ENVIRONMENTAL-PRODUCT DECLARATION

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

Owner of the Declaration	Fritz EGGER GmbH & Co. OG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-EGG-20200248-IBC1-EN
Issue date	29.07.2021
Valid to	09.05.2026

PerfectSense Lacquered Boards

Fritz EGGER GmbH & Co. OG

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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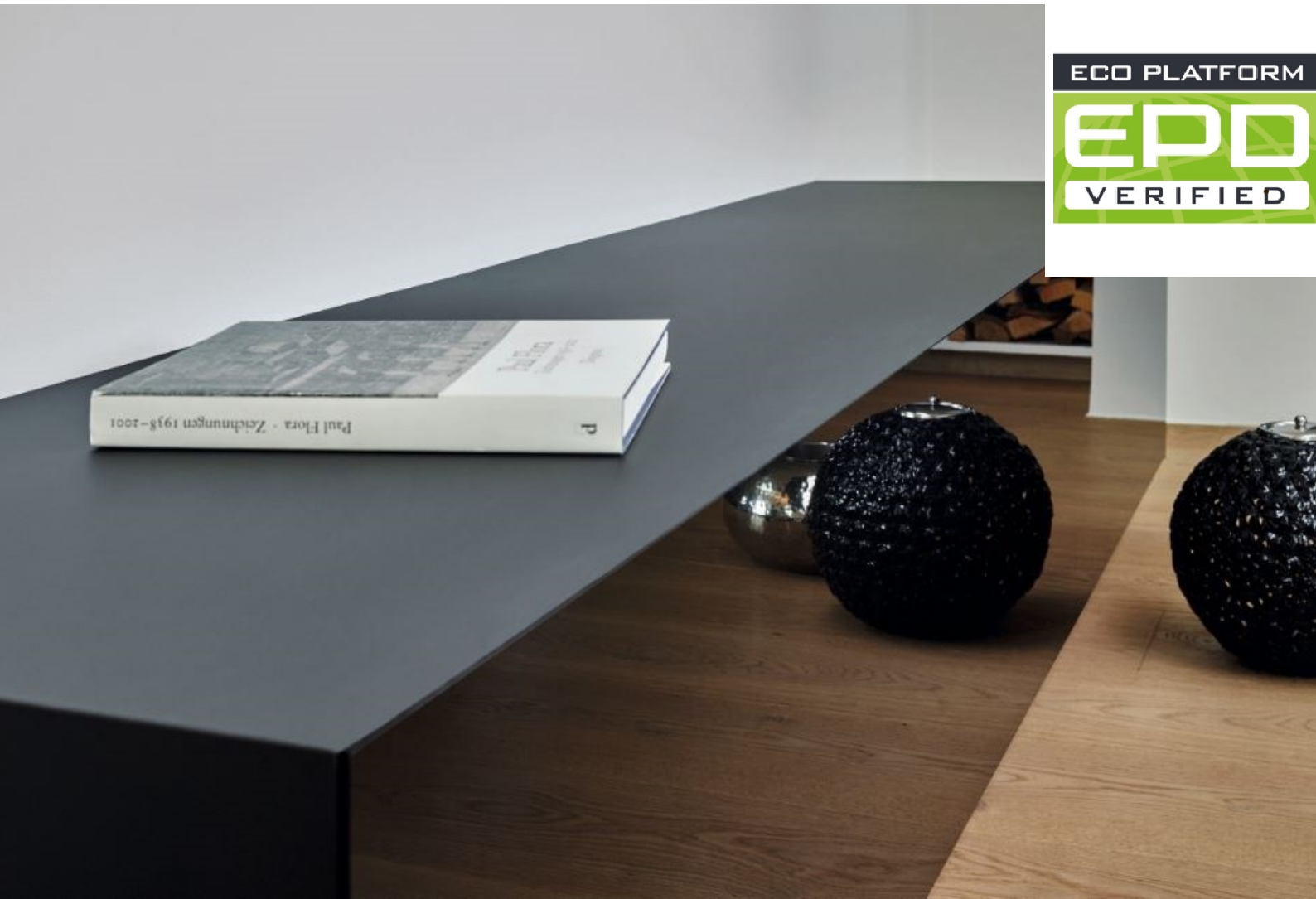


1. General Information

Fritz EGGER GmbH & Co. OG

Programme holder

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

Declaration number

EPD-EGG-20200248-IBC1-EN

This declaration is based on the product category rules:

Wood based panels, 01.08.2021
(PCR checked and approved by the SVR)

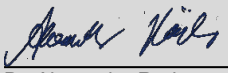
Issue date

29.07.2021

Valid to

09.05.2026

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



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

PerfectSense Lacquered Boards

Owner of the declaration

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

Declared product / declared unit

1
m² EGGER PerfectSense Lacquered Board (13.2 kg/m²).

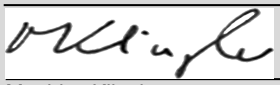
Scope:

This document refers to EGGER PerfectSense
Gloss and Matt Lacquered Boards, produced in Brilon, Germany.
The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804 bezeichnet*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally



Matthias Klingler,
(Independent verifier)

2. Product

2.1 Product description/Product definition

PerfectSense
Lacquered Boards are panel-shaped materials according to

*EN
622-5, Fibreboards — Specifications — Part 5: Requirements for dry process
boards (MDF).*

which
are classified for general purposes in dry conditions.

For
the preliminary product, the MDF coreboard is provided according to the

*EN
14322 Wood-based panels - Melamine faced boards for interior uses - Definition,
requirements and classification*

with
a melamine resin coating.

The
PerfectSense Lacquered Boards are provided with a one-sided UV coating as
standard*. Due to the homogeneity of the coreboard, a high-gloss surface with a
mirror finish effect can be created (PerfectSense Gloss), or a particularly
matt surface with a velvety feel and anti-fingerprint properties (PerfectSense
Matt).

To
protect the lacquered surface, the PerfectSense Lacquered Board is provided
with a protective film, which is peeled off the surface after final processing.

*The optionally available double-sided lacquer finish is excluded from the validity
of this EPD. erfectSense Lacquered Boards with matt and high-gloss surfaces are used in the upmarket furniture segment. PerfectSense
Lacquered Boards are popular in interior design for kitchen fronts and sliding
door elements as well as for bathroom and living room furniture.

2.2 Application

PerfectSense Lackplatten mit matter und hochglänzender Oberfläche werden im gehobenen Möbelsegment eingesetzt. Gerne werden PerfectSense Lackplatten in der Inneneinrichtung für Küchenfronten und Schiebetürelemente sowie für Bad- und Wohnmöbel verwendet.

2.3 Technical Data

The PerfectSense Lacquered Board has a
melamine resin-coated board as coreboard. The definition, requirement and
classification of melamine faced boards for interior use and dimensional
tolerances are provided by the *EN 14323* standard.

The surface properties of the lacquered
board are regulated by a number of other standards, e.g. the behaviour under
scratching stress according to *EN 15186* or surface defects according to
AMK leaflet *AMK-MB-009*.

For detailed information, please refer
to the technical data sheets available at www.egger.com.

Structural engineering data

The following data are based on the EGGER MDF ST
E1 TSCA board type according to *EN 622-5* and therefore refer to the
uncoated coreboard of the PerfectSense Lacquered Board.

Name	Value	Unit
Gross density 15-19 mm, EN 323	670 - 730	kg/m^3
Grammage 18 mm	121 - 131	kg/m^2
Bending strength (longitudinal) 12-19 mm, EN 310	25	N/mm^2
E-module (longitudinal) 12-19 mm, EN 310	2700	N/mm^2
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	%
Formaldehyde emissions according to EN 717-1 (rawboard) *1)*2)	<124	µg/m^3
Surface soundness EN 311	1,0	N/mm^2
Thickness tolerance 12-19 mm, EN 324	+- 0.2	mm

*1) E1: According to *EN 13986+A1:2015-04* formaldehyde class E1, a limit value of 8 mg HCHO/100 g absolutely dry rawboard may not be
exceeded by the perforator method according to *ISO 12460-5*.

*2) TSCA: According to the US Toxic Substances Control Act (*TSCA Title VI*),
MDF boards may not exceed 0.11 ppm according to test chamber method *ASTM E
1333*.

Performance values of the product as stated
in the declaration of performance in relation to its essential characteristics
according to *EN 13986+A1:2015-04*, *Wood-based panels for use in
construction – Characteristics, evaluation of conformity and marking* (not
part of the CE marking).

2.4 Delivery status

Standard size [mm]: 2,800 × 2,070

Thickness range [mm]: 10-25

2.5 Base materials/Ancillary materials

Preliminary products:

MDF boards between 10 and 25 mm thick with an

average density between 670-730 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: It is added as a fire retardant to the average MDF coreboard
(only for Flammex product variants, PerfectSense not available as Flammex).

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.

For lacquering with UV-curing acrylic paint:

- 94.5-97.5% acrylic preparation

- 2.5-5.5% photo-initiators for UV curing.

The paint polymerises completely under UV radiation to a hard 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

The base material of a PerfectSense Lacquered Board is a melamine-resin-coated MDF board (EGGER Eurodekor MDF).

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

Coating the MDF rawboard (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

Lacquering the laminated MDF board:

1. Lacquering with adhesive primer, curing by means of UV rays

2. Lacquering with sanding primer, curing by means of UV rays

3. Lacquer intermediate sanding

4. Lacquering with top coat as final surface, curing by means of UV rays

5. Application of protective film

6. Sorting by quality and stacking

A quality management system in accordance with *ISO 9001* requirements is implemented and certified at the production site.

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.

The production plant is certified with an energy management system according to *ISO 50001* and an environmental management system according to *ISO 14001*.

2.8 Product processing/Installation

EGGER PerfectSense Lacquered Boards 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.

The lacquered surface of the board is also provided with a protective film. This is laminated onto the board immediately after lacquering to protect the surface during further processing.

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 2.6 Basic materials.

During compression, the aminoplast resin (UF) is cross-linked three-dimensionally by an irreversible polycondensation reaction under the application of heat.

The bonding agents as well as the paint used 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: According to the current state of knowledge, no health hazards or adverse effects are to be expected from normal use of PerfectSense Lacquered Boards in accordance with their intended purpose. Natural wood constituents may be released in small quantities. With the exception of minor amounts of formaldehyde in quantities that are harmless to health, no emissions of hazardous substances can be detected.

2.12 Reference service life

The service life of PerfectSense Lacquered 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. Einfluss auf die Alterung des Produktes nehmen maßgeblich die Temperatur, Feuchtigkeit, UV-Strahlung, Häufigkeit und Ausmaß von Raumklimaänderungen sowie das Vorhandensein von stehendem Wasser.

2.13 Extraordinary effects

Fire

The PerfectSense Lacquered Board complies with fire class D according to *EN 13501-1* and falls into categories s2 (normal smoke development) and d0 (non-dripping). PerfectSense Lacquered Boards do not become liquid when heated. Burning dripping is not possible.

The PerfectSense Lacquered Board meets the material properties and end-use conditions according to *EN 13986* and is classified without the need for retesting (CWFT).

Fire protection

Name	Value
Building material class	D (normal flammability)
Burning droplets	d0 (non-dripping)
Smoke gas development	s2 (normal 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 PerfectSense 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 average calorific value of approximately 18.5 MJ/kg an energy utilisation for the generation of process energy and electricity (combined heat and energy power plants) from residues from the construction site as well as from demolition measures are to be preferred over dumping.

2.15 Disposal

Construction site waste of EGGER PerfectSense, 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 as well as PET packaging straps and the protective film 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 refers to a declared unit of one square meter of EGGER PerfectSense Gloss and Matt Lacquered Boards produced with an average grammage of 13.2 kg/m².

Specification of the declared unit

Name	Value	Unit
Declared unit	1	m^2
Conversion factor to 1 kg	-	-
Raw density	13.2	kg/m²

EGGER PerfectSense Gloss and Matt Lacquered Board is made at the Brilon (DE) plant. The surface weight of the PerfectSense Lacquered Board was calculated surface weighted. The calculations of the EURODEKOR products are again based on the averaging of the chipboard and MDF boards, which is volume-weighted. 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 also based on annual production. Given that in this case the quantities of melamine and urea saturating resin depends on the product, the quantities used for the calculation reflect the annual average pro rata.

3.2 System boundary

The LCA of the EGGER PerfectSense Gloss and Matt Lacquered Boards 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 (round wood, production of the basic chemicals used for the gluing systems of the wood-based materials, the components of the impregnation such as decorative and kraft paper, production of the paint, auxiliary materials, etc.) as well as the associated transport 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. In the case of PerfectSense Lacquered Boards, the EURODEKOR products are additionally coated with a paint layer. The glue system used is not manufactured on site. 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 removal was assumed for the PerfectSense Lacquered Board. 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 treatment

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 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s

lifespan: Germany

3.9 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.

3.10 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. Zur Berechnung der Ökobilanz wurde die *GaBi* Hintergrunddatenbank (DB 2020, SP 40) in der *GaBi*-Software-Version 9 verwendet

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)	19.3	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).

In case a **reference service life** according to applicable ISO standards is declared then the assumptions and in-use conditions underlying the determined RSL shall be declared. In addition, it shall be stated that the RSL applies for the reference conditions only.

The same holds for a service life declared by the manufacturer. Corresponding information related to in-use conditions needs not be provided if a service life taken from the list on service life by BNB is declared.

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	according to 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 Chemical exposure according to EN 12720	Class 1B	-
Usage conditions, e.g. frequency of use, mechanical exposure Behaviour under scratching stress according to EN 15186	Class 4B (matt), 4C (gloss)	-
Maintenance e.g. required frequency, type and quality and replacement of components	regular visual inspection and replacement in case of damage	-

You can find detailed processing and usage instructions for download on the product pages at www.egger.com.

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 %]	13.2	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 PerfectSense Gloss and Matt Lacquered Boards, 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 PerfectSense Gloss and Matt Lacquered Boards is focussed on Europe. The scenario foresees a processing rate of the PerfectSense Lacquered Boards 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 life cycle assessment results for a declared unit of one square meter of EGGER PerfectSense Gloss and Matt Lacquered Boards produced with an average grammage of 13.2 kg/m².

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	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² PerfectSense Lacquered Board (13.2 kg/m²)

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO_2 eq	-1.02E+01	0	4.19E-02	1.94E+01	0	-9.4E+00
Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq	8.87E+00	0	4.17E-02	1.12E-01	0	-9.37E+00
Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq	-1.91E+01	0	-6.95E-05	1.93E+01	0	-2.86E-02
Global Warming Potential luluc (GWP-luluc)	kg CO_2 eq	4.11E-02	0	3.35E-04	1.62E-04	0	-9.27E-03
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	2.21E-08	0	7.6E-18	2.46E-15	0	-1.39E-13
Acidification potential of land and water (AP)	mol H^+ eq	2.77E-02	0	1.41E-04	2.47E-04	0	7.63E-03
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	3.42E-05	0	1.26E-07	2.99E-07	0	-1.7E-05
Eutrophication potential aquatic marine (EP-marine)	kg N eq	1.18E-02	0	6.35E-05	5.5E-05	0	1.94E-03
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	1.16E-01	0	7.1E-04	5.77E-04	0	2.3E-02
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	3.08E-02	0	1.25E-04	1.51E-04	0	8.18E-03
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	4.61E-06	0	3.35E-09	3.24E-08	0	-2.09E-06
Abiotic depletion potential for fossil resources (ADPF)	MJ	1.6E+02	0	5.53E-01	1.97E+00	0	-1.96E+02
Water use (WDP)	m^3 world eq deprived	4.47E-01	0	4.04E-04	2.44E-02	0	-6.41E-01

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² PerfectSense Lacquered Board (13.2 kg/m²)

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	3.18E+01	0	3.2E-02	1.96E+02	0	-4.94E+01
Renewable primary energy resources as material utilization (PERM)	MJ	2.34E+02	0	0	-1.95E+02	0	0
Total use of renewable primary energy resources (PERT)	MJ	2.66E+02	0	3.2E-02	8.73E-01	0	-4.94E+01

Non renewable primary energy as energy carrier (PENRE)	MJ	1.27E+02	0	5.55E-01	3.46E+01	0	-1.96E+02
Non renewable primary energy as material utilization (PENRM)	MJ	3.36E+01	0	0	-3.26E+01	0	0
Total use of non renewable primary energy resources (PENRT)	MJ	1.6E+02	0	5.55E-01	1.97E+00	0	-1.96E+02
Use of secondary material (SM)	kg	0	0	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	1.34E+01	0	0	0	0	1.83E+02
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	3.07E+01
Use of net fresh water (FW)	m^3	3.51E-02	0	3.72E-05	1.01E-03	0	-3.99E-02

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:
1 m² PerfectSense Lacquered Board (13.2 kg/m²)

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	2.06E-05	0	2.57E-08	8.16E-10	0	-6.63E-08
Non hazardous waste disposed (NHWD)	kg	1.44E-01	0	8.8E-05	1.4E-03	0	7.17E-03
Radioactive waste disposed (RWD)	kg	5.25E-03	0	1.02E-06	2.99E-04	0	-1.69E-02
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	0	0	0
Materials for energy recovery (MER)	kg	0	0	0	1.39E+01	0	0
Exported electrical energy (EEE)	MJ	0	0	0	0	0	0
Exported thermal energy (EET)	MJ	0	0	0	0	0	0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 m² PerfectSense Lacquered Board (13.2 kg/m²)

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Incidence of disease due to PM emissions (PM)	Disease incidence	2.8E-07	0	7.96E-10	2.08E-09	0	-4.13E-08
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	5.28E-01	0	1.51E-04	4.9E-02	0	-2.77E+00
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	4.92E+01	0	4.14E-01	8.44E-01	0	-4.8E+01
Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	4.34E-08	0	8.55E-12	2.33E-11	0	-1.9E-10
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	8.93E-08	0	4.92E-10	8.58E-10	0	5.55E-08
Soil quality index (SQP)	SQP	1.46E+03	0	1.94E-01	6.27E-01	0	-3.6E+01

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

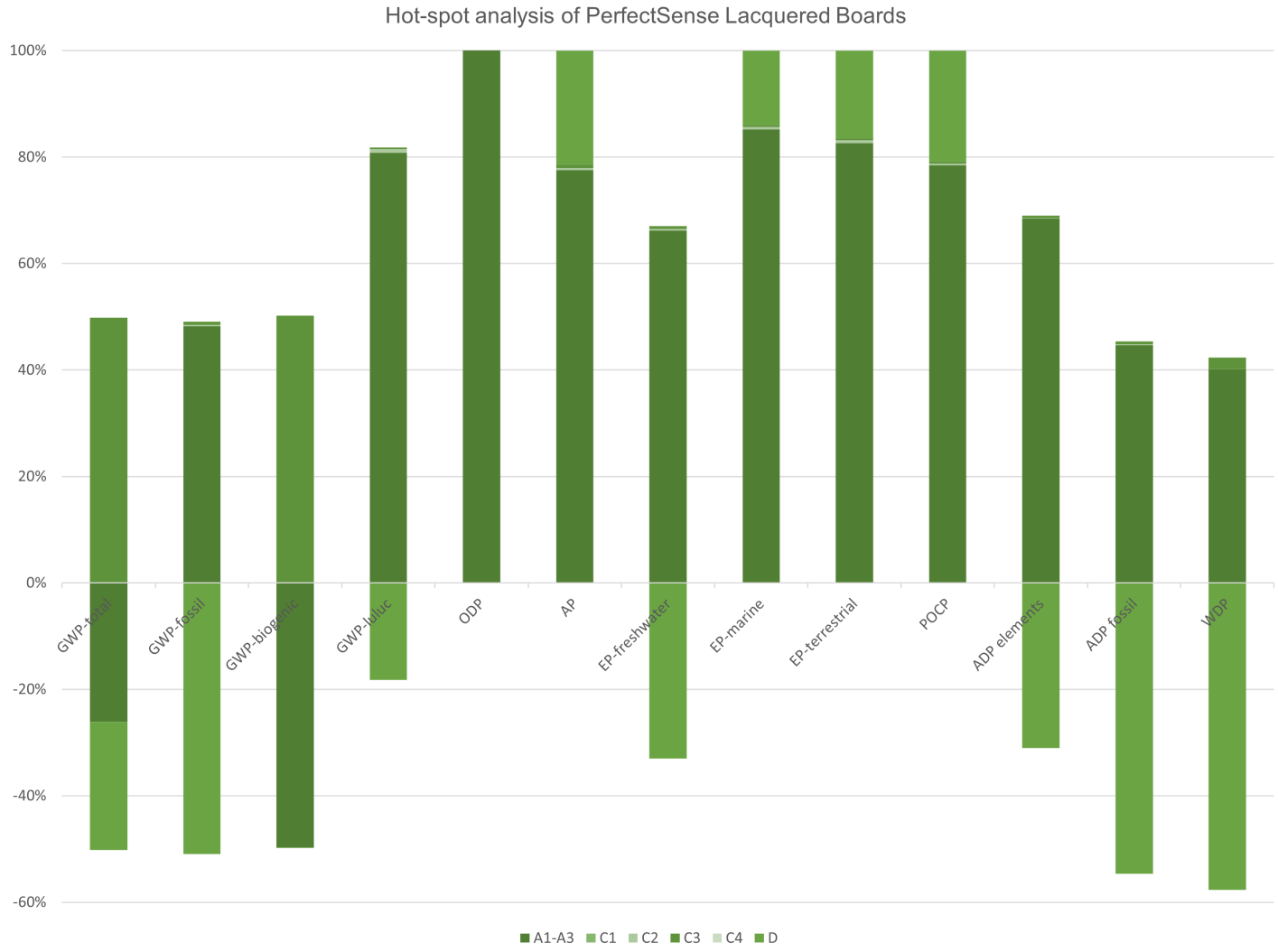
The following interpretation includes a
summary of the LCA results relative to a declared unit of 1 m^3
average EGGER
PerfectSense Gloss and Matt Lacquered Boards.

For the global warming potential (GWP)
during the production phase (Module A1-A3) of the EGGER
PerfectSense Gloss and

Matt Lacquered 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.

The environmental impact (AP, EP, POCP) in Module D is due mainly to emissions from the combustion of the biomass.



In the production of lacquered PerfectSense products, the manufacture of raw MDF boards, the paint system and the impregnation, including their upstream chains, can be identified as the most significant influencing factors. Electricity and steam supply as well as the upstream costs for the production of the UMF gluing system have the greatest influence on the potential environmental impact from the production of the raw MDF board. In the case of impregnation, the decorative paper as well as urea and melamine impregnation resin play a dominant role with regard to the environmental indicators considered. The potential depletion of the stratospheric ozone layer (ODP) and

the greenhouse gas emissions from land use change (GWP-luluc) are caused to a good extent by the texture generator used in production.

The use of renewable primary energy (PERT) is due to the material use of biomass in the product. Looking at the use of non-renewable primary energy (PENRT), this is mainly allocated for the production of the rawboards.

7. Requisite evidence

As a general rule, all statements must be documented with measured data (presented by the corresponding test certificates). The methods of evidence and the test conditions have to be described together with the results.

If substances are not detected, the limit of detection must be included in the declaration.

Interpreting statements such as "… free of …" or "… are entirely harmless …" are not allowed.

If evidence required by the specific PCR part B is not provided, this has to be justified under the respective title for the required evidence.

If relevant for the scope of application of the declared product, or if derivable from its material composition, it is recommended to provide additional adequate evidence.

Formaldehyde emissions

Measurement centre: TCLab Unterradlberg

Test report: CTR_BRI_E1_501_PerfectSenseHochglanz_19mm_20200603

Test basis: Formaldehyde release of the lacquered board according to chamber method *EN 717-1:2004*

Test result: Measured value 0.015 mg/m³ and 0.012 ppm. The limit value for formaldehyde class E1 according to the ChemVerbotsV is complied with. **MDI emissions**

The glue system of PerfectSense Lacquered Boards does not contain MDI. Proof is therefore not required. **Testing for pre-treatment of input materials Measurement in accordance with the Waste Wood Ordinance (AltholzVO)**

The MDF coreboard of the PerfectSense Lacquered Board does not contain any waste wood as a raw material. No testing according to the AltholzVO is required.

. **VOC emissions:**

Measurement centre: Fraunhofer Institut für Holzforschung Wilhelm-Klauditz-Institut WKI Braunschweig, D

Test report: No. MAIC-2020-0184 of 15.01.2020

Method: Testing and evaluation of a lacquered wood-based material sample according to *AgBB* scheme 2018

Test result: The product tested meets the requirements of the principles for the health assessment of building products (*AgBB* scheme 2018, NIK list 2018).

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	≤ 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	≤1	µg/m³

8. References

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EN 310

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EN 311

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EN 324

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thickness, width and length.

EN 622-5

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Specifications - Part 5: Requirements for dry process boards
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Determination of formaldehyde release - Part 1: Formaldehyde
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EN 12524

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EN 12720

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Assessment of surface resistance to cold liquids.

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marking.

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ISO 15686:2011-05, Buildings and
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VI to the Toxic Substances Control Act (TSCA) - ‘TSCA Title VI’, para 40 CFR §
770.10 (b).

The literature referred to in the Environmental Product Declaration must be listed in full.Standards already fully quoted

in the EPD do not need to be listed here again.
The current version of PCR Part A and PCR Part B of the PCR document on which they are based must be referenced.

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