

## Environmental Product Declaration

In accordance with ISO 14025 and EN 15804 +A2



ver2-130622

## General information

Product: Kebony Character (Scots Pine) Decking

#### **Program Operator:**

The Norwegian EPD FoundationPost Box 5250 Majorstuen, 0303 Oslo, NorwayTlf:+47 23 08 80 00e-mail:post@epd-norge.no

Decleration Number: NEPD-3514-2106-EN

#### This declaration is based on Product Category Rules:

CEN Standard EN 15804 serves as core PCR supplied with the PCR NPCR 015 rev4, EPD Norway

#### Statements:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer, life cycle assessment data and evidences.

Declared unit: 1 m<sup>3</sup> of Kebony Character (Scots Pine) Decking

Declared unit with option:

#### Functional unit:

1 m<sup>3</sup> of Kebony Character (Scots Pine) Decking, planed, installed and maintained over 60 years

#### Verification:

Independent verification of the declaration and data, according to ISO14025:2010

internal

external X

Silvia Vilcekova Independent verifier approved by EPD Norway

#### Owner of the declaration:

Kebony ASContact person:Espen RønningslandPhone:+47 98 28 87 92e-mail:info@kebony.com

#### Manufacturer:

Kebony Norge AS Havnevegen 35, N-3739 Skien, Norway Phone: +47 35 10 61 25 e-mail: info@kebony.com

Place of production: Skien, Norway

Organisation no: 979 446 276

Issue date: 25.05.2022

Valid to: 25.05.2027

Year of study: 2020

#### Comparability:

EPDs of construction products may not be comparable if they are not compliant with EN 15804:A2 and not seen in a building context

#### The EPD has been worked out by:

Trebostad, M. & Johansen, B. H. Energiråd AS

Håkon Hauan Managing Director of EPD-Norway

## Product

#### **Product description:**

Kebony Character (Scots Pine) is produced from sustainably managed Scots Pine from Sweden, which is treated with bio-based, renewable chemicals, giving the wood an outstanding durability and an exclusive appearance. Kebony Character (Scots Pine) is produced in Kebony's production facilities located in Skien, Norway.

#### **Product specification:**

Kebony Character (Scots Pine) Decking is available in different size profiles. The material overview below corresponds to the content in the final product and not the input quantities required to produce 1 FU of the product.

| Materials              | kg / m³ | %  |
|------------------------|---------|----|
| Scots pine             | 490     | 86 |
| Bio-based chemicals    | 80      | 14 |
| Total                  | 570     |    |
| Plastic foil packaging | 1,65    |    |

#### Technical data:

Durability class (EN-350) : 1-2. Hardness: brinell 20 - 30 N/mm<sup>2</sup>. Maximum swelling (dry to wet, tangential direction): 6%. Density: 570 kg/m<sup>3</sup>. Technical data sheets for all Kebony Character (Scots Pine) Decking profiles are available on <u>www.kebony.com</u>

#### Market:

Europe, North America, Japan, Australia

## Reference service life, product: 30 years as per EN15804

## Reference service life, building:

Reference service life on building level is 60 years as per EN15804

## LCA: Calculation rules

#### Declared unit:

1 m3 of Kebony Character (Scots Pine) Decking

#### Data quality:

#### Upstream;

Specific data was acquired by using measurable consumption and emission data from Kebony's facilities for 2020. The yearly averages for 2020 are referred to. Only specific data was used to analyse the core process of the LCA.

#### Downstream:

Scenarios were developed and generic data was used.

#### Conversion to process flows and LCI:

Conversion to primary flows and environmental effects were carried out via OpenLCA (version 1.10.13), which uses datasets from to EcoInvent v3.8. Datasets were selected according to their technological, geographical and time related representativeness for the process assessed.

#### Impact assessment:

Open LCA software (version 1.10.13) was used to carry out the impact assessment of this LCA, the later refers to the LCIA characterization models, factors and methods as given by EN15804:2012+A2:2019 explicitly labeled "EN 15804 + A2 Method" in Open LCA.

#### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

#### System boundary:

The scope of the study is "cradle to gate with options", described as A1-A5, B4, C1-C4 and D. The study takes into consideration the life cycle stages from the extraction of raw materials, production, installation, use and disposal, including all transport stages. The flowchart (Figure 1) illustrates the different stages of the product's life cycle considered. Module D: energy under the form of heat and electricity is generated from the incineration of Kebony Character (Scots Pine) at end-of-life and is associated to the substitution of heat production from primary energy sources in Norway and Europe.

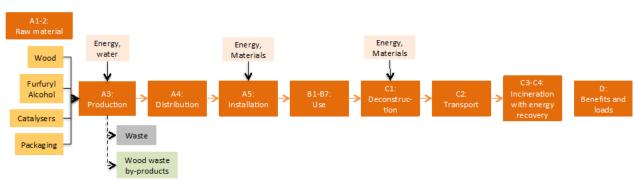


Figure 1: Life cycle stages of Kebony Character

#### Cut-off criteria:

All major raw materials and all the essential energy is included. The production process for raw materials and energy flows that are included with very small amounts (<1%) are not included.

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

The transport scenario considered for Kebony Character (Scots Pine) Decking is based on the distribution of sales in 2020 and corresponding transport data. Datasets from Ecoinvent were referred to.

| Туре  | Capacity utilisation (incl.<br>return) % | Type of<br>vehicle                | Distance KM | Fuel/Energy<br>consumption | value<br>(l/t) |
|-------|--|-----------------------------------|-------------|----------------------------|----------------|
| Truck | 53%                                      | lorry >32<br>metric ton,<br>EURO6 | 635,8       | 0,02285 l/t.km<br>Diesel   | 14,527         |
| Boat  | 70%                                      | container<br>ship                 | 427,3       | 0,00026 l/t.km<br>HFO      | 0,113          |
| Ferry | 50%                                      | Ferry                             | 38,4        | 0,00309 l/t.km<br>HFO      | 0,119          |

#### Transport from production place to assembly/user (A4)

#### Assembly (A5)

Installation will require the use of an electric saw to adjust the size of the planks to the size of the deck desired and an electric hand drill to fasten the screws/fasteners. The use of a hand drill and electric saw is considered negligible, <1% of the cumulative energy of the system model. Screws/fasteners, including H-clips are included and demoniated as "Auxiliary".

|                                       | Unit | Value |
|---------------------------------------|------|-------|
| Auxiliary                             | Kg   | 0,702 |
| Water consumption                     | m3   | -     |
| Electricity consumption               | kWh  | 2     |
| Other energy carriers                 | MJ   | -     |
| Material loss                         | Kg   | -     |
| Output materials from waste treatment | Kg   | -     |
| Dust in the air                       | Kg   | -     |

#### Replacement (B4)/Refurbishment (B5)

|                           | Unit           | Value |
|---------------------------|----------------|-------|
| Replacement cycle*        | Years          | 30    |
| Electricity consumption   | kWh            | 2     |
| Replacement of worn parts | m <sup>3</sup> | 1     |

In accordance with the NPCR 015 table 5, the decking is replaced after 30 years.

#### End of Life (C1, C3, C4)

|                                       | Unit | Value |
|---------------------------------------|------|-------|
| Hazardous waste disposed              | Kg   | -     |
| Collected as mixed construction waste | Kg   | -     |
| Reuse                                 | Kg   | -     |
| Recycling                             | Kg   | -     |
| Energy recovery                       | Kg   | 570   |
| To landfill                           | Kg   | -     |

According to NPCR015 energy recovery is to be assumed in life cycle stage C3.

#### Transport to waste processing (C2)

| Туре  | Capacity utilisation (incl.<br>return) % | Type of<br>vehicle                  | Distance KM | Fuel/Energy<br>consumption | value<br>(l/t) |
|-------|--|-------------------------------------|-------------|----------------------------|----------------|
| Truck | 37%                                      | lorry 16-32<br>metric ton,<br>EURO5 | 85          | 0,045 l/t.km<br>Diesel     | 3,791          |

Transport distance according to Raadal (2009)

#### Benefits and loads beyond the system boundaries (D)

|   | Unit | Value |
|---|------|-------|
| Substituted heat from municipal waste burning, Norway | MJ   | 2779  |
| Substituted heat from natural gas, Europe             | MJ   | 1095  |
| Substituted heat from other than natural gas, Europe  | MJ   | 1812  |
| Substituted heat from wood chips, Norway              | MJ   | 1405  |
| Substituted heat from electricity, Norway             | MJ   | 606   |

Given that Kebony is utilized for energy recovery beyond system boundaries it replaces heat energy according to distribution of Kebonys' markets and their respective soruces of heating.

## LCA: Results

| System boundaries | (X=included, MND= module not declared, MNR=module not |
|-------------------|---|
| relevant)         |   |

| Product stage |           | age           | Assembly<br>stage |          | Use stage |             |        |             |               | E                      | nd of l               | ife staţ                   | ge        | Benefits<br>& loads<br>beoyond<br>system<br>boundary |          |  |
|---------------|-----------|---------------|-------------------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|--|----------|--|
| Raw materials | Transport | Manufacturing | Transport         | Assembly | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing                                     | Disposal | Reuse-Recovery-Recycling-<br>potential |
| A1            | A2        | A3            | A4                | A5       | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | С3   | C4       | D                                      |
| Х             | х         | х             | Х                 | х        | Х         | Х           | Х      | Х           | Х             | Х                      | Х                     | Х                          | Х         | Х  | Х        | х                                      |

The production process is identical for all Kebony Character (Scots Pine) and are all produced in Kebony's facilities located in Skien, Norway. Kebony Character is sold under different profiles, all profiling is carried out in sawmills that supply raw material to Kebony, no profiling is carried out in the company's facilities. The scenarios for modules beyond the factory gate (A4, C and D), are based on recommended practices for installation and maintenance as well as expected service life and guidelines for waste treatment from NCPR 015. Only B4, replacement is included in the use-phase as per provisions of NCPR 015 for the given sub-category of wood products.

| Indicator     | Unit         | A1-A3     | A4       | A5       | B4        | B1-B3+B5-B7 |
|---------------|--------------|-----------|----------|----------|-----------|-------------|
| GWP-total     | kg CO2 eq.   | -1,09E+03 | 3,61E+01 | 2,75E+00 | 6,93E+00  | 0,00E+00    |
| GWP-fossil    | kg CO2 eq.   | 3,28E+02  | 3,60E+01 | 2,66E+00 | 3,87E+02  | 0,00E+00    |
| GWP-biogenic  | kg CO2 eq.   | -1,43E+03 | 5,03E-02 | 9,07E-02 | -3,98E+02 | 0,00E+00    |
| GWP-LULUC     | kg CO2 eq.   | 7,16E+00  | 1,51E-02 | 2,94E-03 | 7,19E+00  | 0,00E+00    |
| ODP           | kg CFC11 eq. | 4,55E-05  | 8,74E-06 | 1,21E-07 | 5,65E-05  | 0,00E+00    |
| АР            | mol H⁺ eq.   | 1,98E+00  | 2,52E-01 | 1,55E-02 | 3,68E+00  | 0,00E+00    |
| EP-freshwater | kg P eq.     | 4,82E-02  | 2,20E-03 | 1,02E-03 | 5,49E-02  | 0,00E+00    |
| EP-marine     | kg N eq.     | 5,21E-01  | 6,01E-02 | 2,60E-03 | 1,27E+00  | 0,00E+00    |
| EP-terrestial | mol N eq.    | 5,60E+00  | 6,63E-01 | 2,76E-02 | 1,40E+01  | 0,00E+00    |
| РОСР          | kg NMVOC eq. | 1,45E+00  | 2,02E-01 | 8,47E-03 | 3,54E+00  | 0,00E+00    |
| ADP-M&M       | kg Sb eq.    | 3,43E-03  | 7,80E-05 | 7,77E-05 | 3,81E-03  | 0,00E+00    |
| ADP-fossil    | MJ           | 1,02E+03  | 4,17E+01 | 2,33E+01 | 1,14E+03  | 0,00E+00    |
| WDP           | m³           | 5,62E+02  | 2,75E+00 | 4,06E+00 | 5,73E+02  | 0,00E+00    |

#### Core environmental impact indicators

| Indicator     | Unit         | C1       | C2       | С3       | C4       | D         |
|---------------|--------------|----------|----------|----------|----------|-----------|
| GWP-total     | kg CO2 eq.   | 6,56E-02 | 7,84E+00 | 1,05E+03 | 9,77E-02 | -6,92E+02 |
| GWP-fossil    | kg CO2 eq.   | 5,88E-02 | 7,82E+00 | 1,28E+01 | 5,61E-02 | -3,30E+02 |
| GWP-biogenic  | kg CO2 eq.   | 6,48E-03 | 1,39E-02 | 1,03E+03 | 4,15E-02 | -3,61E+02 |
| GWP-LULUC     | kg CO2 eq.   | 3,19E-04 | 3,13E-03 | 9,07E-03 | 5,81E-05 | -8,01E-02 |
| ODP           | kg CFC11 eq. | 2,31E-09 | 1,81E-06 | 3,32E-07 | 1,60E-08 | -1,75E-05 |
| AP            | mol H⁺ eq.   | 4,33E-04 | 2,22E-02 | 1,41E+00 | 8,42E-04 | -1,55E+00 |
| EP-freshwater | kg P eq.     | 3,95E-05 | 5,16E-04 | 2,67E-03 | 3,83E-04 | -6,05E-02 |
| EP-marine     | kg N eq.     | 5,45E-05 | 4,52E-03 | 6,81E-01 | 1,54E-04 | -3,56E-01 |
| EP-terrestial | mol N eq.    | 6,19E-04 | 4,91E-02 | 7,67E+00 | 1,68E-03 | -3,82E+00 |
| РОСР          | kg NMVOC eq. | 1,65E-04 | 1,84E-02 | 1,85E+00 | 5,08E-04 | -9,88E-01 |
| ADP-M&M       | kg Sb eq.    | 6,53E-06 | 2,66E-05 | 1,93E-04 | 2,22E-07 | -4,80E-04 |
| ADP-fossil    | MJ           | 3,44E-01 | 9,04E+00 | 4,54E+01 | 2,01E-01 | -1,23E+03 |
| WDP           | m³           | 2,96E+00 | 5,76E-01 | 3,14E+00 | 5,72E-02 | -2,11E+02 |

*GWP-total:* Global Warming Potential; *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:* Depletion potential of the stratospheric ozone layer; *AP:* Acidification potential, Accumulated Exceedance; *EP-freshwater:* Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional Norwegian requirements" for indicator given as PO4 eq. *EP-marine:* Eutrophication potential, Accumulated Exceedance; *P-terrestial:* Eutrophication potential, Accumulated Exceedance; *CP-terrestial:* Eutrophication potential, Accumulated Exceedance; *P-terrestial:* Eutrophication potential, Accumulated Exceedance; *POCP:* Formation potential of tropospheric ozone; *ADP-M&M:* Abiotic depletion potential for non-fossil resources (minerals and metals); *ADP-fossil:* Abiotic depletion potential for fossil resources; *WDP:* Water deprivation potential, deprivation weighted water counsumption

#### Additional environmental impact indicators

| Indicator | Unit                 | A1-A3    | A4       | A5       | B4       | B1-B3+B5-B7 |
|-----------|----------------------|----------|----------|----------|----------|-------------|
| РМ        | Disease<br>incidence | 5,86E+03 | 2,22E+01 | 1,53E+00 | 5,90E+03 | 0,00E+00    |
| IRP       | kBq U235 eq.         | 4,09E-07 | 1,17E-08 | 5,77E-08 | 5,92E-07 | 0,00E+00    |
| ETP-fw    | CTUe                 | 1,73E-05 | 6,16E-07 | 1,64E-07 | 1,97E-05 | 0,00E+00    |
| HTP-c     | CTUh                 | 4,79E+01 | 2,85E+00 | 2,88E-01 | 5,22E+01 | 0,00E+00    |
| HTP-nc    | CTUh                 | 1,64E+03 | 7,71E+02 | 7,83E+00 | 2,55E+03 | 0,00E+00    |
| SQP       | Dimensionless        | 3,09E-05 | 2,88E-06 | 1,96E-07 | 8,97E-05 | 0,00E+00    |

| Indicator | Unit                 | C1       | C2       | С3       | C4       | D         |
|-----------|----------------------|----------|----------|----------|----------|-----------|
| РМ        | Disease<br>incidence | 8,81E-02 | 3,97E+00 | 1,29E+01 | 6,63E-02 | -2,61E+01 |
| IRP       | kBq U235 eq.         | 1,70E-10 | 2,52E-09 | 1,11E-07 | 7,74E-11 | -1,20E-07 |
| ETP-fw    | CTUe                 | 1,33E-08 | 1,47E-07 | 1,46E-06 | 8,55E-09 | 1,16E-05  |
| HTP-c     | CTUh                 | 4,25E-02 | 6,11E-01 | 5,84E-01 | 6,96E-03 | -7,31E+00 |
| HTP-nc    | CTUh                 | 1,93E-01 | 1,01E+02 | 2,47E+01 | 4,27E+00 | -2,17E+02 |
| SQP       | Dimensionless        | 3,20E-09 | 4,95E-07 | 5,52E-05 | 8,80E-09 | -1,62E-05 |

PM: Particulate matter emissions; IRP: Ionising radiation, human health; ETP-fw: Ecotoxicity (freshwater); ETP-c: Human toxicity, cancer effects; HTP-nc: Human toxicity, non-cancer effects; SQP: Land use related impacts / soil quality

| ILCD class             | Indicator  | Disclaimer |  |  |
|------------------------|--|------------|--|--|
|                        | Global warming potential (GWP)   | None       |  |  |
| ILCD type /<br>level 1 | Depletion potential of the stratospheric ozone layer (ODP)                         | None       |  |  |
|                        | Potential incidence of disease due to PM emissions (PM)                            | None       |  |  |
|                        | Acidification potential, Accumulated Exceedance (AP)                               | None       |  |  |
|                        | Eutrophication potential, Share of nutrients to freshwater end compartment (EP-fw) | None       |  |  |
| ILCD type /            | Eutrophication potential, Share of nutrients to marine end compartment (EP-marine) | None       |  |  |
| level 2                | Eutrophication potential, Accumulated Exceedance (EP-terrestrial)                  |            |  |  |
|                        | Formation potential of tropospheric ozone (POCP)                                   | None       |  |  |
|                        | Potential Human exposure efficiency relative to U235 (IRP)                         | 1          |  |  |
|                        | Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)         | 2          |  |  |
|                        | Abiotic depletion potential for fossil resources (ADP-fossil)                      | 2          |  |  |
|                        | Water (user) deprivation potential, deprivation-weighted water consumption (WDP)   | 2          |  |  |
| ILCD type /<br>level 3 | Potential Comparative Toxic Unit for ecosystems (ETP-fw)                           | 2          |  |  |
|                        | Potential Comparative Toxic Unit for humans (HTP-c)                                | 2          |  |  |
|                        | Potential Comparative Toxic Unit for humans (HTP-nc)                               |            |  |  |
|                        | Potential Soil quality index (SQP)   | 2          |  |  |

**Disclaimer 1** – 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.

**Disclaimer 2** – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

| Parameter | Unit           | A1-A3    | A4       | A5       | B4       | B1-B3+B5-B7 |
|-----------|----------------|----------|----------|----------|----------|-------------|
| RPEE      | MJ             | 1,34E+03 | 5,30E+00 | 1,54E+01 | 1,37E+03 | 0,00E+00    |
| RPEM      | MJ             | 2,02E+04 | 1,56E+00 | 1,31E+00 | 2,02E+04 | 0,00E+00    |
| TPE       | MJ             | 2,16E+04 | 6,87E+00 | 1,68E+01 | 2,16E+04 | 0,00E+00    |
| NRPE      | MJ             | 1,57E+03 | 5,16E+01 | 2,76E+01 | 1,71E+03 | 0,00E+00    |
| NRPM      | MJ             | 4,10E+03 | 5,21E+02 | 1,22E+01 | 4,77E+03 | 0,00E+00    |
| TRPE      | MJ             | 5,67E+03 | 5,72E+02 | 3,98E+01 | 6,49E+03 | 0,00E+00    |
| SM        | Kg             | 1,06E+02 | 4,89E-01 | 5,28E-01 | 1,08E+02 | 0,00E+00    |
| RSF       | MJ             | 2,05E+00 | 1,30E-01 | 4,78E-02 | 2,37E+00 | 0,00E+00    |
| NRSF      | MJ             | 1,18E+01 | 3,91E-01 | 9,94E-02 | 1,26E+01 | 0,00E+00    |
| W         | m <sup>3</sup> | 1,41E+01 | 6,55E-02 | 9,55E-02 | 1,43E+01 | 0,00E+00    |

| Parameter | Unit           | C1       | C2       | С3       | C4       | D         |
|-----------|----------------|----------|----------|----------|----------|-----------|
| RPEE      | MJ             | 9,31E+00 | 1,27E+00 | 7,65E+00 | 2,35E-02 | -5,08E+02 |
| RPEM      | MJ             | 8,79E-02 | 4,18E-01 | 1,38E+00 | 8,40E-03 | -7,88E+02 |
| TPE       | MJ             | 9,40E+00 | 1,69E+00 | 9,03E+00 | 3,19E-02 | -1,30E+03 |
| NRPE      | MJ             | 9,12E-01 | 1,15E+01 | 5,41E+01 | 2,51E-01 | -1,31E+03 |
| NRPM      | MJ             | 1,88E-01 | 1,08E+02 | 2,76E+01 | 1,07E+00 | -1,60E+03 |
| TRPE      | MJ             | 1,10E+00 | 1,19E+02 | 8,17E+01 | 1,33E+00 | -2,91E+03 |
| SM        | kg             | 2,00E-02 | 1,21E-01 | 9,27E-01 | 3,07E-03 | -4,01E+00 |
| RSF       | MJ             | 4,95E-03 | 3,62E-02 | 1,05E-01 | 7,79E-04 | -7,44E-01 |
| NRSF      | MJ             | 3,14E-02 | 1,47E-01 | 1,42E-01 | 2,46E-03 | -2,48E+02 |
| W         | m <sup>3</sup> | 6,89E-02 | 1,37E-02 | 7,49E-02 | 1,38E-03 | -4,92E+00 |

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

#### End of life - Waste

| Parameter | Unit | A1-A3    | A4       | A5       | B4       | B1-B3+B5-B7 |
|-----------|------|----------|----------|----------|----------|-------------|
| HW        | KG   | 2,05E+02 | 1,11E+01 | 8,49E+00 | 2,42E+02 | 0,00E+00    |
| NHW       | KG   | 3,78E+02 | 4,76E+01 | 3,96E-01 | 4,48E+02 | 0,00E+00    |
| RW        | KG   | 3,50E-01 | 1,02E-02 | 2,71E-03 | 3,71E-01 | 0,00E+00    |

| Parameter | Unit | C1       | C2       | С3       | C4       | D         |
|-----------|------|----------|----------|----------|----------|-----------|
| HW        | KG   | 2,62E-01 | 2,66E+00 | 1,52E+01 | 5,30E-02 | -2,31E+02 |
| NHW       | KG   | 5,55E-02 | 6,15E+00 | 1,17E+01 | 4,82E+00 | -2,78E+02 |
| RW        | KG   | 3,54E-04 | 2,38E-03 | 5,47E-03 | 3,69E-05 | -3,55E-02 |

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed

#### End of life – output flow

| Parameter | Unit | A1-A3    | A4       | A5       | B4       | B1-B3+B5-B7 |
|-----------|------|----------|----------|----------|----------|-------------|
| CR        | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00    |
| MR        | kg   | 9,56E+01 | 3,88E-01 | 9,26E-02 | 9,67E+01 | 0,00E+00    |
| MER       | kg   | 1,46E+00 | 1,33E-01 | 4,80E-03 | 2,01E+00 | 0,00E+00    |
| EEE       | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00    |
| ETE       | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00    |

| Parameter | Unit | C1       | C2       | С3       | C4       | D         |
|-----------|------|----------|----------|----------|----------|-----------|
| CR        | kg   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| MR        | kg   | 9,07E-03 | 1,01E-01 | 4,61E-01 | 1,66E-03 | -4,55E+00 |
| MER       | kg   | 6,46E-04 | 2,78E-02 | 3,80E-01 | 3,51E-04 | -3,27E-01 |
| EEE       | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| ETE       | MJ   | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy

#### Information describing the biogenic carbon content at the factory gate

| Biogenic carbon content                               | Unit | Value   |
|---|------|---------|
| Biogenic carbon content in product                    | kg C | 1048,85 |
| Biogenic carbon content in the accompanying packaging | kg C | 0       |

## Additional Norwegian requirements

#### Greenhous gas emission from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing prosess(A3).

| National electricity grid                             | Unit           | Value   |
|---|----------------|---------|
| Norwegian mix (market for electricity, ecoinvent 3.8) | kg CO2 -eq/kWh | 0,01713 |

#### Additional environmental impact indicators required in NPCR Part

In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator for GWP is also given as GWP-IOBC, being climate impacts calculated according to the principle of instantanious oxidation of biogenic carbon.

| Indicator | Unit       | A1-A3    | A4       | A5       | B4       | B1-B3+B5-B7 |
|-----------|------------|----------|----------|----------|----------|-------------|
| GWP-IOBC  | kg CO2 eq. | 3,35E+02 | 3,61E+01 | 2,75E+00 | 3,35E+02 | 0,00E+00    |

| Indicator | Unit       | C1       | C2       | С3       | C4       | D         |
|-----------|------------|----------|----------|----------|----------|-----------|
| GWP-IOBC  | kg CO2 eq. | 6,56E-02 | 7,84E+00 | 1,04E+03 | 9,77E-02 | -6,91E+02 |

GWP-IOBC Global warming potential calculated according to the principle of instantanious oxidation.

#### Hazardous substances

The declaration is based upon reference to threshold values and/or test results and/or material safety data sheets provided to EPD verifiers. Documentation available upon request to EPD owner.

- The product contains no substances given by the REACH Candidate list or the Norwegian priority list.
- □ The product contains substances given by the REACH Candidate list or the Norwegian priority list that are less than 0,1 % by weight.
- □ The product contain dangerous substances, more then 0,1% by weight, given by the REACH Candidate List or the Norwegian Priority list, see table.
- □ The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskiften, Annex III), see table.

#### Indoor environment

Not relevant for outdoor products.

#### Carbon footprint

Carbon footprint has not been worked out for the product.

## Bibliography

| ISO 14025:2010        | Environmental labels and declarations - Type III environmental    |
|-----------------------|---|
|                       | declarations - Principles and procedures                          |
| ISO 14044:2006        | Environmental management - Life cycle assessment -                |
|                       | Requirements and guidelines                                       |
| EN 15804:2012+A2:2019 | Sustainability of construction works - Environmental product      |
|                       | declaration - Core rules for the product category of construction |
|                       | products  |
| ISO 21930:2007        | Sustainability in building construction - Environmental           |

declaration of building products

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