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-20200252-IBC1-EN
Issue date	29.07.2021
Valid to	09.05.2026

EGGER Eurodekor laminated MDF

Fritz EGGER GmbH & Co. OG
Holzwerkstoffe

Institut Bauen und Umwelt e.V.

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1. General Information

Fritz EGGER GmbH & Co. OG

Programme holder
IBU – Institut Bauen und Umwelt e.V.
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10178 Berlin
Germany

Declaration number
EPD-EGG-20200252-IBC1-EN

This declaration is based on the product category rules:
Wood based panels, 12.2018
(PCR checked and approved by the SVR)

Issue date
29.07.2021

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

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

EGGER Eurodekor MDF

Owner of the declaration
Fritz EGGER GmbH & Co. OG
Holzwerkstoffe
Weiberndorf 20
6380 St. Johann in Tyrol
Austria

Declared product / declared unit
1 m² EGGER Eurodekor laminated MDF fibreboard (13.22 kg/m²) with a moisture content of 6 %.

Scope:
This document refers to laminated MDF boards EGGER Eurodekor, produced with an average glue mix at the site in Brilon, Germany.

The production conditions in Brilon are comparable to those of the other plants. They correspond to the technologies and standards used in all locations.

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

Matthias Klingler
(Independent verifier)

2. Product

2.1 Product description/Product definition

Laminated MDF boards Eurodekor are panel-shaped materials according to

- *EN 622-5, Fibreboards — Specifications — Part 5: Rquirements for dry process boards (MDF)* and
- *EN 14322:2017-03, Wood-based panels - Melamine faced boards for interior uses - Definition, requirements and classification.*

These raw material boards are predominantly used as furniture boards. They are used, for example, as deep drawer fronts in the kitchen area. The decorative pattern is achieved by means of printed decor paper. A corresponding texture is applied to the surface in the course of the pressing.

The average glue mix across all board types is considered. The production conditions of the Brilon site are comparable to those of the other plants. They correspond to the technologies and standards used in all locations.

Regulation (EU) no. 305/2011 (CPR) applies to bringing the product into circulation in the EU/EFTA (with the exception of Switzerland). The product requires a declaration of performance taking into account *EN 13986+A1:2015-04*, *Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking* and the CE marking.

Relevant national regulations apply to use.

2.2 Application

Coated MDF boards are used indoors for high quality purposes in furniture construction. Due to their homogeneous structure, MDF boards can be milled out three-dimensionally and subsequently either lacquered or coated with a film in a membrane press. Boards produced in this way can often be used as fronts for high quality kitchens.

2.3 Technical Data

Definitions, requirements and classifications of melamine faced boards for interior use such as surface properties and dimensional tolerances are provided by the standard *EN 14322:2017-03*. For detailed information, please refer to the technical data sheets available at www.egger.com.

Structural engineering data

Name	Value	Unit
Gross density 15-19 mm, EN 323	670 - 730	kg/m³
Grammage 18 mm	121 - 131	kg/m²
Bending strength (longitudinal) 12-19 mm, EN 310	> 25	N/mm²
E-module (longitudinal) 12-19 mm, EN 310	> 2700	N/mm²
Material dampness at delivery EN 322	4 - 8	%
Thermal conductivity EN 13986	1 - 14	W/(mK)
Water vapour diffusion resistance factor EN 12524 in µ-dry	20 - 30	-
Sound absorption coefficient EN 13986 Tab. 10 250 Hz to 500 Hz	1	%
Surface soundness EN 311	> 1.0	N/mm²
Thickness tolerance 12-19 mm, EN 324	± 0,2	mm
Formaldehyde emissions vary by product	E1)*1, E1E05)*2, TSCA)*3, F****)*4	

*1) E1: According to *EN 13986+A1:2015-04* formaldehyde class E1, a limit value of 8 mg HCHO/100 g absolutely dry board may not be exceeded by the perforator method according to *ISO 12460-5*.
*2) E1E05: According to the *ChemVerbotsV*, coated and uncoated wood-based materials may not be placed on the market in DE if the compensation concentration of formaldehyde caused by the wood-based material in the air of a test room according to *EN 16516* exceeds 0.1 ml/cbm (ppm).
*3) TSCA: According to the US Toxic Substances Control Act (*TSCA Title VI*), MDF boards may not exceed 0.11 ppm and thin MDF may not exceed 0.13 ppm according to test chamber method *ASTM E 1333*.
*4) F****: According to Japanese standard *JIS A 5905*, the uncoated MDF board complies with the limit (mean) of ≤ 0.3 mg HCHO/L according to desiccator method *JIS A 1460*.

Leistungswerte des Produkts entsprechend der Leistungserklärung in Bezug auf dessen wesentliche Merkmale gemäß *EN 13986+A1:2015-04, Holzwerkstoffe zur Verwendung im Bauwesen - Eigenschaften, Bewertung der Konformität und Kennzeichnung* (nicht Bestandteil der CE-Kennzeichnung).

2.4 Delivery status

Standard size [mm]: 2,800 x 2,070 & 5,610 x 2,070
Thickness range [mm]: 8-38

2.5 Base materials/Ancillary materials

Preliminary products:
MDF boards between 2.4 and 40 mm thick with an average density of 720 kg/m³ consisting of (information in weight % per 1 m³ of production):

- approx. 81 % wood weight: predominantly the wood species spruce and pine
- approx. 5-7 % water
- approx. 12 % UMF glue (urea-melamine-formaldehyde resin): consisting of urea-formaldehyde resin. Through polycondensation, the aminoplastic adhesive hardens completely in the pressing process.
- approx. <1 % paraffin wax emulsion: A paraffin wax emulsion is added to the recipe during application as a water repellent (improves moisture resistance).
- Ammonium phosphate: Added as a fire retardant to the Flammex product variant.

For the coating:
- Decorative papers: with a grammage of 60 -120 g/m²
- **Melamine formaldehyde resin:** amino-plastic resin for the impregnation of decorative paper for lamination; the resin hardens inside the press into a hard and wear-resistant surface.

The product contains substances on the *ECHA List* of substances of very high concern (16.01.2020) 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

Production of the rawboards (EGGER MDF):
1. Wood preparation
 - Roundwood chipping
 - Chip preparation
 - Residual wood preparation
2. Cooking the chips
3. Defibration in the refiner
4. Drying the fibres to approximately 2-3 % residual moisture
5. Application of resin to the fibres
6. Spreading the glue-coated fibres onto a forming belt
7. Compression of the fibre mat in a continuously operating hot press
8. Cutting and trimming the fibre strand into rawboard formats
9. Cooling the rawboards in star coolers
10. Piling into large stacks
11. Sanding the upper and lower sides after the climatisation phase

Production of impregnates for coating:
1. Processing the base paper
2. Addition of impregnation resins (MUF) in the plant
3. Drying the impregnated paper in heated dryers
4. Formatting the endless paper by means of a cross-cutter
5. Stacking the formatted sheets on pallets

Production of the laminated MDF board (EGGER Eurodekor):
1. Laying the impregnated papers onto the upper and lower sides of the rawboard

2. Pressing the board in the hot press with variously structured pressing sheets
3. Sorting by quality and stacking
4. Acclimatisation phase of up to 14 days

All waste generated in the course of production (trimming, cutting and milling waste) is used thermally with no exceptions.

The quality management system is implemented and certified according to the requirements of *ISO 9001*.

2.7 Environment and health during manufacturing

Environmental management at EGGER starts with state-of-the-art technologies: The plants are equipped with state-of-the-art wastewater, noise protection and air purification systems.
The EGGER environmental management system runs through the entire company, enabling efficient implementation of environmental objectives and the integration of environmental aspects into work processes. The objective is to ensure compliance with legislation, to avoid or reduce negative operational environmental impact, and to continuously improve environmental performance.

2.8 Product processing/Installation

EGGER Eurodekor can be sawed and drilled with regular (electrical) machines. Hard metal tipped tools are recommended, particularly in the case of circular saws. Wear a respiratory mask if using hand tools without a dust extraction device. Detailed information and processing recommendations are available at: www.egger.com

2.9 Packaging

Wooden chipboard and corrugated cardboard are used for covering, as well as PET packaging straps.

2.10 Condition of use

The component materials of laminated MDF board comply in terms of their proportions to those of the basic material composition described in section 2.5. During compression, the aminoplast resin (UF) is cross-linked three-dimensionally by an irreversible polycondensation reaction under the application of heat.
The bonding agents are chemically stable and permanently bonded to the wood.

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 aspects: There are currently no known health hazards or effects to be expected from normal use, i.e. in accordance with the intended uses of laminated MDF boards. Natural wood constituents may be released in small quantities. With the exception of small amounts of formaldehyde that are not a hazard to health, no emissions of harmful substances are detectable.

2.12 Reference service life

The service life of the Eurodekor MDF boards 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.

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.

The temperature, humidity, UV radiation, frequency and extent of room climate changes as well as the presence of standing water have a significant influence on the ageing of the product.

2.13 Extraordinary effects

Fire

From a thickness of 9 mm and a raw density of > 600 kg/m3, EGGER Eurodekor MDF complies with fire classification D as per *EN 13501* and falls into the categories s2 (normal smoke development) and d0 (non-dripping).
EGGER Eurodekor MDF boards do not become liquid when heated. Burning dripping is not possible. For increased fire protection requirements there is EGGER Eurodekor MDF Flammex (B-s1, d0).

Fire protection

Name	Value
EGGER Eurodekor MDF:	-
Building material class	D (normal flammability)
Burning droplets	d0 (no drip off / fall off)
Smoke gas development	s2 (limited smoke development)
EGGER Eurodekor MDF Flammex:	-
Building materials class	B (low flammability)
Dropping while burning	d0 (no drip off / fall off)
Smoke development	s1 (no/almost no smoke development)

Water

No water-polluting substances are washed out. MDF boards are not resistant to the long-term effects of water (change to the mechanical properties from swelling of the fibres), yet damaged areas can be replaced at a local level.

Mechanical destruction

The fracture pattern of an MDF board shows relatively

brittle behaviour, with the possibility of sharp edges where the boards break (risk of injury).

2.14 Re-use phase

Re-use / Recycling: EGGER Eurodekor chipboard can easily be collected separately in the case of selective dismantling when a building is converted or ends its use phase, and can be re-used or recycled for purposes other than its original application. Exceptions to this are boards that have been bonded over their surface.

Energy generation (in approved facilities): With the high calorific value of approx. 18.5 MJ/kg, energy recovery for the generation of process energy and electricity (combined heat and power plants) of residues accumulating on the construction site and residues from demolition measures is preferable to landfilling.

2.15 Disposal

Construction site waste of EGGER Eurodekor, and waste from demolition projects, should primarily be used in materials. If this is not possible, they must be sent for energy recovery instead of landfilling (waste code according to the European Waste Catalogue *EWC: 170201/030105*).
The transport packaging materials, chipboard and PET packaging straps can be recycled as long as they are collected separately. In some cases, external disposal can be arranged with the manufacturer.

2.16 Further information

Detailed information and recommendations are available at www.egger.com.

3. LCA: Calculation rules

3.1 Declared Unit

This environmental product declaration is based on a declared unit of 1 m³ EGGER Eurodekor laminated MDF board with an average raw density of 13.22 kg/m² and a delivery moisture of approximately 6 %.

Specification of the declared unit

Name	Value	Unit
Declared unit	1	m^2
conversion factor [Mass/Declared Unit]	13.22	-
Grammage	13.22	kg/m^2
Wood moisture at delivery	6	%
Layer thickness	0.023	m

EGGER Eurodekor laminated MDF is made at the Brilon (DE) plant. The surface weight of the Eurodekor laminated MDF was calculated surface weighted. This is based on the averaging of raw chipboard, which was done according to dimensional weight. The glue mix of the products was also included in the calculation as a weighted average. The average for the impregnation used for coating was based on annual production.

3.2 System boundary

The LCA of the average EGGER Eurodekor laminated MDF board 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 of the raw material supply (logs, scrap wood, sawdust, glue system, auxiliary materials, etc.) as well as the associated transports to the production site in Brilon. Within the plant boundaries, the log yard, wet chip preparation, drying, gluing, spreading, pressing, the sanding line up to the warehouse and shipping are taken into account. The Eurodekor products are also finished by applying an impregnation in the short-cycle presses and then packaged. Thermal and electrical energy, compressed air and water are provided by central suppliers at the Brilon site. The majority of the electrical energy used is obtained from the German power grid. Both internal wood waste and scrap wood sourced externally are used in the in-house biomass power plant. The system boundary for the scrap wood used in the production is set after sorting and chopping. It is assumed that the end of the waste status has been reached. The system boundary for secondary raw materials according to *EN 15804* applies.

Module C1 | Dismantling / Demolition
Manual dismantling was assumed for the laminated MDF boards. 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
Chopping after product disassembly is considered in module C3. The wood products and with them the material-inherent properties leave the product system as secondary fuel in module C3.

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

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

3.3 Estimates and assumptions

Assumptions and estimates are used in the absence of a representative background data set to represent the environmental impact of certain raw materials. All assumptions are supported with detailed documentation and correspond to the best possible representation of reality given the available data. A generic data set from the *GaBi* Database for spruce roundwood was used as background data set for

roundwood. A large part of the wood processed by EGGER represents coniferous fibrewood. For other wood types used, the data set for spruce roundwood should be considered as an approximation.

In the case of missing measurement data for emissions from the presses, these values were estimated based on the publication by *Rüter & Diederichs 2012*.

3.4 Cut-off criteria

All inputs and outputs for which data are available and from which a significant contribution can be expected are included in the LCA model. Missing data are populated when a data basis is available using conservative assumptions for average data or generic data and are documented accordingly. Only data with a contribution of less than 1% were removed. Neglecting these data can be justified by the limited effect to be expected. Thus, no processes, materials or emissions were neglected that are expected to make a significant contribution to the environmental impact of the products under consideration. It can be assumed that the data were recorded in full and that the total sum of the neglected input flows does not exceed 5 % of the energy and mass input. 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, on the one hand, from the *GaBi* database 2020, SP40 and, on the other hand, from recognised literature sources, such as *Rüter & Diederichs 2012*.

3.6 Data quality

The data was collected via spreadsheets specifically created by EGGER. Questions were answered through an iterative process in writing via e-mail, phone, or in 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 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 forestry chain is based on the publication of *Hasch 2002* and its update by *Rüter & Albrecht 2007*.

For board production, sawing by-products were also used in addition to roundwood. A price allocation according to *Rüter & Diederichs 2012* and according to the primary data for the sawmill in Brilon 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.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

4. LCA: Scenarios and additional technical information

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

Information describing the biogenic carbon content at the plant gate

Name	Value	Unit
Biogenic carbon content (in the product)	5.3	kg C/m²
Stored carbon dioxide (in the product)	19.5	kg CO2-Äq./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.

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).

Integration into building (A5)
The end-of-life of product packaging is not declared in module A5.

Name	Value	Unit
Packaging (PET)	0.0004	kg/dekl. Einheit
Packaging (wood)	0.36	kg/dekl. Einheit
Packaging (Kraftliner)	0.0086	kg/dekl. Einheit

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	according to EN 622-5	-
Design application parameters (if instructed by the manufacturer), including the references to the appropriate practices and application codes	Service life depending on intended use	-
An assumed quality of work, when installed in accordance with the manufacturer's instructions	see the processing instructions EGGER Eurodekor/ Eurodekor Plus" available on www.egger.com	-
Outdoor environment, (for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature	not relevant, given use in interiors	-
Indoor environment (for indoor applications), e.g. temperature, moisture, chemical exposure	dry furniture and interior design	-
Usage conditions, e.g. frequency of use, mechanical exposure	according to EN 622-5	-
Maintenance e.g. required frequency, type and quality and replacement of components	regular visual inspection and replacement in case of damage	-

End of life cycle (C1-C4)

Name	Value	Unit
For energy recovery [balance moisture 12%]	14	kg/m²

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

Name	Value	Unit
Net flow in module D [balance moisture 12 %]	13.1	kg/m²
Moisture during thermal reuse	12	%
Processing rate	100	%
Efficiency of the system	61	%

The product reaches the end of the waste status after it is removed from the building, transported for preparation, and the chopping of the product. For the end of life of EGGER Eurodekor laminated MDF, energy recovery as secondary fuel is assumed. Energetic utilisation takes place in a biomass power plant. System-specific figures correspond to a European average scenario (EU28), given that the sales market of EGGER Eurodekor laminated MDF is focussed on Europe. The scenario foresees a processing rate of the Eurodekor MDF 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 utilisation.

5. LCA: Results

The following table contains the LCA results for a declared unit of 1 m³ average EGGER Eurodekor MDF with a thickness of surface weight of 13.22 kg/m² (approximately 6 % moisture).

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

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

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

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² Eurodekor MDF (13.22 kg/m²)

Core Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Global warming potential - total	[kg CO_2-Eq.]	-1.11E+1	0.00E+0	4.21E-2	1.96E+1	0.00E+0	-9.51E+0
Global warming potential - fossil fuels	[kg CO_2-Eq.]	8.26E+0	0.00E+0	4.18E-2	1.12E-1	0.00E+0	-9.47E+0
Global warming potential - biogenic	[kg CO_2-Eq.]	-1.94E+1	0.00E+0	-6.98E-5	1.95E+1	0.00E+0	-2.85E-2
GWP from land use and land use change	[kg CO_2-Eq.]	1.35E-2	0.00E+0	3.37E-4	1.63E-4	0.00E+0	-9.24E-3
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1.56E-11	0.00E+0	7.63E-18	2.47E-15	0.00E+0	-1.39E-13
Acidification potential, accumulated exceedance	[mol H^+-Eq.]	2.57E-2	0.00E+0	1.41E-4	2.48E-4	0.00E+0	7.61E-3
Eutrophication, fraction of nutrients reaching freshwater end compartment	[kg PO_4-Eq.]	2.56E-5	0.00E+0	1.27E-7	3.00E-7	0.00E+0	-1.70E-5
Eutrophication, fraction of nutrients reaching marine end compartment	[kg N-Eq.]	1.13E-2	0.00E+0	6.38E-5	5.52E-5	0.00E+0	1.93E-3
Eutrophication, accumulated exceedance	[mol N-Eq.]	1.09E-1	0.00E+0	7.12E-4	5.80E-4	0.00E+0	2.30E-2
Formation potential of tropospheric ozone photochemical oxidants	[kg NMVOC-Eq.]	2.79E-2	0.00E+0	1.25E-4	1.51E-4	0.00E+0	8.16E-3
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	3.78E-6	0.00E+0	3.36E-9	3.26E-8	0.00E+0	-2.08E-6
Abiotic depletion potential for fossil resources	[MJ]	1.51E+2	0.00E+0	5.55E-1	1.98E+0	0.00E+0	-1.96E+2
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	[m³ world-Eq deprived]	3.03E-1	0.00E+0	4.05E-4	2.45E-2	0.00E+0	-6.40E-1

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Eurodekor MDF (13.22 kg/m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	3.06E+1	0.00E+0	3.21E-2	1.98E+2	0.00E+0	-4.92E+1
Renewable primary energy resources as material utilization	[MJ]	2.01E+2	0.00E+0	0.00E+0	-1.97E+2	0.00E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	2.31E+2	0.00E+0	3.21E-2	8.76E-1	0.00E+0	-4.92E+1
Non-renewable primary energy as energy carrier	[MJ]	1.20E+2	0.00E+0	5.57E-1	3.34E+1	0.00E+0	-1.96E+2
Non-renewable primary energy as material utilization	[MJ]	3.14E+1	0.00E+0	0.00E+0	-3.14E+1	0.00E+0	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	1.51E+2	0.00E+0	5.57E-1	1.98E+0	0.00E+0	-1.96E+2
Use of secondary material	[kg]	3.01E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of renewable secondary fuels	[MJ]	1.48E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.85E+2
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.95E+1
Use of net fresh water	[m³]	3.06E-2	0.00E+0	3.74E-5	1.01E-3	0.00E+0	-3.98E-2

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Eurodekor MDF (13.22 kg/m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	[kg]	1.64E-6	0.00E+0	2.58E-8	8.19E-10	0.00E+0	-6.62E-8
Non-hazardous waste disposed	[kg]	1.34E-1	0.00E+0	8.83E-5	1.40E-3	0.00E+0	7.15E-3
Radioactive waste disposed	[kg]	4.34E-3	0.00E+0	1.03E-6	3.00E-4	0.00E+0	-1.68E-2
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	1.40E+1	0.00E+0	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m² Eurodekor MDF (13.22 kg/m²)

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Potential incidence of disease due to PM emissions	[Disease Incidence]	2.25E-7	0.00E+0	7.99E-10	2.08E-9	0.00E+0	-4.12E-8
Potential Human exposure efficiency relative to U235	[kBq U235-Eq.]	4.29E-1	0.00E+0	1.51E-4	4.92E-2	0.00E+0	-2.76E+0
Potential comparative toxic unit for ecosystems	[CTUe]	4.27E+1	0.00E+0	4.15E-1	8.47E-1	0.00E+0	-4.79E+1
Potential comparative toxic unit for humans - cancerogenic	[CTUh]	4.17E-8	0.00E+0	8.58E-12	2.34E-11	0.00E+0	-1.89E-10
Potential comparative toxic unit for humans - not cancerogenic	[CTUh]	7.58E-8	0.00E+0	4.94E-10	8.61E-10	0.00E+0	5.54E-8
Potential soil quality index	[-]	1.42E+3	0.00E+0	1.95E-1	6.30E-1	0.00E+0	-3.60E+1

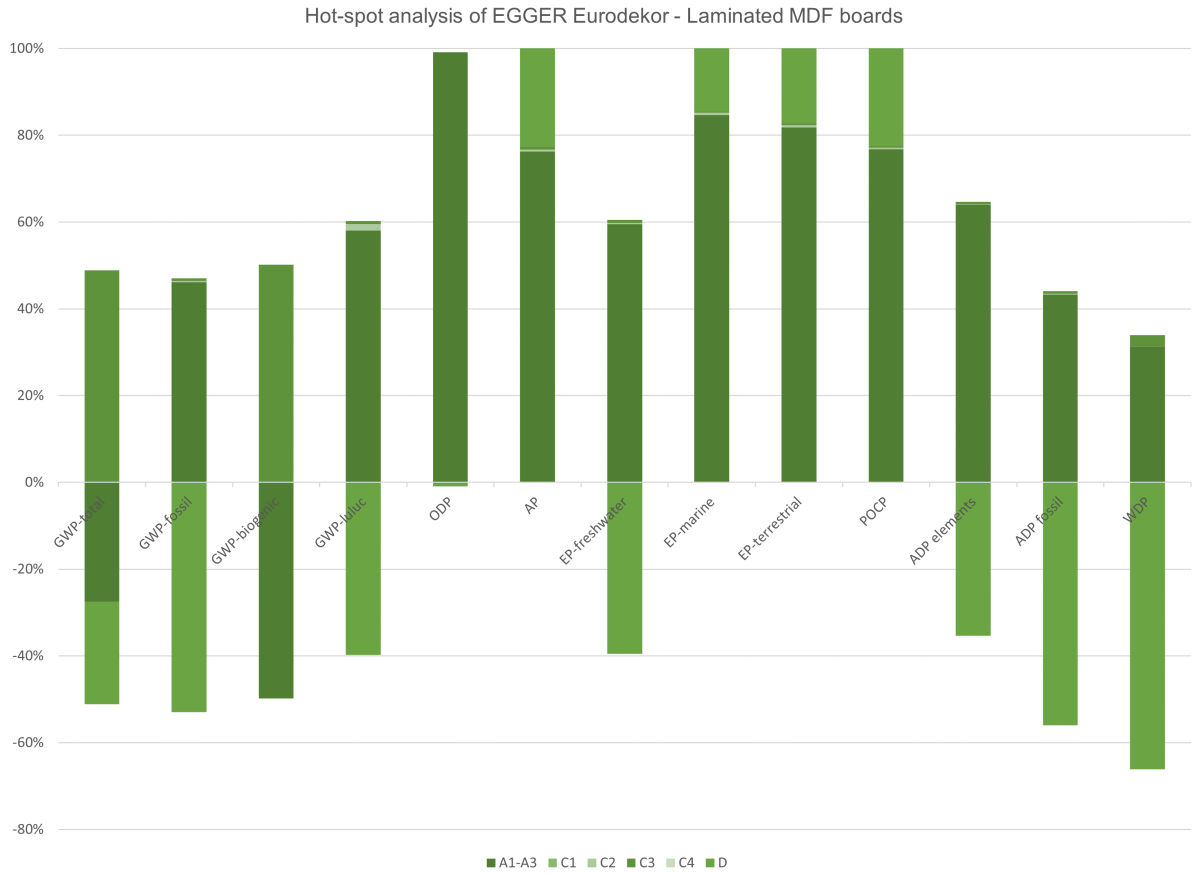
Limitation note 1 - applies to the indicator Potential effect from human exposure to U235:
This impact category mainly addresses the possible effect of low dose ionising radiation on human health in the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents and occupational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

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

6. LCA: Interpretation

The following interpretation includes a summary of the LCA results relative to a declared unit of 1 m³ average EGGER Eurodekor laminated MDF board.

For the global warming potential (GWP) during the production phase (Module A1-A3) of the EGGER Eurodekor MDF board, the total is a negative value. This is due to the material use of wood in the products. While the tree is growing, the wood stores carbon dioxide as biogenic carbon (negative greenhouse potential) and does therefore not have a greenhouse effect as long as it is stored in the product. Only upon the energy utilisation at the end of the product life cycle (Module C3) does the stored carbon leave the product system as a material-specific characteristic of the secondary fuel.
The negative values in Module D can be explained through the fact that the energy generated by the energetic utilisation of the product is able to replace the combustion of fossil fuels. In this way, more emissions of (mainly fossil) fuels are avoided than those emitted through the use of the energy stored in the wood.
Environmental impacts (acidification potential (AP), eutrophication potential (EP), formation potential of tropospheric ozone (POCP)) in module D arise primarily from emissions from the combustion of biomass.



In the production of laminated Eurodekor boards, the manufacture of raw MDF boards and impregnation, including their upstream chains, can be identified as the most significant influencing factors in all the impact categories considered. The potential environmental impacts from the provision of electricity and steam as well as the upstream expenses for the production of the UMF gluing system represent the most significant influencing factors in the production of the raw MDF board. In the case of impregnation, the decorative paper as well as urea and melamine impregnation resin take on a dominant role with regard to the environmental indicators considered.

The use of renewable primary energy (PERT) is due to the material use of biomass in the product. If we look at the use of non-renewable primary energy (PENRT), this is mainly used for the production of the gluing system and for the provision of energy from the German electricity mix.

The results of the previous EPD for EGGER EURODEKOR MDF (EPD-EGG-20150045-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

Eurodekor MDF E1 P2 CE
Measurement centre: Entwicklungs- und Prüflabor Holztechnologie GmbH Dresden
Test report: Test report no. 2118076/2019/MDF/E1-2020
Test basis: Chamber method *EN 717-1:2004*, testing the laminated board
Result: 0.012 mg/m³ or 0.01 ppm. The limit value of the *ChemVerbotsV* is complied with.

Eurodekor MDF E1E05 TSCA P2 CE
Measurement centre: TCLAB TechCenter Laboratory Unterradlberg
Test report:
CTR_BRI_E1E05_503_504_mm_20191001_3719650
Test basis: Chamber method *EN 717-1:2004*, testing the raw board
Result: Measured value 0.056 mg/m³ and 0.045 ppm. As required by the ChemVerbotsV, twice the measured value is below the limit of 0.1 ppm.

7.2 MDI emissions

No MDI is used in the gluing system of EGGER MDF boards, no evidence is necessary.

7.3 Testing for pre-treatment of input materials (Measurement in accordance with the Waste Wood Ordinance (AltholzVO))

As no waste wood is used for the product, this evidence is not necessary.

7.4 Toxicity of the fire gases:

Measurement centre: epa Aachen, Division of Flue Gas Toxicology, D
Test report: No. 14/2014 of 25.06.2014
Testing method: Testing the toxic fire gases according to *DIN 4102-1* Category A at 400 °C, melamine faced board (only coating)
Results: After 30 minutes, 20,000 ppm of carbon monoxide were measured in the inhalation room. After 60 minutes, the concentrations in the inhalation room were as follows: Carbon monoxide 30,000 ppm

(calculated from this > 50% COHb), carbon dioxide 15,000 ppm and hydrogen cyanide 10 ppm. Sulphur dioxide and hydrogen chloride were not detectable. The relative weight reduction at a test temperature of 400° C was 64.8 %. There was dense white smoke in the inhalation room at the end of the test. The gaseous emissions released under the selected experimental conditions correspond largely to the emissions released by wood under the same conditions. Given that the coating hasn't changed, the said test report maintains its validity.

7.5 VOC emissions

Measurement centre: WKI Fraunhofer Wilhelm-Klauditz-Institute, testing, monitoring and certification facility, Braunschweig, DE
Test report: QA-2018-3580 laminated MDF board E1 TSCA of 19.11.2018
Test basis: *AgBB* scheme 2015

Test result after 28 days: meets the requirements of the *AgBB* scheme

AgBB result overview (28 days [µg/m³])

Name	Value	Unit
TVOC (C6 - C16)	≤ 1000	µg/m³
Sum SVOC (C16 - C22)	≤ 100	µg/m³
R (dimensionless)	≤ 1	-
VOC without NIK	≤ 100	µg/m³
Carcinogenic Substances per single value	≤1	µg/m³

AgBB result overview (3 days [µg/m³])

Name	Value	Unit
TVOC (C6 - C16)	≤ 300	µg/m³
Sum SVOC (C16 - C22)	≤ 30	µg/m³
R (dimensionless)	0.602	-
VOC without NIK	≤ 50	µg/m³
Carcinogenic Substances total	≤ 1	µg/m³

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