ENVIRO
ONMENTAL PRODUCT DECLARA
TION
as per ISO 14025 and EN 15804+A1

Owner of the Declaration | STEICO SE
Programme holder | Institut Bauen und Umwelt e.V. (IBU)
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Declaration number | EPD-STE-20200175-IBA1-EN
Issue date | 20.11.2020
Valid to | 19.11.2025

STEICOflex flexible wood fibre cavity insulation

STEICO SE

www.ibu-epd.com | https://epd-online.com
1. General Information

STEICO SE
Programme holder
IBU – Institut Bauen und Umwelt e.V.
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10178 Berlin
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STEICOflex
Owner of the declaration
STEICO SE
Otto-Lilienthal-Ring 30
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Germany

Declaration number
EPD-STE-20200175-IBA1-EN

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

Issue date
20.11.2020

Valid to
19.11.2025

2. Product

2.1 Product description/Product definition
STEICOflex are flexible wood fibre insulation boards manufactured in a dry process. The addition of a small quantity of textile binding fibre is necessary in order to achieve product flexibility.


The following Declarations of Performance are available for STEICOflex:
STEICO flex 036 DOP No. 01-0040-03
STEICO flex 038 DOP No. 01-0038-03
Use is governed by the respective national regulations.

2.2 Application
The flexible STEICOflex wood fibre thermal insulation is used as cavity insulation in roof, wall and ceiling constructions as well as in cavity insulation for partition walls, facing layers and installation levels.

2.3 Technical Data
The following information refers to the STEICOflex product as delivered.

Technical construction data

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross density</td>
<td>50 - 60</td>
<td>kg/m³</td>
</tr>
<tr>
<td>Material moisture on delivery</td>
<td>4</td>
<td>%</td>
</tr>
<tr>
<td>Tensile strength rectangular</td>
<td>0.01</td>
<td>N/mm²</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>0.036 or 0.038</td>
<td>W/(mK)</td>
</tr>
<tr>
<td>Water vapour diffusion resistance factor</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Specific thermal capacity c</td>
<td>2100</td>
<td>J/(kg*K)</td>
</tr>
<tr>
<td>Airflow resistance</td>
<td>&gt;5</td>
<td>(kPa*s)/m</td>
</tr>
</tbody>
</table>

The product performance values comply with the Declaration of Performance in terms of its essential characteristics in accordance with DIN EN 13171, Thermal insulation products for buildings – Factory-made wood fibre (WF) products – Specifications.
2.4 Delivery status
STEICOflex is offered in the following standard sizes:
Board thickness: 30 - 240 mm
Format: 1220 x 575 mm
Special formats of 385 to 2300 mm width and 500 to 10000 mm length available on request

2.5 Base materials/Ancillary materials
The primary component of STEICOflex is wood fibres from regional sustainable forestry. The product can be broken down into the following components:
Wood fibres: approx. 90%
Water: approx. 4%
Bi-component fibres: approx. 3%
Ammonium salts: approx. 7%

The STEICOflex product contains substances on the ECHA List of Candidates for including substances of very high concern in Annex XIV of the REACH Directive (last revised: 07.01.2019) exceeding 0.1% by mass: no

The STEICOflex product contains other CMR substances in categories 1A or 1B which are not on the ECHA List of Candidates exceeding 0.1% by mass in at least one partial product: no

Biocide products were added to this STEICOflex 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
STEICOflex is manufactured in a dry process:
- Processing of the raw timber to form wood chips
- Heating of the wood chips under steam pressure
- Defibration of the wood chips through a defibration process
- Drying of the fibres in the cyclone dryer
- Adding the bi-component fibres
- Submitting the mixture to the production line
- Heating and pressing the mixture for the insulation board
- Cutting the wood fibre insulation to size
- Stacking, packing

All residual materials incurred during production are directed to in-house energy recycling. A small percentage is redirected to production.

Quality assurance systems:
- Quality management system acc. to ISO 9001
- Environmental management system acc. to ISO 14001
- CE marking acc. to EN 13171
- FSC certificate CU-COC-841217
- PEFC certificate CU-PEFC-841217

2.7 Environment and health during manufacturing

Health protection
Owing to the manufacturing conditions, no other health protection measures are required extending beyond the legally specified measures.

Environmental protection
Air: Waste air generated during production is cleaned in accordance with statutory specifications.
Water/Soil: No direct pollution of water or soil is caused by the production process. Waste water incurred during production is reprocessed internally.

2.8 Product processing/Installation
STEICO wood fibre insulation boards can be processed using conventional wood-processing tools (handsaw, insulation knife, circular and band saw etc.). Insofar as processing is carried out without dust extraction, the use of breathing protection measures is recommended. Neither the processing nor the installation of STEICO wood fibre insulation materials leads to environmental pollution. No additional measures are necessary in terms of environmental protection.

2.9 Packaging
Polyethylene foil (PE), paper and cardboard as well as wood are used for packaging STEICO wood fibre insulation materials. All packing materials are recyclable if unmixed, and/or can be recovered as energy.

2.10 Condition of use
When used correctly and as designated, no material product changes are to be anticipated during the use phase.

2.11 Environment and health during use

Environment: When STEICO wood fibre insulation materials are used as designated, no hazard potential for water, air or soil is currently known (IBR test report).

Health: When STEICO wood fibre insulation materials are installed as designated, no health risks or impairments are to be expected. Low quantities of components inherent to the product can be released. No emissions of health relevance were detected (test report IBR).
In order to guarantee that the statutory limit values are exceeded in terms of emissions, radioactivity, VOC etc., STEICO wood fibre insulation materials are tested externally (Test report: Institut für Baubiologie, Rosenheim, Germany).

2.12 Reference service life
When used as designated, there is no known or expected limit to their durability. Accordingly, the average service life of the product is equivalent to the service life of the building. Under Central European climate conditions, a service life of 50 years can be assumed as a conservative duration.

There are no known or anticipated influences on product ageing when the products are applied in accordance with the generally accepted rules of technology.

2.13 Extraordinary effects

Fire
Information in acc. with DIN EN 13501-1

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building material class</td>
<td>E</td>
</tr>
<tr>
<td>Burning droplets</td>
<td>-</td>
</tr>
<tr>
<td>Smoke production</td>
<td>-</td>
</tr>
</tbody>
</table>

Water
STEICO wood fibre insulation materials do not comprise any leachable components which are hazardous to water. Wood fibre insulation materials do not offer permanent resistance to standing water.

2.14 Re-use phase
When dismantled without damage, STEICO wood fibre insulation materials may be reused for the same application after the end of utilisation, or may be reused in the same application spectrum in an alternative location. Provided that the wood fibre insulation materials are not damaged, material recycling of the raw material does not present a problem (e.g. re-introduction to the production process).

2.15 Disposal
Insulation material residue without contamination (clippings and de-construction material) can be recycled in the production process. During thermal utilisation, STEICO wood fibre insulation materials achieve a calorific value of approx. 20.34 MJ per kg insulation material (product moisture = 4%) as renewable energy carriers, e.g. for heating as biomass or in waste incineration plants. Process energy as well as electricity can be generated.

2.16 Further information
Detailed information on STEICOflex and other products offered by STEICO SE (processing, characteristic values, approvals) is available at www.steico.com.

3. LCA: Calculation rules

3.1 Declared Unit
The declared unit is 1 m³ wood fibre insulation material with an average apparent density of 50.00 kg and 4% water. Additives account for 11.03%. In accordance with 5.2.1a in PCR Part A, this concerns a "Declaration of a specific product from a manufacturer's plant".

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declared unit</td>
<td>1</td>
<td>m³</td>
</tr>
<tr>
<td>Conversion factor to 1 kg (in kg/m²)</td>
<td>50</td>
<td>-</td>
</tr>
<tr>
<td>Mass reference</td>
<td>50</td>
<td>kg/m³</td>
</tr>
</tbody>
</table>

3.2 System boundary
The Declaration complies with an EPD "from cradle to plant gate, with options”. It includes the production stage, i.e. from provision of the raw materials through to production (cradle to gate, Modules A1 to A3). Module A5, and parts of the end-of-life stage (Modules C2 and C3). It also contains an analysis of the potential benefits and burdens over and beyond the product's entire life cycle (Module D).

Module A1 comprises the provision of wood from forestry resources and the provision of additives. Transport of these substances is considered in Module A2. Module A3 includes the expenses associated with manufacturing the product, such as the provision of fuels, consumables and energy, as well as product packaging. Module A5 exclusively covers the disposal of product packaging which includes the disposal of biogenic carbon and primary energy (PERM and PENRM). Module C3 is concerned with preparing and sorting waste wood. Due to a lack of data, the conservative assumption was made that the material is crushed – as is the case for waste wood – before it is ready for reuse. In accordance with EN 16485, Module C3 also includes as outflows CO₂ equivalents of the carbon inherent in the wood product as well as the renewable and non-renewable primary energy (PERM and PENRM) contained in the product. Module D takes account of the thermal utilisation of the product at its end of life as well as the ensuing potential benefits and burdens in the form of a system extension.

3.3 Estimates and assumptions
In principle, all of the material and energy flows for the processes required by production are established on the basis of questionnaires.
3.4 Cut-off criteria
No known material or energy flows were ignored, including those 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 guarantees that no material or energy flows were ignored which display a particular potential for significant influences in terms of environmental indicators.

3.5 Background data

3.6 Data quality
The primary data gleaned for 2019 was validated on the basis of mass and in accordance with plausibility criteria. With the exception of forest wood, the background data used for wood materials for material and 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 the GaBi Professional Database 2020 Edition. The overall data quality can be regarded as good.

3.7 Period under review
The data recorded for the primary system refers to 2019. Accordingly, all information is based on averaged data from 12 consecutive months.

3.8 Allocation
The allocations comply with the specifications of the EN 15804 and EN 16485, and are explained in detail in S. Rüter, S. Diederichs: 2012. Essentially, the following system extensions and allocations were carried out.

General information
The product characteristics inherent in the material (biogenic carbon and the primary energy contained therein) are allocated in accordance with the physical criterion of mass.

Module A1
The processes in the upstream forestry chain concern associated co-productions of logs (primary product) and industrial wood (co-product). The corresponding expenses of this upstream chain were allocated on the basis of log and industrial wood prices. For the same reason, the expenses associated with sawn timber (primary product) and sawmill by-products (wood chips, co-product) were also allocated on the basis of their prices in the upstream sawmill chain.

Module A3
On the other hand, the products manufactured in the plant are not associated co-productions. In accordance with EN 16485, data which is only available for production as a whole is allocated to the products on the basis of the production volume (mass). Energy generated from external disposal of waste incurred during production is credited to the system by means of substitution processes, whereby it is assumed that the thermal energy would be generated from natural gas and the substituted electricity would correspond with the German power mix. The credits achieved here account for significantly less than 1% of overall expenses.

Module D
The potential benefit through substitution of fossil fuels in the course of generating energy with thermal utilisation of the product packaging and the actual product at its end of life is analysed in Module D, whereby a system extension is applied for calculating the substitutions under the assumptions described above.

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

The LCA was conducted using version 9.2 of the GaBi ts 2020 software.
All background data was taken from the GaBi Professional Database 2020 Edition or literary sources.

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 volume of packaging materials incurred per declared unit in Module A5 and directed to thermal waste treatment as well as other details on the scenario are listed in the following table.

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid wood (wood moisture = 40%) as packaging material for thermal waste treatment</td>
<td>7.5</td>
<td>kg</td>
</tr>
<tr>
<td>PE foil as packaging material for thermal waste treatment</td>
<td>0.89</td>
<td>kg</td>
</tr>
</tbody>
</table>
Paper as packaging material for thermal waste treatment | 0.01 | kg
Biogenic carbon contained in the solid wood share of packaging | 2.68 | kg
Total efficiency of thermal waste treatment | 38.44 | %
Total exported electrical energy | 6.0 | kWh
Total exported thermal energy | 47.8 | MJ

A transport distance of 20 km is assumed for disposal of the product packaging.

End of life (C1-C4)
Es wird eine Redistributionstransportdistanz von 50 km in Modul C2 angenommen.

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy recovery (waste wood)</td>
<td>50</td>
<td>kg</td>
</tr>
</tbody>
</table>

A collection rate of 100% without losses incurred by potential crushing of the material is assumed for the scenario of thermal utilisation as a secondary fuel.

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity generated (per tonne of bone-dry waste wood)</td>
<td>968.37</td>
<td>kWh</td>
</tr>
<tr>
<td>Waste heat generated (per tonne of bone-dry waste wood)</td>
<td>7053.19</td>
<td>MJ</td>
</tr>
<tr>
<td>Electricity generated (per net flow of declared unit)</td>
<td>47.1</td>
<td>kWh</td>
</tr>
<tr>
<td>Waste heat generated (per net flow of declared unit)</td>
<td>336.1</td>
<td>MJ</td>
</tr>
</tbody>
</table>

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 of bone-dry wood (mass value as bone dry, consideration of efficiency, yet ~18% wood moisture) generates approx. 968.37 kWh electricity and 7053.19 MJ useful heat. Converted to the net flow of the bone-dry wood percentage included in Module D and taking consideration of the percentage of adhesives in waste wood, 47.1 kWh electricity and 336.1 MJ thermal energy are produced per declared unit in Module D.

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.
5. LCA: Results

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

<table>
<thead>
<tr>
<th>PRODUCT STAGE</th>
<th>CONSTRUCTION STAGE</th>
<th>USE STAGE</th>
<th>END OF LIFE STAGE</th>
<th>BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material</td>
<td>Transport</td>
<td>Manufacturing</td>
<td>Assembly</td>
<td>Use</td>
</tr>
<tr>
<td>A1</td>
<td>A2</td>
<td>A3</td>
<td>A4</td>
<td>A5</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>MND</td>
<td>X</td>
<td>MND</td>
</tr>
</tbody>
</table>

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 m³ STEICOflex

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A5</th>
<th>C2</th>
<th>C3</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>GWP</td>
<td>[kg CO₂-Eq.]</td>
<td>-7.14E-1</td>
<td>3.80E-1</td>
<td>4.23E-1</td>
<td>1.23E+1</td>
<td>1.45E-1</td>
<td>7.83E-1</td>
<td>4.01E+1</td>
</tr>
<tr>
<td>ODP</td>
<td>[kg CFC11-Eq.]</td>
<td>6.29E-11</td>
<td>1.38E-16</td>
<td>1.55E-13</td>
<td>4.80E-15</td>
<td>2.42E-17</td>
<td>1.35E-18</td>
<td>-1.21E-12</td>
</tr>
<tr>
<td>AP</td>
<td>[kg SO₂-Eq.]</td>
<td>1.20E-2</td>
<td>3.48E-3</td>
<td>8.76E-2</td>
<td>2.18E-3</td>
<td>6.09E-4</td>
<td>3.89E-3</td>
<td>-4.21E-2</td>
</tr>
<tr>
<td>EP</td>
<td>[kg PONP-Eq.]</td>
<td>2.07E-3</td>
<td>8.74E-4</td>
<td>1.07E-2</td>
<td>4.14E-4</td>
<td>1.58E-4</td>
<td>7.96E-4</td>
<td>-7.42E-3</td>
</tr>
<tr>
<td>POPC</td>
<td>[kg ethene-Eq.]</td>
<td>7.23E-3</td>
<td>-1.46E-3</td>
<td>1.56E-2</td>
<td>1.00E-4</td>
<td>-2.96E-4</td>
<td>3.60E-4</td>
<td>-4.06E-3</td>
</tr>
<tr>
<td>ADPE</td>
<td>[kg Sb-Eq.]</td>
<td>1.98E-6</td>
<td>6.99E-8</td>
<td>4.82E-6</td>
<td>3.18E-7</td>
<td>1.22E-8</td>
<td>3.75E-8</td>
<td>-1.20E-5</td>
</tr>
<tr>
<td>ADPF</td>
<td>[MJ]</td>
<td>1.79E+2</td>
<td>1.15E+1</td>
<td>6.31E+2</td>
<td>3.94E+0</td>
<td>2.00E+0</td>
<td>5.45E-0</td>
<td>-6.94E+2</td>
</tr>
</tbody>
</table>

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 m³ STEICOflex

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A5</th>
<th>C2</th>
<th>C3</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>PERE</td>
<td>[MJ]</td>
<td>5.70E-0</td>
<td>6.45E+0</td>
<td>1.96E+2</td>
<td>8.62E-1</td>
<td>1.13E-1</td>
<td>3.19E-1</td>
<td>-2.12E+2</td>
</tr>
<tr>
<td>PERM</td>
<td>[MJ]</td>
<td>8.15E-2</td>
<td>0.00E+0</td>
<td>1.03E+2</td>
<td>-1.03E+2</td>
<td>0.00E+0</td>
<td>-8.19E+2</td>
<td>0.00E+0</td>
</tr>
<tr>
<td>PENRE</td>
<td>[MJ]</td>
<td>1.83E-2</td>
<td>1.15E+1</td>
<td>6.40E+2</td>
<td>4.29E+0</td>
<td>2.07E+0</td>
<td>5.47E+0</td>
<td>-7.71E+2</td>
</tr>
<tr>
<td>PENRM</td>
<td>[MJ]</td>
<td>1.95E-2</td>
<td>0.00E+0</td>
<td>3.21E+1</td>
<td>-3.21E+1</td>
<td>0.00E+0</td>
<td>-1.98E+2</td>
<td>0.00E+0</td>
</tr>
<tr>
<td>PENRT</td>
<td>[MJ]</td>
<td>3.81E-2</td>
<td>1.15E+1</td>
<td>6.73E+2</td>
<td>-2.79E+1</td>
<td>0.21E+0</td>
<td>-1.33E+2</td>
<td>-7.71E+2</td>
</tr>
<tr>
<td>SM</td>
<td>[kg]</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
</tr>
<tr>
<td>RSF</td>
<td>[MJ]</td>
<td>0.00E+0</td>
<td>6.07E+1</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>8.19E+2</td>
</tr>
<tr>
<td>NSF</td>
<td>[MJ]</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>1.98E+2</td>
</tr>
<tr>
<td>FW</td>
<td>[m³]</td>
<td>6.76E-2</td>
<td>7.47E-4</td>
<td>1.56E-1</td>
<td>3.65E-2</td>
<td>1.31E-4</td>
<td>2.35E-4</td>
<td>9.94E-2</td>
</tr>
</tbody>
</table>

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: 1 m³ STEICOflex

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A5</th>
<th>C2</th>
<th>C3</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>HWD</td>
<td>[kg]</td>
<td>3.77E-7</td>
<td>5.35E-7</td>
<td>9.26E-7</td>
<td>1.41E-6</td>
<td>9.35E-8</td>
<td>2.04E-7</td>
<td>-3.93E-7</td>
</tr>
<tr>
<td>NHWD</td>
<td>[kg]</td>
<td>4.77E-2</td>
<td>1.76E-3</td>
<td>3.55E-3</td>
<td>3.09E-4</td>
<td>3.07E-4</td>
<td>9.56E-4</td>
<td>1.43E+0</td>
</tr>
<tr>
<td>RDD</td>
<td>[kg]</td>
<td>1.41E-3</td>
<td>1.42E-3</td>
<td>3.70E-3</td>
<td>1.37E-4</td>
<td>2.48E-6</td>
<td>5.76E-6</td>
<td>-3.07E-2</td>
</tr>
<tr>
<td>CRU</td>
<td>[kg]</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
</tr>
<tr>
<td>MFR</td>
<td>[kg]</td>
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<td>0.00E+0</td>
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<td>0.00E+0</td>
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<td>0.00E+0</td>
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<tr>
<td>MER</td>
<td>[kg]</td>
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<td>0.00E+0</td>
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<td>EEE</td>
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<td>4.79E+1</td>
<td>0.00E+0</td>
<td>0.00E+0</td>
<td>9.38E+1</td>
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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, POPC, ADPE, ADPF).
ADPE, ADPF) and the use of renewable/non-renewable primary energy (PERE, PENRE). Accordingly, the most significant factors for the respective categories are listed below.

6.1 Global Warming Potential (GWP)

CO₂ product system inputs and outputs inherent in wood require separate consideration in terms of GWP. A total of approx. 87.7 kg CO₂ enters the system in the form of carbon stored in the biomass. Around 9.8 kg CO₂ bound in the form of the packaging material is accounted for in Module A3 and released again in Module A5. The volume of carbon accounting for around 77.9 kg CO₂ equiv. ultimately stored in the wood fibre insulating material is extracted from the system again when recycled in the form of waste wood.

Essentially, the generation of energy during the manufacturing process accounting for 70% (Module A3) and the packaging materials for the product accounting for 8% (Module A3) are the most relevant sources for emissions contributing to the acidification potential.

6.4 Eutrophication Potential (EP)

35% of total EP is attributable to the provision of electricity and a further 20% is accounted for by the provision of heat (both Module A3). The packaging for the product makes a 12% contribution to EP (also Module A3).

6.5 Photochemical Ozone Creation Potential (POCP)

The primary POCP contributions (35%) are accounted for by energy generation during the manufacturing process (Module A3). Direct emissions in the plant (also Module A3) account for a further 53% of total POCP. The negative values recorded for the POCP in Modules A2 and C2 are attributable to the negative characterisation factor for nitrogen monoxide emissions of the standard-conformant CML IA 2013 version (2001 – April 2013) in combination with the GaBi Professional Database 2020 Edition truck transport process used.

6.6 Abiotic Depletion Potential non-Fossil Resources (ADPE)

The essential contributions to ADPE (28%) are incurred by the provision of additives for the product (Module A1). The consumables used also account for 25% of total ADPE (Module A3).

6.7 Abiotic Depletion Potential – fossil fuels (ADPF)

39% of total ADPF is incurred by the generation of heat in the manufacturing process and 28% by the electricity consumed there (both Module A3). The provision of additives for the product accounts for 21% (Module A1).

6.8 Renewable primary energy as energy carrier (PERE)

Most of PERE use (69%) is attributable to the packaging materials used and the renewable share of electricity consumption accounting for 26% (both Module A3). 5% of total use is attributable to the provision of additives for the product (Module A1).

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

The use of PENRE is distributed across the provision of product additives (21%, Module A1) and the manufacturing process, with 38% for heat generation and 28% for electricity consumption there (both Module A3).

6.10 Waste

54% of special waste is incurred in Module A3 during the provision of packaging.

7. Requisite evidence

7.1 Formaldehyde

STEICO wood fibre insulation materials manufactured in a dry process are produced without adhesives containing formaldehyde. The formaldehyde emissions comply with those of natural wood.

7.2 MDI
No binding agents containing isocyanate are used in the production of STEICOflex.

7.3 Testing for pre-treatment of substances used
No waste wood is used as a material input in the production of STEICO wood fibre insulation materials. Only untreated fresh wood (conifer) is used.

7.4 VOC emissions
VOC evidence is available for the STEICOflex wood fibre insulation boards. The measurements were taken by MPA Eberswalde (PB 31/19/3623/01).

<table>
<thead>
<tr>
<th>Name</th>
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</tr>
<tr>
<td>Carcinogenic Substances</td>
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AgBB overview of results (28 days [μg/m³])

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Unit</th>
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</thead>
<tbody>
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<tr>
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<td>VOC without NIK</td>
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</tr>
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<td>Carcinogenic Substances</td>
<td>&lt;1</td>
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<td>μg/m³</td>
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8. References

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