

Owner: Kurt Obermeier GmbH
No.: MD- 24136 -EN
Issued: 19-02-2025
Valid to: 19-02-2030

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration
 Berghäuser Str. 70
 57319 Bad Berleburg
 Germany
 VAT: DE 126587004



Issued:
 19-02-2025

Valid to:
 19-02-2030

Programme
 EPD Danmark
www.epddanmark.dk



- Industry EPD
- Product EPD

Basis of calculation

This EPD is developed and verified in accordance with the European standard EN 15804+A2.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

Declared product(s)
 Korasit® KS2

Number of declared datasets/product variations: 1

Production site
 Berghäuser Str. 70
 57319 Bad Berleburg
 Germany

- Use of Guarantees of Origin**
- No certificates used
 - Electricity covered by GoO
 - Biogas covered by GoO


EPD type

- Cradle-to-gate with modules C1-C4 and D
- Cradle-to-gate with options, modules C1-C4 and D
- Cradle-to-grave and module D
- Cradle-to-gate
- Cradle-to-gate with options

Declared/ functional unit
 1 kg wood preservative

Year of production site data (A3)
 2023

EPD version
 1st version

| |
|-------------------------------------------------------------------------------------------------------------------------------------------|
| CEN standard EN 15804 serves as the core PCR |
| Independent verification of the declaration and data, according to EN ISO 14025 |
| <input type="checkbox"/> internal <input checked="" type="checkbox"/> external |
| Third party verifier:  _____ Mirko Miseljic |



 Martha Katrine Sørensen
 EPD Danmark

Life cycle stages and modules (MND = module not declared)

| Product | | | Construction process | | Use | | | | | | | | End of life | | | | Beyond the system boundary |
|---------------------|-----------|---------------|----------------------|----------------------|-----|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-------------|------------------|----------|------------------------------------------|----------------------------|
| Raw material supply | Transport | Manufacturing | Transport | Installation process | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Re-use, recovery and 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 | MND | MND | MND | MND | MND | X | X | X | X | X | |

Product information

Product description

The main product components are shown in the table below.

| Material | Weight-% of declared product |
|----------------------------|------------------------------|
| | Korasit® KS2 |
| 2-aminoethanol | 25-<50 |
| Copper hydroxide carbonate | 10-<25 |
| DMPAP | 10-<25 |
| Ethanediol | 1-<10 |

Korasit® KS2 is a high performance water-soluble, liquid, fixative wood preservative used as preventive treatment by vacuum pressure of soft- and hardwood in use classes 1, 2, 3 and 4. Korasit® KS2 contains the active substances basic copper carbonate and DMPAP to provide preventive protection against wood-destroying fungi (brown rot, white rot and soft rot) and insects (wood boring beetles). It is particularly effective against copper tolerant fungi (e.g. *Poria sp.*) and has proven effectiveness against termites (*Reticulitermes sp.*). Korasit® KS2 is used for the protection of load-bearing and/or construction timber components (e.g. timber structures, pillars, playground equipment), non-load-bearing timbers (e.g. formwork), timbers in gardening and landscaping (e.g. fences, palisades) as well as for transmission poles, vineyard stakes, hop poles and stakes for fruit trees. The excellent effectiveness of Korasit® KS2 extends the service life of treated timber and thus further increases the sustainability of wood.

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the following table.

| Material | Weight of packaging material (g) | Weight-% of packaging |
|----------|----------------------------------|-----------------------|
| IBC | 53,1 | 100% |
| Total | 53,1 | 100% |

Note that Korasit® KS2 is also supplied in a tanker. However, as capital goods are not considered in this EPD, no packaging material is noted in the previous table.

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of 1 kg Korasit® KS2 product on the production site located in Bad Berleburg. Product specific data are based on average values collected in the period 2023. Background data are based on LCA for experts 2024.1 database and Ecoinvent v.3.9.1 and are with the exception for one dataset less than 10 years old. One dataset is 12 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Hazardous substances

Korasit® KS2 is chromate-, propiconazole- and boron-free. It does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

(<http://echa.europa.eu/candidate-list-table>)

Essential characteristics

The product is approved under Biocidal Products Regulation (EU) No 528/2012 [BPR]. Declaration of performance according to EN 599-1:2009+A1:2013 is available for wood in use classes 1-4 according to DIN EN 335:2013. In addition, Korasit® KS2 is covered by the following national technical specifications: ATG, CTB-P+, ecobau, FCIÖ, ITB, KOMO®, NTR, RAL-GZ 411.

Further technical information can be obtained by contacting the manufacturer or on the manufacturer's website:

<https://www.kora-holzschutz.de/en/>

Reference Service Life (RSL)

According to the manufacturer the reference service life of Korasit® KS2 is above 20 years from practical experience.

Picture of product(s)



LCA background

Declared unit

The LCI and LCIA results in this EPD relates to Korasit® KS2.

| Name | Product | Density/ conversion factor | Unit |
|---------------------------------|--------------|----------------------------------|------|
| Declared unit | All | 1 | kg |
| Density | Korasit® KS2 | 1,2 | kg/L |
| Conversion factor to 1 kg | Korasit® KS2 | 0,83 | - |

Functional unit

Not defined.

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804 and PCR 2021:03, Basic Chemicals from EPD International.

Energy modelling principles

Foreground system:

The product is produced using electricity covered by GoOs in production.

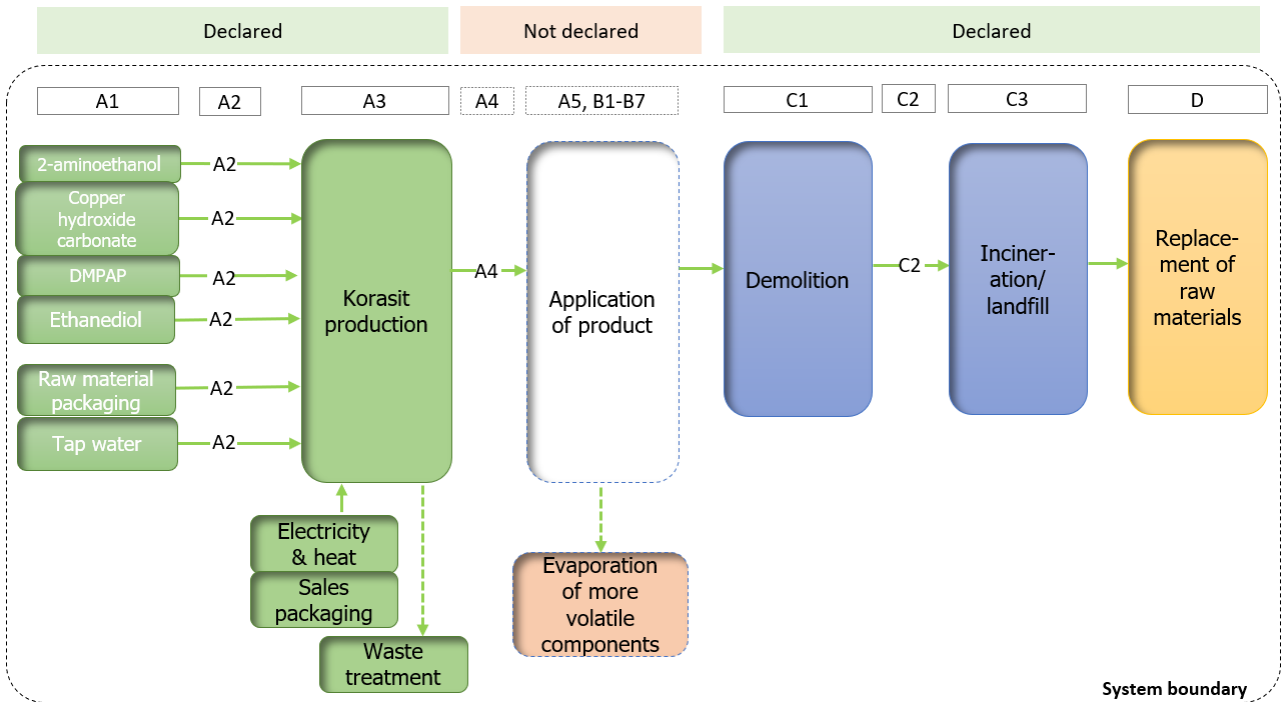
Information about the energy mix in the foreground system:

| Dataset |
|-----------------------------------------|
| Electricity from photovoltaic, DE, 2023 |
| Electricity from wind, DE, 2023 |

Background system:

Upstream processes are modelled using the residual grid mix. Downstream processes are modelled using the production mix.

Flowdiagram



System boundary

This EPD is based on a cradle-to-gate with modules C1-C4 and D LCA, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes.

The cut-off criteria for mass was applied for the packaging of the sales packaging and capital goods. Both account for a mass of <<1% and presumably for impacts <<1%, as well. Allocation was done on a mass basis and applied on electricity consumption and sales packaging, which was allocated on a mass-based principle.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, packaging and waste processing up to the "end-of-waste" state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3.

The raw materials are transported from their place of extraction to Kurt Obermeier's production site often via an intermediate agent. Here the raw materials are directly tapped into the reaction tank according to the batch ticket specified for product and volume. The finished product is packaged and transported by IBC or tanker truck.

End of Life (C1-C4) includes:

As Korasit® KS2 is imbedded in the wooden structure, it is deconstructed together with the wooden structure without causing an additional demand for electricity and heat (C1).

After demolition, Korasit® KS2 or the wooden structure treated with Korasit® KS2 is assumed to be transported 1000 km to a waste treatment according to PCR 2021:03, Basic Chemicals (C2).

Most of Kurt Obermeier's products are sold within the European Union. Therefore, a European waste scenario was assumed for modelling, where 54% of the wood waste Korasit is applied on is incinerated, 46% is treated by recycling (C3).

Re-use, recovery and recycling potential (D) includes:

There is an export of electricity and heat from the waste incineration of the Korasit as described in the waste processing occurring in C3. The benefits of this incineration are declared in module D and correspond to the exported electricity and heat in the incineration process. They replace an average European mix for electricity and district heating.

LCA results

Korasit® KS2

| ENVIRONMENTAL IMPACTS PER KG | | | | | | | |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|----------|----------|-----------|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| GWP-total | [kg CO ₂ eq.] | 2,08E+00 | 0,00E+00 | 3,08E-03 | 4,96E-01 | 0,00E+00 | -9,55E-02 |
| GWP-fossil | [kg CO ₂ eq.] | 2,28E+00 | 0,00E+00 | 3,02E-03 | 2,90E-01 | 0,00E+00 | -9,50E-02 |
| GWP-biogenic | [kg CO ₂ eq.] | -3,63E-01 | 0,00E+00 | 7,22E-06 | 2,06E-01 | 0,00E+00 | -5,42E-04 |
| GWP-luluc | [kg CO ₂ eq.] | 1,72E-01 | 0,00E+00 | 5,08E-05 | 5,64E-05 | 0,00E+00 | -2,03E-05 |
| ODP | [kg CFC 11 eq.] | 3,02E-08 | 0,00E+00 | 4,45E-16 | 1,12E-13 | 0,00E+00 | -7,53E-13 |
| AP | [mol H ⁺ eq.] | 7,34E-02 | 0,00E+00 | 4,70E-06 | 7,94E-05 | 0,00E+00 | -1,99E-04 |
| EP-freshwater | [kg P eq.] | 5,36E-03 | 0,00E+00 | 1,29E-08 | 8,62E-08 | 0,00E+00 | -3,60E-07 |
| EP-marine | [kg N eq.] | 1,01E-02 | 0,00E+00 | 1,79E-06 | 2,71E-05 | 0,00E+00 | -5,14E-05 |
| EP-terrestrial | [mol N eq.] | 6,65E-02 | 0,00E+00 | 2,11E-05 | 3,78E-04 | 0,00E+00 | -5,35E-04 |
| POCP | [kg NMVOC eq.] | 1,78E-02 | 0,00E+00 | 4,66E-06 | 7,30E-05 | 0,00E+00 | -1,37E-04 |
| ADPm ¹ | [kg Sb eq.] | 8,34E-04 | 0,00E+00 | 2,63E-10 | 1,45E-09 | 0,00E+00 | -1,64E-08 |
| ADPf ¹ | [MJ] | 4,49E+01 | 0,00E+00 | 3,98E-02 | 2,19E-01 | 0,00E+00 | -1,41E+00 |
| WDP ¹ | [m ³ world eq. deprived] | 4,31E+00 | 0,00E+00 | 4,68E-05 | 5,80E-02 | 0,00E+00 | -1,62E-02 |
| Caption | <p>GWP-total = Globale Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water depletion potential</p> <p>The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10² or 195, while 1,12E-11 is the same as 1,12*10⁻¹¹ or 0,0000000000112.</p> | | | | | | |
| Disclaimer | <p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> | | | | | | |

Korasit® KS2

| ADDITIONAL ENVIRONMENTAL IMPACTS PER KG | | | | | | | |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|-----------|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| PM | [Disease incidence] | 2,27E-07 | 0,00E+00 | 5,11E-11 | 1,86E-09 | 0,00E+00 | -1,61E-09 |
| IRP ² | [kBq U235 eq.] | 2,23E-01 | 0,00E+00 | 1,05E-05 | 1,75E-03 | 0,00E+00 | -2,53E-02 |
| ETP-fw ¹ | [CTUe] | 9,55E+01 | 0,00E+00 | 2,96E-02 | 9,75E-02 | 0,00E+00 | -3,99E-01 |
| HTP-c ¹ | [CTUh] | 1,60E-08 | 0,00E+00 | 5,97E-13 | 4,54E-12 | 0,00E+00 | -1,74E-11 |
| HTP-nc ¹ | [CTUh] | 8,63E-07 | 0,00E+00 | 2,68E-11 | 1,17E-10 | 0,00E+00 | -6,02E-10 |
| SQP ¹ | - | 4,74E+01 | 0,00E+00 | 1,96E-02 | 8,93E-02 | 0,00E+00 | -1,26E+00 |
| Caption | <p>PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)</p> <p>The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10² or 195, while 1,12E-11 is the same as 1,12*10⁻¹¹ or 0,0000000000112.</p> | | | | | | |
| Disclaimers | <p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p> <p>² 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.</p> | | | | | | |

Korasit® KS2

| RESOURCE USE PER KG | | | | | | | |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|-----------|----------|-----------|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| PERE | [MJ] | 1,42E+01 | 0,00E+00 | 3,43E-03 | 6,64E-02 | 0,00E+00 | -8,46E-01 |
| PERM | [MJ] | 1,20E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| PERT | [MJ] | 1,43E+01 | 0,00E+00 | 3,43E-03 | 6,64E-02 | 0,00E+00 | -8,46E-01 |
| PENRE | [MJ] | 3,10E+01 | 0,00E+00 | 3,98E-02 | 1,35E+01 | 0,00E+00 | -1,41E+00 |
| PENRM | [MJ] | 1,39E+01 | 0,00E+00 | 0,00E+00 | -1,32E+01 | 0,00E+00 | 0,00E+00 |
| PENRT | [MJ] | 4,52E+01 | 0,00E+00 | 3,98E-02 | 2,19E-01 | 0,00E+00 | -1,41E+00 |
| SM | [kg] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | [MJ] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| NRSF | [MJ] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| FW | [m³] | 1,01E-01 | 0,00E+00 | 3,82E-06 | 1,32E-03 | 0,00E+00 | -6,18E-04 |
| Caption | 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 = Net use of fresh water | | | | | | |
| | The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112. | | | | | | |

Korasit® KS2

| WASTE CATEGORIES AND OUTPUT FLOWS PER KG | | | | | | | |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|----------|-----------|
| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
| HWD | [kg] | 3,72E-09 | 0,00E+00 | 1,52E-12 | 1,42E-10 | 0,00E+00 | -1,85E-10 |
| NHWD | [kg] | 6,53E-02 | 0,00E+00 | 6,50E-06 | 3,61E-02 | 0,00E+00 | -2,47E-03 |
| RWD | [kg] | 2,95E-06 | 0,00E+00 | 7,25E-08 | 1,02E-05 | 0,00E+00 | -1,50E-04 |
| CRU | [kg] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MFR | [kg] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MER | [kg] | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EEE | [MJ] | 2,27E-02 | 0,00E+00 | 0,00E+00 | 5,01E-01 | 0,00E+00 | 0,00E+00 |
| EET | [MJ] | 8,58E-02 | 0,00E+00 | 0,00E+00 | 6,91E-01 | 0,00E+00 | 0,00E+00 |
| Caption | 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 | | | | | | |
| | The numbers are declared in scientific notation, fx 1,95E+02. This number can also be written as: 1,95*10 ² or 195, while 1,12E-11 is the same as 1,12*10 ⁻¹¹ or 0,0000000000112. | | | | | | |

Korasit® KS2

| BIOGENIC CARBON CONTENT PER KG | | |
|---------------------------------------------------|--------|---------------------|
| Parameter | Unit | At the factory gate |
| Biogenic carbon content in product | [kg C] | 7,83E-02 |
| Biogenic carbon content in accompanying packaging | [kg C] | 0,00E+00 |

Additional information

LCA interpretation

The production of raw materials used in the production of Korasit® KS2 is responsible for all impacts in the respective impact categories accounting for at least 90% of all impacts for the Korasit products. The main factor for the impact of a raw material is the amount in which it is used in Korasit.

Technical information on scenarios

Reference service life

| RSL information | Korasit KS2 | Unit |
|-------------------------------|-------------|----------------|
| Reference service Life | > 20 | Years |
| Declared product properties | - | As appropriate |
| Design application parameters | - | As appropriate |
| Assumed quality of work | - | As appropriate |
| Outdoor environment | - | As appropriate |
| Indoor environment | - | As appropriate |
| Usage conditions | - | As appropriate |
| Maintenance | - | As appropriate |

End of life (C1-C4)

| Scenario information | Value | Unit |
|--------------------------------------|-------|----------------|
| Collected separately | 0,69 | kg |
| Collected with mixed waste | - | kg |
| For reuse | - | kg |
| For recycling | 0,32 | kg |
| For energy recovery | 0,37 | kg |
| For final disposal | - | kg |
| Assumptions for scenario development | - | As appropriate |

Re-use, recovery and recycling potential (D)

| Scenario information/Materiel | Value | Unit |
|----------------------------------------------|-------|------|
| Displaced material | 0,31 | kg |
| Electricity recovery from waste incineration | 0,5 | MJ |
| Heat recovery from waste incineration | 0,69 | MJ |

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A2 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A2 chapter 7.4.2.

References

| | |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Publisher |  www.epddanmark.dk <small>Template version 2023.2</small> |
| Programme operator | Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk |
| LCA-practitioner | Daniel Matthaeus Krisa & Emilie Muff Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup www.teknologisk.dk |
| LCA software / background data | Sphera LCA for experts version 10.7.1.28, 2023 including databases v.2024.2 https://sphera.com/ Ecoinvent v3.9.1 Life-Cycle Assessment database https://ecoinvent.org/database-login/ <i>EN 15804 reference package 3.1</i> |
| 3rd party verifier | <i>Mirko Miseljic</i> LCA Specialists Denmark lcaspecialists@outlook.com |

General programme instructions

General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804

DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

Product-specific PCR

PCR 2021:03, Basic Chemicals

EN 15942

DS/EN 15942:2021 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025

DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040

DS/EN ISO 14040:2008 – " Environmental management – Life cycle assessment – Principles and framework"

ISO 14044

DS/EN ISO 14044:2008 – " Environmental management – Life cycle assessment – Requirements and guidelines"