ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A1*

Owner of the Declaration	GUTEX Holzfaserplattenwerk H. Henselmann GmbH + Co KG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-GTX-20190018-IBA2-EN
Issue date	18.04.2019
Valid to	17.10.2024

GUTEX Thermofibre

GUTEX Holzfaserplattenwerk H. Henselmann GmbH + CoKG

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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1. General Information

GUTEX Holzfaserplattenwerk H. Henselmann GmbH + CoKG

Programme holder

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

Declaration number

EPD-GTX-20190018-IBA2-EN

This declaration is based on the product category rules:

Blow-in insulation materials made from cellulose and wood fibres, 01.08.2021
(PCR checked and approved by the SVR)

Issue date

18.04.2019

Valid to

17.10.2024

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

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

GUTEX Thermofibre

Owner of the declaration

GUTEX Holzfaserplattenwerk H. Henselmann GmbH + Co KG
Gutenburg 5
79761 Waldshut-Tiengen
Germany

Declared product / declared unit

1 kg wood fibre insulating board

Scope:

This Environmental Product Declaration is valid for loose GUTEX Thermofibre wood fibre insulation boards produced in the Gutenburg plant (see manufacturer's address).
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+A1. 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 14025:2011
☐ internally ☒ externally

Dr. Patricia Wolf,
(Independent verifier)

2. Product

2.1 Product description/Product definition

GUTEX Thermofibre are loose wood fibres which are dried and made available in pre-compressed units according to /ETA-12/0181/.

The wood fibres are manufactured from mechanically-crushed coniferous wood chips.

The blow-in gross density depends on the area of application and is on average approx. 35 kg/m³. Directive (EU) No. 305/2011 /CPR/ applies for placing the product on the market in the EU/EFTA (with the exception of Switzerland). The product has a Declaration of Performance based on the /ETA 12/0181/ and the corresponding CE marking.

Use is governed by the respective national regulations.

2.2 Application

This thermal insulation serves towards manufacturing thermal layers which are not resistant to compression by mechanically processing them at the place of application.

The following areas of application are possible:

- Expansive insulation in closed cavities in exterior and interior walls

- Insulation in closed cavities between rafters and wood beams

- Exposed insulation in horizontal or slightly inclined areas

- Insulation of top storey ceilings which are accessible but cannot be walked on

- Cavity insulation between sleepers in the floor area and comparable supporting constructions

2.3 Technical Data

The product's performance values correspond with the Declaration of Performance (GX-01-0029-02) in terms of its essential properties in accordance with /ETA-12/0181/ dated 21.06.2017.

Technical construction data

Name	Value	Unit
Slump Settling to /ISO 18393/, Method A – Settling by impact excitation	< 10	%
Slump Settling to /ISO 18393/, Method C – Settling by vibration	< 1	%
Water vapour diffusion resistance factor μ (with regard to the density indicated)	1/2	-
flow resistance to /EN 29053/ at 30 kg/m³	> 4	kPa/m²
Thermal conductivity Nominal thermal conductivity of blow-in method (with regard to the density indicated)	0.039	W/(mK)
Reaction to fire Reaction to fire classification to /EN 13501-1/	E	-
Resistance to biological influence acc. to Annex C of the CUAP	-	class
Moisture conversion factor Fm thermal conductivity (23 °C 50% rel. humidity to 23 °C 80% relative humidity)	1.02	-
Density range depending on the area of application	25-50	-
Vertical exterior walls and partition wall cavities	35-50	kg/m³
Inclined blow-in insulation in cavities under roof waterproofing >10° pitch	35	kg/m³
Horizontal blow-in insulation in flat roof cavities	35	kg/m³
Horizontal exposed blow-in insulation for ceiling constructions which cannot be walked on	25	kg/m³

2.4 Delivery status

The insulating material is supplied in PE sacks, each weighing 15 kg, on disposable pallets with 21 bales per pallet. The pallets are delivered to the customer by truck.

2.5 Base materials/Ancillary materials

Exclusively untreated spruce/fir wood from regional forest management in the southern Black Forest is used for manufacturing GUTEX Thermofibre. This accounts for 95% by mass of the product.
Ammonium salt is added as a fire retardant.

The product contains substances on the /SVHC List of Candidates/ (08.01.2019) exceeding 0.1% by mass: no

The product contains other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass in at least one partial product: no

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on /Biocide Products No. 528/2012)/: no

2.6 Manufacture

Product manufacturing is based on wood chips supplied by regional sawmills which are broken down into wood fibres when exposed to moisture and heat. Then the fibres are dried and packed as units of the same size and weight in a filling process.

The production site works on the basis of certified quality management (/ISO 9001/).

2.7 Environment and health during manufacturing

Only minor or no dust emissions are incurred during production. No components are used which could potentially be hazardous

to the environment. Health and environmental protection measures during the manufacturing process which extend beyond the national guidelines or plant-specific requirements are outlined within the framework of the environmental management system certified to /ISO 14004/.

2.8 Product processing/Installation

GUTEX Thermofibre blow-in insulation materials are installed by certified processors using blow-in machines specially equipped for this purpose.

2.9 Packaging

The dried wood fibres are weighed and packed into PE foil sacks, the units are arranged on disposable pallets and the entire stack wrapped in stretch film.

All packaging materials can be recycled when segregated and/or can be utilised energetically.

2.10 Condition of use

When used as designated, no material changes in composition can be anticipated during the use phase.

2.11 Environment and health during use

When the product is used as designated, no hazards for water, air or soil can be anticipated in accordance with the current state of knowledge.

2.12 Reference service life

A conservative estimate of the reference service life is 50 years for wood fibre insulating products under the following conditions: impeccable product, planning, execution and maintenance quality, no extreme interior or exterior ambient conditions, central European climate.

2.13 Extraordinary effects

Fire

As per its approval, the GUTEX Thermofibre product is allocated to Class E in accordance with /EN 13501-1/.

Fire protection

Name	Value
Building material class nach /EN 13501-1/	E
Burning droplets	
Smoke gas development	

Water

As a general rule, the wood fibres must be kept dry (during transport, installation, use). Moisture damage can be anticipated if the product is exposed to high levels of sustained moisture. But this is excluded if used as designated.

Mechanical destruction

The product involves wood fibres which have already been softened with the result that mechanical destruction is not to be anticipated during use.

2.14 Re-use phase

Uncontaminated wood fibre insulation can be reused. If this is not the case or if the insulation material is contaminated, it is disposed of as residual waste in accordance with 2.15 and/or incinerated in a waste incineration plant (thermal recycling).

2.15 Disposal

As a biogenic, wood-based product, GUTEX Thermofibre can be disposed of in accordance with waste wood category A2 or the waste code numbers according to /AVV/ (030105 / 170201).

2.16 Further information

Further information is available on the GUTEX website, e.g. in the download section (data sheets, Declaration of Performance, certificates, approval): www.gutex.de.

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit of this ecological analysis is the provision of 1 kg GUTEX Thermofibre.

Note: Depending on the respective application, various densities can be assumed for analysis at building level (see section 2.3).

Declared Unit

Name	Value	Unit
Declared unit	1	kg
Conversion factor to 1 kg	1	-
Density (based on the specified thermal conductivity)	35	kg/m^3

Other declared units are allowed if the conversion is shown transparently.

3.2 System boundary

The Declaration complies with an EPD "from cradle to gate, with options". It includes the production stage, i.e. from provision of the raw materials through to production (cradle-to-gate, Modules A1-A3), disposal of product packaging in Module A5, and parts of the end-of-life stage (Modules C2-C4). It also contains an analysis of the potential benefits and loads over and beyond the product's entire life cycle (Module D).

The provision of wood as a raw material in the form of wood chips from forestry and the provision of additives are analysed in Module A1. Transport of these substances is considered in Module A2. Module A3 comprises the provision of fuels, resources and electricity as well as the production processes on site. These are essentially defibring, fibre drying, adding additives as well as packing the products.

Module A5 exclusively concerns the disposal of packaging materials.

Module C2 considers transport to the disposal company and Module C3 is concerned with preparing and sorting waste wood.

In accordance with /EN 16485/, Module C3 also includes as outflows the CO2 equivalents of the carbon in the product and packaging as well as the renewable and non-renewable primary energy (PERM and PENRM) contained in the product and its packaging. The loads and potentials arising from thermal recycling of the product at its end of life and the potential benefits by substituting fossil fuels in the course of generating energy during thermal recycling of the product packaging are analysed in Module D.

3.3 Estimates and assumptions

All of the material and energy flows for the processes required by production were established using questionnaires. Estimates were not necessary. The basis for the calculated application of fresh water resources is depicted by blue water consumption.

3.4 Cut-off criteria

No known material or energy flows were ignored, including those which fell below the limit of 1%. Accordingly, the total sum of input flows ignored is certainly less than 5% of the energy and mass applied. This also safeguards against the possibility of any material or energy flows being ignored which display a particular potential for significant influences in terms of the environmental indicators.

3.5 Background data

Most of the background data was taken from version 6.115 of the /GaBi professional database/. The remaining background data is based on scientific literary sources and is documented in /S. Rüter, S.
Diederichs/.

3.6 Data quality

Validation of the primary data required for 2017 was on the basis of mass and in accordance with plausibility criteria as well as by means of a plant inspection. With the exception of forest wood, the background data used for wood materials for energy purposes originates from 2008 to 2012. The provision of forest wood was taken from a 2008 publication which is essentially based on information from 1994 to 1997. All other information was taken from version 6.115 of the /GaBi professional data base/ and is not more than 5 years old. Considering the topicality of the primary data used as well as the use of the GaBi Professional database and exclusively scientific literature for background data used, the data quality can generally be regarded as good.

3.7 Period under review

The data acquired for the primary system refers to 2017. All information, therefore, is based on averaged data for 12 consecutive months.

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: Europe

3.9 Allocation

The allocations performed correspond with the requirements of /EN 15804/ and /EN 16485/ and primarily occur in Module A1 in the provision of wood chips.

The properties inherent to the material (biogenic carbon and primary energy contained therein) are allocated in accordance with the physical criterion of mass.

The products manufactured in the plant do not involve combined co-productions. Accordingly, as per /EN 16485/, data solely available for production as a whole is allocated to the products on the basis of the respective production volume (mass). The processes in the upstream forest chain involve combined co-productions of the logs (primary product) and industrial wood (co-product) products. The corresponding expenses associated with this upstream chain were allocated on the basis of the prices for logs and industrial wood.

Using the same grounds, the expenses associated with sawn timber (primary product) and sawmill by-products (wood chips, co-product) applied in the upstream sawmill chain were also allocated on the basis of their prices.

The credits achieved by the disposal of production waste are offset on the basis of a system extension. Heat and electricity generated are credited to the system by means of substitution processes, whereby it is alleged that the thermal energy is generated from natural gas and the substituted electricity complies with the German power mix for 2017. The credits achieved here account for significantly less than 1% of overall expenses.

The potential benefits through substitution of fossil fuels in the course of generating energy through thermal recycling of product packaging as well as the product at its end of life are analysed in Module D, whereby a system extension under the assumptions outlined above is applied for calculating the substitutions.

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. Die Ökobilanzmodellierung wurde mithilfe der Software /GaBi ts/ durchgeführt.
Als Hintergrunddatenbank wurde die /GaBi Professional Datenbank/ in der Version 6.115 verwendet

4. LCA: Scenarios and additional technical information

The scenarios on which the LCA is based are outlined in more detail below.

Construction installation process (A5)

The information in Module A5 exclusively refers to the disposal of packaging materials. No information is provided on installation of the product.
The volumes of packaging material incurred per declared unit in Module A5 and directed to thermal waste processing as well as other details on the scenario are listed in the table below.

Name	Value	Unit
Solid wood (wood moisture = 20%) from packaging material for thermal waste processing	0,0554	kg
PE foil from packaging material for thermal waste processing	0,0091	kg
Paper from packaging material for thermal waste processing	0,0001	kg
Biogenic carbon contained in solid timber packaging	0,1015	kg CO2-Äqv.

A lower calorific value of 18 MJ/kg and an overall efficiency of thermal waste processing accounting for 38% for solid wood from the product packaging in a waste incineration plant are assumed (/GaBi Professional database/). The additive content of 36 MJ/kg and overall efficiency of thermal waste processing accounting for 44% are taken into consideration (/GaBi Professional database/). In total, 0.41 MJ thermal and 0.17 MJ electrical energy is generated by thermal waste processing of the product packaging which is then integrated as exported

energy in the calculations for substitution potentials in Module D.

End of life (C1-C4)

A redistribution transport distance of 20 km is assumed in Module C2. R1 > 0.6 is implicit for Thermofibre energy recovery.

Name	Value	Unit
Waste wood for energy recovery	1	kg

Reuse, recovery and recycling potential (D), relevant scenario details

Name	Value	Unit
Electricity generated (per tonne of bone-dry waste wood)	965,52	kWh
Waste heat used (per tonne of bone-dry waste wood)	7034,48	MJ

The product is recycled in the form of waste wood in the same composition as the declared unit at the end-of-life stage. Thermal recovery in a biomass power station with an overall degree of efficiency of 54.54% and electrical efficiency of 18.04% is assumed, whereby incineration of 1 tonne wood (bone dry) generates approx. 965.52 kWh electricity and 7034.48 MJ useful heat. Approx. 18% wood moisture is considered in this degree of efficiency. The exported energy substitutes fuels from fossil sources, whereby it is alleged that the thermal energy is generated from natural gas and the substituted electricity complies with the German power mix for 2017.

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE 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	X	MND	MND	MNR	MNR	MNR	MND	MND	MND	X	X	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 kg GUTEX Thermofibre

Parameter	Unit	A1	A2	A3	A5	C2	C3	D
GWP	kg CO_2 eq	-1.55E+00	7.17E-03	3.98E-01	1.26E-01	9.16E-04	1.62E+00	-9.41E-01
ODP	kg CFC11 eq	5.9E-14	3.7E-15	1.45E-13	7.75E-15	4.72E-16	0	-2.14E-12
AP	kg SO_2 eq	2.49E-04	3.03E-05	3.64E-04	1.51E-05	3.87E-06	0	-1.01E-03
EP	kg PO_4^3 eq	5.7E-05	7.55E-06	5.43E-05	2.57E-06	9.64E-07	0	-1.52E-04
POCP	kg Ethen eq	1.91E-06	-1.23E-05	6.38E-05	8.74E-07	-1.57E-06	0	-1.03E-04
ADPE	kg Sb eq	1.69E-08	4.44E-10	1.11E-07	2.8E-09	5.67E-11	0	-2.91E-07
ADPF	MJ	9.82E-01	1E-01	8.31E+00	2.79E-02	1.28E-02	0	-1.29E+01

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 kg GUTEX Thermofibre

Parameter	Unit	A1	A2	A3	A5	C2	C3	D
PERE	MJ	1.08E-01	4.76E-03	7.68E-01	1.07E+00	6.08E-04	0	1.39E+01
PERM	MJ	1.71E+01	0	1.07E+00	-1.07E+00	0	-1.71E+01	0
PERT	MJ	1.72E+01	4.76E-03	1.84E+00	5.49E-03	6.08E-04	-1.71E+01	1.39E+01
PENRE	MJ	6.74E-01	1.01E-01	8.37E+00	3.57E-01	1.29E-02	0	-1.42E+01
PENRM	MJ	3.5E-01	0	3.26E-01	-3.26E-01	0	-3.5E-01	0
PENRT	MJ	1.02E+00	1.01E-01	8.69E+00	3.1E-02	1.29E-02	-3.5E-01	-1.42E+01
SM	kg	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	1.71E+01
NRSF	MJ	0	0	0	0	0	0	3.5E-01
FW	m^3	1.07E-03	9.35E-06	3.76E-03	2.99E-04	1.19E-06	0	1.91E-03

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: 1 kg GUTEX Thermofibre

Parameter	Unit	A1	A2	A3	A5	C2	C3	D
HWD	kg	0	0	0	0	0	0	0
NHWD	kg	0	0	1.81E-04	0	0	0	0
RWD	kg	1.67E-05	1.38E-07	2.15E-05	1.27E-06	1.76E-08	0	-6.68E-04
CRU	kg	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	1E+00	0
EEE	MJ	0	0	0	1.68E-01	0	0	0
EET	MJ	0	0	0	4.1E-01	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

Disclaimer 1 – for the indicator 'Potential Human exposure efficiency relative to U235'. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources',

'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

6. LCA: Interpretation

The interpretation of results focuses on the production phase (Modules A1 to A3) as it is based on specific data provided by the company. The interpretation takes the form of a dominance analysis of the environmental impacts (GWP, ODP, AP, EP, POCP, ADPE, ADPF) and the use of renewable/non-renewable primary energy (PERE, PENRE).

Accordingly, the most important factors for the respective categories are listed below.

6.1 Global Warming Potential (GWP)

The CO2 product system inputs and outputs inherent in wood deserve separate attention in terms of GWP.
A total of approx. 1.72 kg CO2 enter the system in the form of carbon stored in the biomass. Around 0.10 kg of this CO2 bound in the form of the packaging material are included in Module A3 and are emitted again in Module A5.

Accounting for approx. 1.62 kg CO2 equiv., the volume of carbon ultimately stored in the wood fibre insulating board is extracted from the system again when recycled in the form of waste wood.

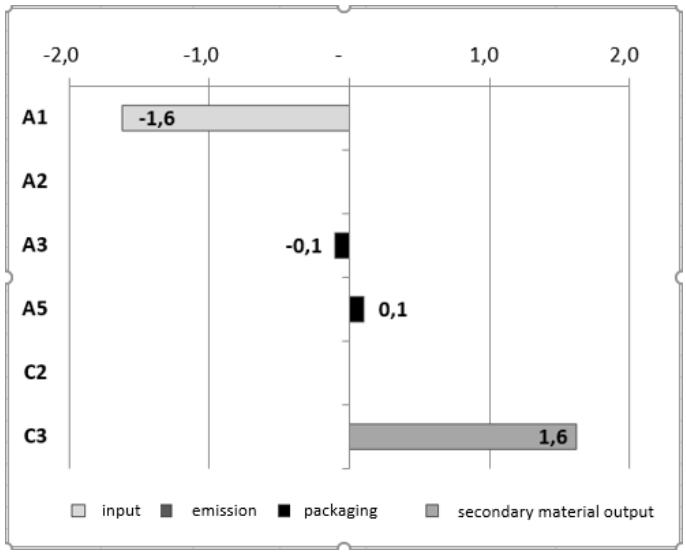

Fig. 1: CO2 product system inputs and outputs inherent in wood [kg CO2 equiv.]. The inverse indication suggested by inputs and outputs is in line with the LCO CO2 flow analysis in terms of the atmosphere.

13% of the analysed fossil greenhouse gases are accounted for by the provision of raw materials (entire Module A1), 1% by transporting the raw materials (entire Module A2), and 86% by the manufacturing process for cross-laminated timber (entire Module A3).

Heat generation in the plant as part of Module A3 represents 73%, electricity consumption in the plant amounts to 9% and the provision of the wood raw material as part of Module A1 accounts for 9% of fossil greenhouse gases, making them essential influential factors.

6.2 Ozone Depletion Potential (ODP)

61% of emissions with an ozone depletion potential are incurred by the consumables and packaging materials used (Module A3), while 25% of emissions are attributable to provision of the wood raw material (Module A1). Heat generation in the plant (Module A3) contributes 7% to the ODP.

6.3 Acidification Potential (AP)

Essentially, heat generation during the manufacturing process accounting for 43% (Module A3) and the provision of wood accounting for 35% represent the key sources for emissions contributing to the acidification potential.

6.4 Eutrification Potential (EP)

45% of the entire EP is attributable to incinerating processes in the upstream chains for the provision of wood as a raw material (Module A1). Heat generation for the manufacturing process contributes 36% to the EP (Module A3), while a further 5% is accounted for by transporting the wood as a raw material (Module A2).

6.5 Photochemical Ozone Creation Potential (POCP)

77% of primary POCP contributions are attributable to heat generation during the manufacturing process (Module A3). The consumables and packaging materials used (Module A3) account for further 11% of overall POCP. The negative values recorded for the POCP in Modules A2 and C2 are attributable to the negative characterisation factor for nitrogen monoxide emissions in the /CML IA/ version conformant with EN 15804 in combination with the /GaBi Professional database/ truck transport process used.

6.6 Abiotic Depletion Potential non-Fossil Resources (ADPE)

The essential contributions to ADPE are incurred by the consumables used and provision of packaging (Module A3) accounting for 47% as well as electricity consumption (24%) and heat generation (16%) during the manufacturing process (both Module A3).

6.7 Abiotic Depletion Potential Fossil Resources (ADPF)

Heat generation during the manufacturing process accounts for 72% and electricity consumption accounts for 9% of total ADPF (both Module A3). A further 8% is incurred by the consumables and packaging materials (Module A3).

6.8 Renewable primary energy as energy carrier (PERE)

11% of PERE is attributable to the provision of wood and 1% to the provision of additives for the product (both Module A1). But most of the contribution is accounted for by electricity consumption (77%) from hydropower during the manufacturing process and the consumables and packaging materials used (8%) (both Module A3).

6.9 Non-renewable primary energy as energy carrier (PENRE)

The use of PENRE accounts for 71% heat generation and 8% electricity consumption during the manufacturing process (both Module A3). A further 8% of overall consumption is attributable to the consumables and packaging materials used (Module A3).

7. Requisite evidence

7.1 Formaldehyde
Apart from wood as a raw material, no additives emitting formaldehyde are used in the manufacturing process.

7.2 MDI
MDI is not used as a binding agent in the manufacturing process.

7.3 Waste wood
No waste wood is used in the manufacturing process.

7.4 VOC
Details on VOC emissions are not currently specified.

8. References

Institut Bauen und Umwelt e.V., Berlin (pub.):
Generation of Environmental Product Declarations (EPDs)

General programme instructions
For generating EPDs at Institut Bauen und Umwelt e.V. (IBU), 10/2015, www.ibu-epd.com

/ISO 14025/
DIN EN /ISO 14025:2011-10/, Environmental labels and declarations – Type III environmental declarations – Principles and processes

/EN 15804/
/EN 15804:2012-04+A1 2013/, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

/EN 13501-1/
DIN EN 13501-1:2010-01, Classification of building products and methods by fire performance – Part 1: Classification with the results of tests on reaction to fire of construction products

/ISO 14001/
DIN EN ISO 14001:2015-11, Environmental management systems – Requirements with guidance for use

/EN 16485/
EN 16485:2014, Round and sawn timber – Environmental Product Declarations – Product category rules for wood and wood-based products for use in construction

/ISO 18393/
ISO 18393-1:2012, Thermal insulation products – Determination of ageing by settlement – Part 1: Blown loose-fill insulation for ventilated attics

/EN 29053/
DIN EN 29053:1993-05, Acoustical materials – Methods for determination of airflow resistance

/ISO 9001/
DIN EN ISO 9001:2015, Quality management systems – Requirements

Other sources:

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Ordinance governing the European List of Wastes (List of Wastes Ordinance – AVV):2002, last revised in 2017

/CML-IA/
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/SVHC List of Candidates/
List of substances of very high concern which may be approved; retrievable at https://echa.europa.eu/de/candidate-list-table, 08.01.2019

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