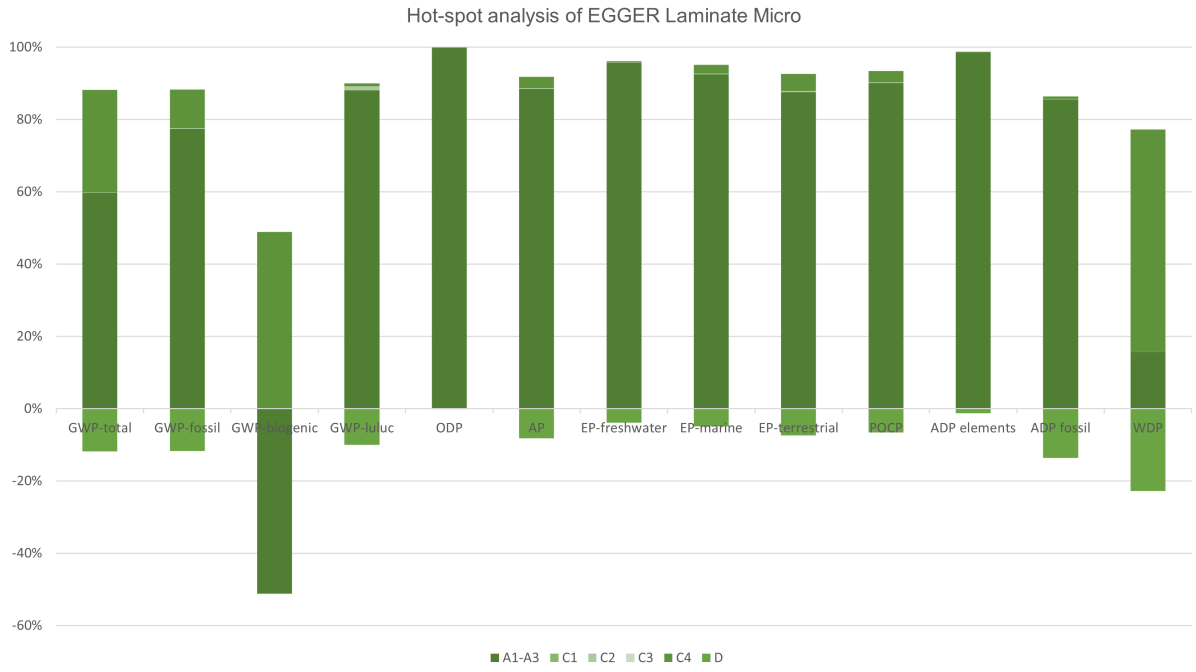
## 6. LCA: Interpretation

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

The production phase (modules A1-A3) is the dominant factor in the environmental profile of the Laminate Micro. 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 Micro identifies the upstream chain of the resins used and the paper production as significant drivers in the environmental profile of the product. In the case of the Laminate Micro, emissions from energy production play a major role in addition to paper and

resin production. 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 laminates 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. In the case of the Laminate Micro, the provision of electricity and heat are also driving factors for the use of non-renewable primary energy.

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 Micro (EPD-EGG-2010265-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:** No. CAL21-049933-2a/tec of 13.04.2021
**Test basis:** Measurement of specific migration according to *DIN CEN/TS 13130-23.* Limits according to the *BedGgstV2* 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 1.2 mg/kg in the first 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. CAL21-049933-2a/tec of 13.04.2021
**Test basis:** Measurement of specific migration according to *DIN CEN/TS 13130-23.* Limits according to the *BedGgstV2* 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 < 1 mg/kg in the first extract and in 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. CAL21-049933-2a/tec of 13.04.2021
**Test basis:** Measurement of specific migration according to *DIN CEN/TS 13130-23.* Limits according to the *BedGgstV2* and *EU Directive 10/2011/EC*.
**Test conditions:** Acetic acid 3 % (v/v) 2 h, 70 °C
Ethanol 10 % (v/v) 2 h, 70 °C
Ethanol 95 % (v/v) 2 h, 60 °C
Isooctane 0.5 h, 40 °C
with respectively O:V / S:V = 0.44 dm2: 73 ml
**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. CAL20-187471 -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 substance phenol could not be detected over the entire test period of 28 days (limit of quantification 1 µg/m³). 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.

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

**EN 438-2**
DIN EN 438-2:2019-02-01, High-Pressure Decorative Laminates (HPL) – Sheets based on thermosetting resins (usually called laminates) - Part 2: Determination of properties.

**EN 438-3**
DIN EN 438-3:2016-08-15, 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 438-7**
DIN EN 438-7:01/05/2005, High-Pressure Decorative Laminates (HPL) – Sheets based on thermosetting resins (usually called laminates) - Part 7: Compact laminate and HPL composite panels for internal and external wall and ceiling finishes.

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

**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) Version: 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.

**GefStoffV**
German Ordinance on Protection against Hazardous Substances (Gefahrstoffverordnung), as of April 2017, last revised version of 26.11.2010, reference Federal Official Journal I p. 1643.

**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.

**MAC values**
List of values for the Maximum Workplace Concentration, published by the "Senate Commission for the Testing of Harmful Working Substances" in the German Research Foundation.

**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**