

Owner: [Hørning Parket A/S]  
No.: MD-22073-EN  
Issued: 31-03-2023  
Valid to: 31-03-2028

3<sup>rd</sup> PARTY VERIFIED

**EPD**

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



**Owner of declaration**

Hørning Parket A/S  
Christiansmindevej 12  
8660 Skanderborg, Denmark  
CVR-nr.: 33965362



**Issued:**

XX-XX-XXXX

**Valid to:**

XX-XX-XXXX

**Basis of calculation**

This EPD is developed in accordance with the European standard EN 15804:2012+A2:2019.

**Programme**

EPD Danmark  
[www.epddanmark.dk](http://www.epddanmark.dk)



- Industry EPD
- Product EPD

**Comparability**

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804:2012+A2:2019. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804:2012 +A2:2019 and if the background systems are not based on the same database.

**Validity**

This EPD has been verified in accordance with ISO 14025:2010 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)**

- Solid Plank 16/20 mm thickness (Untreated)
- Origin Plank 20/28 mm thickness (Untreated)

The EPD covers two hardwood types - oak and ash. The moisture content of the products is 8% ±2%

Number of declared datasets/product variations: 2

**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

**Production site**

Production site of Skanderborg in Denmark

**Product(s) use**

Plank floor, which is ready to be installed in accordance with the instructions of Hørning Parket A/S. Results are listed for floors with no surface treatment. Supplementary datasheets for optional surface treatment at suppliers (A1) can be found in the section, [Additional Information](#).

The floor is intended for indoor use.

CEN standard EN 15804:2012+A2:2019 serves as the core PCR

Independent verification of the declaration and data, according to EN ISO 14025:2010

- internal
- external

Third party verifier:

  
Linda Højbye

**Declared/ functional unit**

1 m<sup>2</sup> solid plank floor in oak or ash.

**Year of data**

2021

**EPD version**

[2], March 2023



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  |
| <b>X</b>            | <b>X</b>  | <b>X</b>             | MND       | MND                  | MND | MND         | MND    | MND         | MND           | MND                    | MND                   | <b>X</b>                   | <b>X</b>  | <b>X</b>         | <b>X</b> | <b>X</b>                                 |

# Product Information

## Product Description:

The products assessed in this study are solid plank floors, which is ready to be installed in accordance with the instructions of Hørning Parket A/S. [LCA Results](#) are listed for untreated floors without surface treatment. Because of this, supplementary datasheets for two types of generic coating can be found in the section, [Additional Information](#), and subsequently added to the results to account for the optional surface treatment during the product stage (A1). Datasheets for the declared products can be found here:

- [Solid Plank 16/20 mm thickness](#)
- [Origin Plank 20/28 mm thickness](#)

The main product components are shown in the table below excluding the optional surface treatment (See [Additional Information](#)). Materials account for 100% of the mass of the declared product.

| Material         | Weight-% of product |
|------------------|---------------------|
| Wood (Untreated) | 100%                |
| <b>Total</b>     | <b>100%</b>         |

Table 1: Mass distribution of declared products.

The product packaging is shown in the table below. Materials account for 100% of the mass of the product packaging.

| Material             | Weight-% of packaging |
|----------------------|-----------------------|
| EUR Pallet, reusable | 41.0%                 |
| Cardboard            | 42.6%                 |
| Packaging film       | 16.4%                 |
| <b>Total</b>         | <b>100%</b>           |

Table 2: Mass distribution of product packaging

## Representativity:

This declaration, including data collection and the modelled foreground system including results, represents the production of the declared products by Hørning Parket A/S in Skanderborg, Denmark, which is also the representative geographical area.

Product specific data are based on average values collected at the production site for the year 2021. Background data are based on ecoinvent 3.8 (Released 09-2021) and complies with the EN 15804:2012 +A2:2019, Section 6.3.8.2, by being

less than 10 years old. Generally, the background datasets used are of high quality with a reference year of 2021 in line with release of the database. Almost all datasets are locally and/or regionally representative (e.g. Denmark or Europe), and electricity is country specific. In processes deemed particularly important (e.g. sawmill activities), the electricity mix has been modified to reflect local production conditions.

## Hazardous substances:

The plank floors by Hørning Parket A/S, that are analyzed in this study, do not contain any substances listed in the "Candidate List of Substances of Very High Concern for Authorisation"

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

## Essential Characteristics:

Hørning Parket A/S products are CE certified in accordance with the European standard regarding wooden floors for indoor usage EN 14342:2013.

*Thermal conductivity, [W/m<sup>2</sup>K]:*

- Oak and Ash: 0.16

*Thermal resistance, [m<sup>2</sup> °K/W]:*

- 16 mm wooden oak or ash floor 0.100
- 20 mm wooden oak or ash floor 0.125
- 28 mm wooden oak or ash floor 0.175

Further technical information can be obtained by contacting the manufacturer, Hørning Parket A/S, or on the manufacturers website:

- <https://www.horningfloor.dk/>

## Reference Service Life (RSL):

No reference service life (RSL) is declared since the scope of this EPD is cradle-to-gate with modules C1-C4 and D. As a result, the use stage (B1-B7) of the declared products is not included.

Picture of Products:

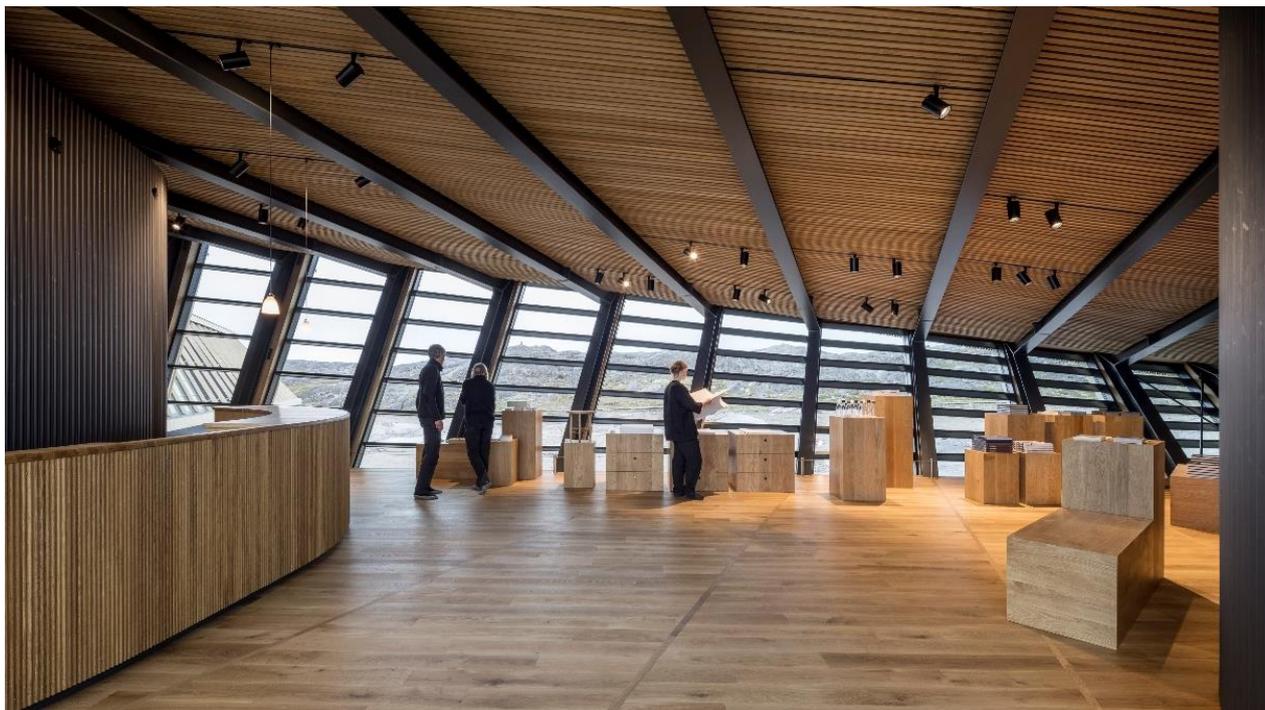


Figure 1: Solid Plank



Figure 2: Origin Plank

# LCA Background

## Declared Unit (DU):

The declared unit of this EPD is: *1 m<sup>2</sup> of plank floor in oak or ash*. The product variations include two different wood species (oak and ash) and the highest and lowest options for floor thickness. The properties of each product variation are presented in the tables below:

| Name          | Declared unit    | Thickness [mm] | Total weight [kg] | Scaling factor | Conversion [m <sup>2</sup> /kg] |
|---------------|------------------|----------------|-------------------|----------------|---------------------------------|
| Solid Plank*  | 1 m <sup>2</sup> | 16             | 10.4              | 1.00           | 0.096                           |
|               | 1 m <sup>2</sup> | 20             | 13.0              | 1.25           | 0.077                           |
| Origin Plank* | 1 m <sup>2</sup> | 20             | 13.0              | 1.00           | 0.077                           |
|               | 1 m <sup>2</sup> | 28             | 18.2              | 1.40           | 0.055                           |

**Table 3: Product properties and scaling factor for each declared product. \*Optional surface treatment at supplier**

The scaling factor can be applied to the results to account for an alternative thickness. See the section, [Additional Information](#), for further guidance concerning scaling factors. The total weight per declared unit (1 m<sup>2</sup>) is calculated based on the measurements of the various floor components. The density of oak and ash are both 650 kg/m<sup>3</sup> at 8 % moisture content. The mass of holding materials (i.e. tape, BOPP film and adhesive) for the floor is minimal compared to the use of wood.

## Product Category Rules (PCR):

This EPD is developed according to the core rules for the product category of construction products in EN 15804:2012+A2:2019 (2019-11-04), and cPCR EN 16485:2014 (2014-05-02) concerning wood and wood-based products for use in construction.

## Guarantees of Origin (GOs):

The declared products are not produced using guarantees of origin (GOs) for the energy consumption during the manufacturing stage at the facilities of Hørning Parket A/S in Skanderborg (A3).

## Foreground System:

The production at Hørning Parket A/S (A3) is modelled based on site-specific data for the year 2021. The electricity consumption is modelled as an average supply mix in Denmark. The remaining activities are likewise modelled with average supply mixes representing the individual countries (e.g. FR & PL) or regions (e.g. EU) pertaining to the specific processes in the value chain.

## Background System:

The database, ecoinvent 3.8. (published in 09-2021) is utilized for the background system. As a result, both upstream- and downstream activities are based on average supply mixes for the

specific country or region depending on the given dataset.

## System Boundary:

This study is cradle-to-gate and covers the life cycle sub modules A1-A3. C1-C4 and D, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements specified in EN 15804:2012+A2:2019. section 6.3.6. where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of renewable and non-renewable primary energy usage and mass for unit processes. In addition, particular care has been taken to include materials and flows known to have the potential to cause significant emissions into air, water and soil related to the environmental indicators assessed in this study. In this respect, conservative assumptions in combination with plausibility considerations and expert judgement has been used to demonstrate compliance with this criterion.

It should be noted, that the surface treatment is assessed as an optional product activity for certain solid wood pattern floors. The rules and criteria of the declared products are hence extended to the supplementary datasets, which

should not be applied to any other products than indicated in this EPD.

**Product Stage (A1-A3):**

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.

All the floor products in this study consist of wooden planks made of either oak or ash. For the pre-manufactured solid wooden floors some additional tape or oak strips are used to hold the planks together. As prescribed by EN 15804:2012 +A2:2019, material flows carrying specific inherent properties i.e. energy content or elementary composition (e.g. biogenic carbon content), shall always be allocated reflecting the physical flow, irrespective of the allocation chosen for the process. Consequently, all by products resulting in downstream processes (e.g. boards and sawdust) are attributed the burdens of the forestry activities and transport from forests to the sawmill by mass allocation, which has required modifications to the generic datasets.

Furthermore, the following declared products have the option to receive surface treatment during the raw material supply stage (A1):

- Solid Plank 16/20 mm thickness
- Origin Plank 20/28 mm thickness

The optional surface treatment assumes that coating is subsequently not necessary during installation of the floor (A5). The optional surface treatment come in two variations: (i) Lacquer which is a wood finish commonly used for wooden floors due to its protective properties and limited maintenance required. Additionally, lacquer is fast drying, impervious to water, and maintains its transparency as it ages. (ii) Oil treatment which is a type of wood finish that is commonly used to protect and enhance the appearance of wooden surfaces. The coating is designed to penetrate into the wood, providing a durable, water-resistant finish that enhances the natural beauty of the wood grain. Due to the scope of this EPD, additional surface treatment during the use stage (B1-B7) is not accounted for in the supplementary datasets and should consequently

be added when assessing the full life cycle of the products since it will affect the reference service life (RSL).

Curing and hardening of both types of surface treatment is done with ultraviolet (UV) light. It should be noted, that the same amount of surface treatment is applied regardless of floor thickness. Because of this, scaling factors (See Table 3) should always be applied before adding the supplementary datasets to the results of the declared product. For additional information regarding the addition of these optional datasets, please refer to the section, [Additional Information](#).

Concerning the production at the Hørning Parket A/S facilities (A3), electricity, district heating, diesel and propane (for forklifts) are used as energy sources. Due to the disparity between processing of locally produced and pre-manufactured products, economic allocation is applied to the energy consumption on the site. Consequently, the share of gross profit is used as an allocation key since the difference in profit represents the additional energy and work that has gone into drying, splitting, and planning, compared to the pre-manufactured products. Electricity is the main source for the operation of the facilities, whereas district heat are used for drying planks and maintaining a comfortable working environment. Hørning Parket A/S uses water for both sanitary purposes and for the process of maintaining the humidity of all solid wooden floors in storage.

**End-of-Life Stage (C1-C4):**

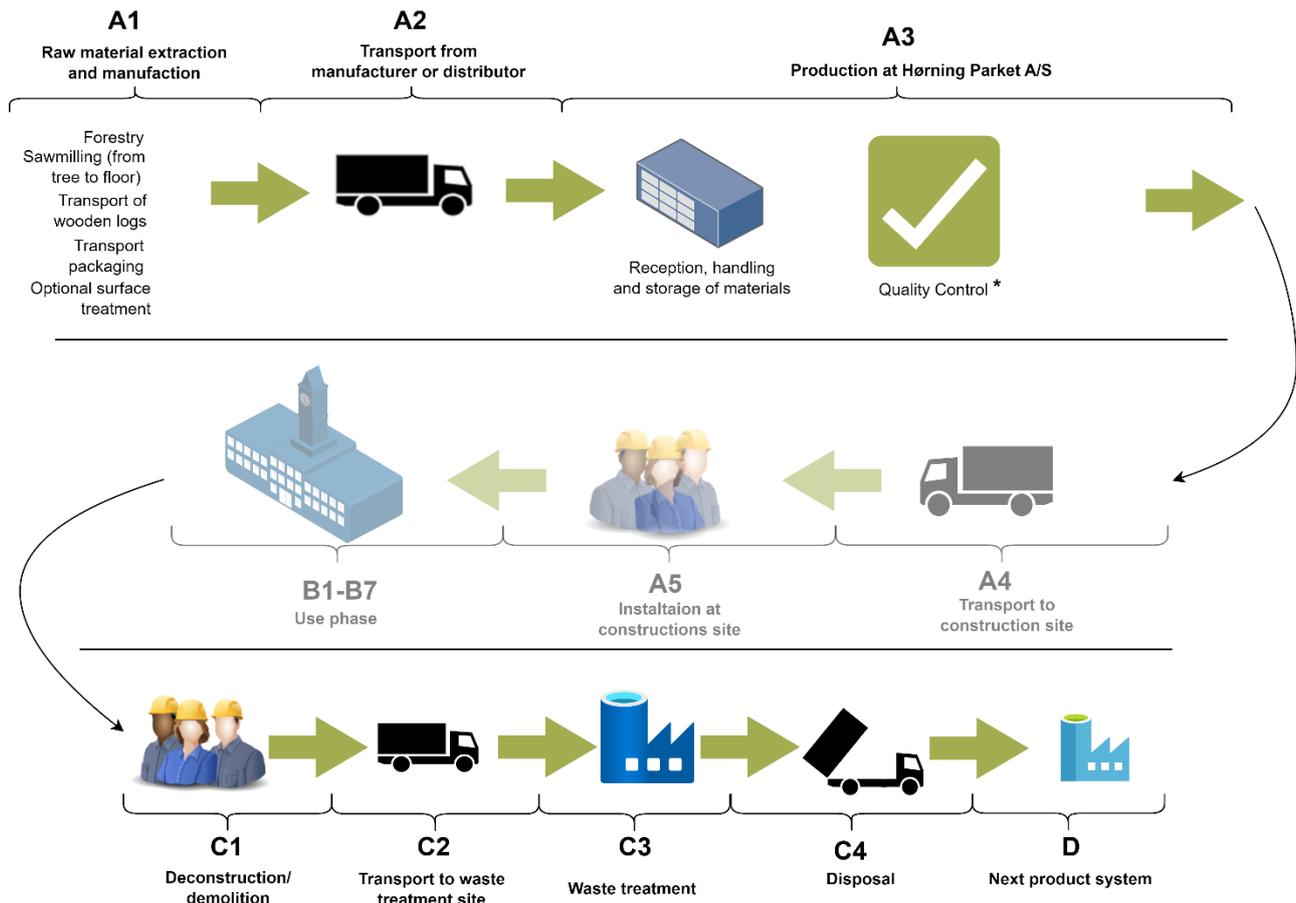
The deconstruction (C1) of the declared products is assumed to be done manually, and thus does not require any processes with an environmental impact. Plank floors are assumed to be transported from the demolition site to a waste facility where they are shredded. After this, the wood chips are transported to a municipal plant where they are incinerated for energy recovery. 100% of the waste wood is processed by energy recovery through municipal incineration. As specified in the cPCR, EN 16485:2014, Section 6.3.4.5, page 18, the default attribution of end-of-life processes of wood and wood-based products does not include landfilling (C4) after energy recovery. Moreover, it can be assumed that fly ash produced from the municipal

incineration process is used in new production cycles as instead of being disposed. Therefore, disposal does not take place.

**Re-use, Recovery, & Recycling Potential (D):** All of the materials used in the production and maintenance of pallets have potential benefits and load beyond the system boundary. Primarily this consists of the waste wood, which is sent for

energy recovery through municipal incineration with fly ash extraction. Electricity generated through the waste incineration at the CHP plant is assumed to replace the average Danish electricity mix, while thermal energy is utilized as district heating. Due to the constrained conditions of the technologies on the market, it is assumed that thermal energy replaces heating from natural gas.

**Flowchart:**



\* Sustainability and tracability control, moisture control, dimension control, grading and surface control

**Figure 3: Product life cycle illustrated as a flowchart**

## LCA Results

Due to the multiple declared products covered by this EPD, a series of results for each product is presented. Note, that the additional indicator for soil quality (SQP) is not declared (ND), which is why results are denoted as *Indicator not assessed (INA)*. The datasets for each of the declared products can be found on the following pages:

- **Page 8-9:** [Solid Plank 16/20 mm thickness \(Untreated\)](#)
- **Page 10-11:** [Origin Plank 20/28 mm thickness \(Untreated\)](#)

**Solid Plank - 16 mm thickness (Untreated):**

| Solid Plank 16 mm (Untreated)<br>ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> |  |           |          |          |          |          |           |
|---|--|-----------|----------|----------|----------|----------|-----------|
| Parameter   | Unit   | A1-A3     | C1       | C2       | C3       | C4       | D         |
| GWP-total   | [kg CO <sub>2</sub> eq.]   | -1.29E+01 | 0.00E+00 | 1.73E-01 | 1.65E+01 | 0.00E+00 | -1.57E+00 |
| GWP-fossil  | [kg CO <sub>2</sub> eq.]   | 3.36E+00  | 0.00E+00 | 1.73E-01 | 1.98E-01 | 0.00E+00 | -1.53E+00 |
| GWP-biogenic  | [kg CO <sub>2</sub> eq.]   | -1.63E+01 | 0.00E+00 | 1.47E-04 | 1.64E+01 | 0.00E+00 | -3.38E-02 |
| GWP-luluc   | [kg CO <sub>2</sub> eq.]   | 1.43E-02  | 0.00E+00 | 6.79E-05 | 1.53E-04 | 0.00E+00 | -1.42E-03 |
| ODP   | [kg CFC 11 eq.]  | 4.35E-07  | 0.00E+00 | 4.00E-08 | 1.25E-08 | 0.00E+00 | -6.93E-08 |
| AP  | [mol H <sup>+</sup> eq.]   | 2.23E-02  | 0.00E+00 | 7.02E-04 | 1.85E-03 | 0.00E+00 | -3.13E-03 |
| EP-freshwater   | [kg PO <sub>4</sub> eq.]   | 1.93E-03  | 0.00E+00 | 1.11E-05 | 9.45E-05 | 0.00E+00 | -5.14E-04 |
| EP-marine   | [kg N eq.]   | 6.09E-03  | 0.00E+00 | 2.11E-04 | 9.27E-04 | 0.00E+00 | -8.81E-04 |
| EP-terrestrial  | [mol N eq.]  | 6.50E-02  | 0.00E+00 | 2.31E-03 | 8.95E-03 | 0.00E+00 | -9.66E-03 |
| POCP  | [kg NMVOC eq.]   | 2.10E-02  | 0.00E+00 | 7.07E-04 | 2.19E-03 | 0.00E+00 | -2.34E-03 |
| ADPm <sup>1</sup>   | [kg Sb eq.]  | 8.76E-06  | 0.00E+00 | 6.01E-07 | 5.99E-07 | 0.00E+00 | -3.74E-06 |
| ADPf <sup>1</sup>   | [MJ]   | 4.52E+01  | 0.00E+00 | 2.61E+00 | 1.97E+00 | 0.00E+00 | -2.50E+01 |
| WDP <sup>1</sup>  | [m <sup>3</sup> world eq. deprived]  | 4.24E-01  | 0.00E+00 | 7.83E-03 | 3.53E-02 | 0.00E+00 | -2.34E-01 |
| Caption   | GWP-total = Global 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 use |           |          |          |          |          |           |
| Disclaimer  | <sup>1</sup> 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.   |           |          |          |          |          |           |

**Table 4: Core environmental impact indicators for 1 m<sup>2</sup> of Solid Plank 16mm**

| Solid Plank 16 mm (Untreated)<br>ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> |  |          |          |          |          |          |          |
|--|--|----------|----------|----------|----------|----------|----------|
| Parameter  | Unit   | A1-A3    | C1       | C2       | C3       | C4       | D        |
| PM   | [Disease incidence]  | 7.50E-07 | 0.00E+00 | 1.10E-08 | 1.49E-08 | 0.00E+00 | 1.88E-08 |
| IRP <sup>2</sup>   | [kBq U235 eq.]   | 2.53E-01 | 0.00E+00 | 6.69E-02 | 1.34E-02 | 0.00E+00 | 1.82E-02 |
| ETP-fw <sup>1</sup>  | [CTUe]   | 8.25E+01 | 0.00E+00 | 7.95E+00 | 2.04E+00 | 0.00E+00 | 3.42E+00 |
| HTP-c <sup>1</sup>   | [CTUh]   | 2.36E-09 | 0.00E+00 | 1.56E-10 | 6.61E-11 | 0.00E+00 | 4.31E-10 |
| HTP-nc <sup>1</sup>  | [CTUh]   | 7.05E-08 | 0.00E+00 | 4.01E-09 | 2.14E-09 | 0.00E+00 | 1.89E-08 |
| SQP  | -  | INA      | INA      | INA      | INA      | INA      | INA      |
| Caption  | 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)  |          |          |          |          |          |          |
| Disclaimer   | <sup>1</sup> 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.<br><sup>2</sup> 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. |          |          |          |          |          |          |

**Table 5: Additional environmental impact indicators for 1 m<sup>2</sup> of Solid Plank 16mm**

| Solid Plank 16 mm (Untreated)<br>RESOURCE USE PER 1 m <sup>2</sup> |   |          |          |          |           |          |           |
|--|---|----------|----------|----------|-----------|----------|-----------|
| Parameter  | Unit  | A1-A3    | C1       | C2       | C3        | C4       | D         |
| PERE   | [MJ]  | 4.73E+01 | 0.00E+00 | 3.69E-02 | 7.25E-01  | 0.00E+00 | -8.05E+00 |
| PERM   | [MJ]  | 1.96E+02 | 0.00E+00 | 0.00E+00 | -1.96E+02 | 0.00E+00 | 0.00E+00  |
| PERT   | [MJ]  | 2.43E+02 | 0.00E+00 | 3.69E-02 | -1.95E+02 | 0.00E+00 | -8.05E+00 |
| PENRE  | [MJ]  | 4.52E+01 | 0.00E+00 | 2.61E+00 | 1.97E+00  | 0.00E+00 | -2.50E+01 |
| PENRM  | [MJ]  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  | 0.00E+00 | 0.00E+00  |
| PENRT  | [MJ]  | 4.52E+01 | 0.00E+00 | 2.61E+00 | 1.97E+00  | 0.00E+00 | -2.50E+01 |
| 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   | [m <sup>3</sup> ]   | 5.26E-02 | 0.00E+00 | 2.91E-04 | 4.44E-03  | 0.00E+00 | -2.73E-02 |
| 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 |          |          |          |           |          |           |

**Table 6: Parameters describing resource use for 1 m<sup>2</sup> of Solid Plank 16mm**

| Solid Plank 16 mm (Untreated)                          |  |          |          |          |          |          |           |
|--|--|----------|----------|----------|----------|----------|-----------|
| WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m <sup>2</sup> |  |          |          |          |          |          |           |
| Parameter  | Unit   | A1-A3    | C1       | C2       | C3       | C4       | D         |
| HWD  | [kg]   | 9.55E-05 | 0.00E+00 | 6.83E-06 | 2.11E-05 | 0.00E+00 | -2.22E-05 |
| NHWD   | [kg]   | 2.26E+00 | 0.00E+00 | 1.34E-01 | 7.64E-02 | 0.00E+00 | -6.80E-02 |
| RWD  | [kg]   | 2.12E-04 | 0.00E+00 | 1.77E-05 | 6.08E-06 | 0.00E+00 | -4.39E-05 |
| 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]   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 8.78E+00 | 0.00E+00 | 0.00E+00  |
| EET  | [MJ]   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.29E+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; EE = Exported energy |          |          |          |          |          |           |

**Table 7: End-of-life (waste categories and output flows) for 1 m<sup>2</sup> of Solid Plank 16mm**

| Solid Plank 16 mm (Untreated)                     |   |                     |
|---|---|---------------------|
| BIOGENIC CARBON CONTENT PER 1 m <sup>2</sup>      |   |                     |
| Parameter   | Unit  | At the factory gate |
| Biogenic carbon content in product                | [kg C]  | 4.81                |
| Biogenic carbon content in accompanying packaging | [kg C]  | 0.11                |
| Note  | 1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub> |                     |

**Table 8: Biogenic carbon content at factory gate for 1 m<sup>2</sup> of Solid Plank 16mm**

**Origin Plank - 20 mm thickness (Untreated):**

| Origin Plank 20 mm (Untreated)<br>ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> |  |           |          |          |          |          |           |
|--|--|-----------|----------|----------|----------|----------|-----------|
| Parameter  | Unit   | A1-A3     | C1       | C2       | C3       | C4       | D         |
| GWP-total  | [kg CO <sub>2</sub> eq.]   | -1.72E+01 | 0.00E+00 | 2.16E-01 | 2.07E+01 | 0.00E+00 | -1.96E+00 |
| GWP-fossil   | [kg CO <sub>2</sub> eq.]   | 3.13E+00  | 0.00E+00 | 2.16E-01 | 2.48E-01 | 0.00E+00 | -1.91E+00 |
| GWP-biogenic   | [kg CO <sub>2</sub> eq.]   | -2.03E+01 | 0.00E+00 | 1.84E-04 | 2.04E+01 | 0.00E+00 | -4.23E-02 |
| GWP-luluc  | [kg CO <sub>2</sub> eq.]   | 1.84E-02  | 0.00E+00 | 8.48E-05 | 1.91E-04 | 0.00E+00 | -1.77E-03 |
| ODP  | [kg CFC 11 eq.]  | 4.61E-07  | 0.00E+00 | 5.00E-08 | 1.56E-08 | 0.00E+00 | -8.67E-08 |
| AP   | [mol H <sup>+</sup> eq.]   | 1.73E-02  | 0.00E+00 | 8.77E-04 | 2.32E-03 | 0.00E+00 | -3.91E-03 |
| EP-freshwater  | [kg PO <sub>4</sub> eq.]   | 1.75E-03  | 0.00E+00 | 1.39E-05 | 1.18E-04 | 0.00E+00 | -6.42E-04 |
| EP-marine  | [kg N eq.]   | 6.18E-03  | 0.00E+00 | 2.64E-04 | 1.16E-03 | 0.00E+00 | -1.10E-03 |
| EP-terrestrial   | [mol N eq.]  | 6.67E-02  | 0.00E+00 | 2.89E-03 | 1.12E-02 | 0.00E+00 | -1.21E-02 |
| POCP   | [kg NMVOC eq.]   | 2.18E-02  | 0.00E+00 | 8.84E-04 | 2.74E-03 | 0.00E+00 | -2.93E-03 |
| ADPm <sup>1</sup>  | [kg Sb eq.]  | 1.01E-05  | 0.00E+00 | 7.51E-07 | 7.49E-07 | 0.00E+00 | -4.68E-06 |
| ADPF <sup>1</sup>  | [MJ]   | 4.54E+01  | 0.00E+00 | 3.27E+00 | 2.46E+00 | 0.00E+00 | -3.12E+01 |
| WDP <sup>1</sup>   | [m <sup>3</sup> world eq. deprived]  | 3.31E-01  | 0.00E+00 | 9.78E-03 | 4.41E-02 | 0.00E+00 | -2.93E-01 |
| Caption  | GWP-total = Global 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 use |           |          |          |          |          |           |
| Disclaimer   | <sup>1</sup> 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.   |           |          |          |          |          |           |

**Table 9: Core environmental impact indicators for 1 m<sup>2</sup> of Origin Plank 20mm**

| Origin Plank 20 mm (Untreated)<br>ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> |  |          |          |          |          |          |           |
|---|--|----------|----------|----------|----------|----------|-----------|
| Parameter   | Unit   | A1-A3    | C1       | C2       | C3       | C4       | D         |
| PM  | [Disease incidence]  | 8.85E-07 | 0.00E+00 | 1.86E-08 | 2.35E-08 | 0.00E+00 | -2.03E-08 |
| IRP <sup>2</sup>  | [kBq U235 eq.]   | 3.85E-01 | 0.00E+00 | 1.68E-02 | 2.28E-02 | 0.00E+00 | -2.16E-01 |
| ETP-fw <sup>1</sup>   | [CTUe]   | 8.46E+01 | 0.00E+00 | 2.55E+00 | 4.27E+00 | 0.00E+00 | -1.91E+01 |
| HTP-c <sup>1</sup>  | [CTUh]   | 2.49E-09 | 0.00E+00 | 8.26E-11 | 5.39E-10 | 0.00E+00 | -3.87E-10 |
| HTP-nc <sup>1</sup>   | [CTUh]   | 6.68E-08 | 0.00E+00 | 2.67E-09 | 2.37E-08 | 0.00E+00 | -1.11E-08 |
| SQP   | -  | INA      | INA      | INA      | INA      | INA      | INA       |
| Caption   | 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)  |          |          |          |          |          |           |
| Disclaimer  | <sup>1</sup> 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.<br><sup>2</sup> 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. |          |          |          |          |          |           |

**Table 10: Additional environmental impact indicators for 1 m<sup>2</sup> of Origin Plank 20mm**

| Origin Plank 20 mm (Untreated)<br>RESOURCE USE PER 1 m <sup>2</sup> |   |          |          |          |           |          |           |
|---|---|----------|----------|----------|-----------|----------|-----------|
| Parameter   | Unit  | A1-A3    | C1       | C2       | C3        | C4       | D         |
| PERE  | [MJ]  | 5.86E+01 | 0.00E+00 | 4.62E-02 | 9.06E-01  | 0.00E+00 | -1.01E+01 |
| PERM  | [MJ]  | 2.44E+02 | 0.00E+00 | 0.00E+00 | -2.44E+02 | 0.00E+00 | 0.00E+00  |
| PERT  | [MJ]  | 3.03E+02 | 0.00E+00 | 4.62E-02 | -2.44E+02 | 0.00E+00 | -1.01E+01 |
| PENRE   | [MJ]  | 4.54E+01 | 0.00E+00 | 3.27E+00 | 2.46E+00  | 0.00E+00 | -3.12E+01 |
| PENRM   | [MJ]  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  | 0.00E+00 | 0.00E+00  |
| PENRT   | [MJ]  | 4.54E+01 | 0.00E+00 | 3.27E+00 | 2.46E+00  | 0.00E+00 | -3.12E+01 |
| 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  | [m <sup>3</sup> ]   | 2.29E-02 | 0.00E+00 | 3.64E-04 | 5.55E-03  | 0.00E+00 | -3.41E-02 |
| 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 |          |          |          |           |          |           |

**Table 11: Parameters describing resource use for 1 m<sup>2</sup> of Origin Plank 20mm**

| Origin Plank 20 mm (Untreated)                         |  |          |          |          |          |          |           |
|--|--|----------|----------|----------|----------|----------|-----------|
| WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m <sup>2</sup> |  |          |          |          |          |          |           |
| Parameter  | Unit   | A1-A3    | C1       | C2       | C3       | C4       | D         |
| HWD  | [kg]   | 1.06E-04 | 0.00E+00 | 8.53E-06 | 2.64E-05 | 0.00E+00 | -2.78E-05 |
| NHWD   | [kg]   | 2.28E+00 | 0.00E+00 | 1.68E-01 | 9.55E-02 | 0.00E+00 | -8.51E-02 |
| RWD  | [kg]   | 2.59E-04 | 0.00E+00 | 2.21E-05 | 7.60E-06 | 0.00E+00 | -5.49E-05 |
| 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]   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.05E+00 | 0.00E+00 | 0.00E+00  |
| EET  | [MJ]   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.12E+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; EE = Exported energy |          |          |          |          |          |           |

**Table 12: End-of-life (waste categories and output flows) for 1 m<sup>2</sup> of Origin Plank 20mm**

| Origin Plank 20 mm (Untreated)                    |   |                     |
|---|---|---------------------|
| BIOGENIC CARBON CONTENT PER 1 m <sup>2</sup>      |   |                     |
| Parameter   | Unit  | At the factory gate |
| Biogenic carbon content in product                | [kg C]  | 6.02                |
| Biogenic carbon content in accompanying packaging | [kg C]  | 0.13                |
| Note  | 1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub> |                     |

**Table 13: Biogenic carbon content at factory gate for 1 m<sup>2</sup> of Origin Plank 20mm**

# Additional Information

## Supplementary Datasets & Scaling Factors:

The following section provides a two supplementary datasets that can be added onto the [LCA results](#) in order to account for an optional surface treatment at Hørning Parket A/S' suppliers during the raw material supply stage (A1). The following declared products have the option to receive surface treatment. The supplementary datasets should **NOT** be added to any product absent from the list.

- Solid Plank 16/20 mm thickness
- Origin Plank 20/28 mm thickness

It should be noted, that the same amount of surface treatment is applied regardless of floor thickness. Because of this, scaling factors (See Table 3) should always be applied before adding the supplementary datasets to the results of the declared product. When applying a scaling factor to adjust the floor thickness or adding the optional surface treatment, the results of a specific module should hence be calculated using the following linear equation:

$$y = a * x + b \tag{Eq. 1}$$

Where...

**y** = the impact results of the solid wooden floor. The specific results of a given floor variation depends on the thickness and optional surface treatment (See Table 3).

**a** = the impact of the untreated floor at the default thickness as listed in the [LCA results](#), which are displayed in Table 4 - Table 13.

**x** = the scaling factor for adjusting the thickness of the plank floor (See Table 3), if it deviated from the default value of a given floor.

**b** = the impact of the optional surface treatment for the relevant products as listed in the supplementary datasets of Table 14 - Table 21.

The optional surface treatment come in two variations: (i) **Lacquer treatment** with supplementary datasheets listed from Table 14 - Table 17. (ii) **Oil treatment** with supplementary datasets listed from Table 18 - Table 21. Results are listed for surface treatment of 1 m<sup>2</sup> of solid wood floor.

## 1) Supplementary Datasets – Lacquer Treatment

| Lacquer Treatment<br>ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> |   |          |          |          |          |          |           |
|---|---|----------|----------|----------|----------|----------|-----------|
| Parameter   | Unit  | A1-A3    | C1       | C2       | C3       | C4       | D         |
| GWP-total   | [kg CO <sub>2</sub> eq.]  | 7.32E-01 | 0.00E+00 | 1.29E-03 | 4.78E-01 | 0.00E+00 | -1.97E-01 |
| GWP-fossil  | [kg CO <sub>2</sub> eq.]  | 7.28E-01 | 0.00E+00 | 1.29E-03 | 4.78E-01 | 0.00E+00 | -1.92E-01 |
| GWP-biogenic  | [kg CO <sub>2</sub> eq.]  | 3.10E-03 | 0.00E+00 | 1.15E-06 | 4.87E-05 | 0.00E+00 | -4.16E-03 |
| GWP-luluc   | [kg CO <sub>2</sub> eq.]  | 4.15E-04 | 0.00E+00 | 4.89E-07 | 9.44E-07 | 0.00E+00 | -1.70E-04 |
| ODP   | [kg CFC 11 eq.]   | 6.23E-08 | 0.00E+00 | 3.01E-10 | 3.61E-10 | 0.00E+00 | -8.80E-09 |
| AP  | [mol H <sup>+</sup> eq.]  | 3.36E-03 | 0.00E+00 | 5.27E-06 | 3.99E-05 | 0.00E+00 | -3.90E-04 |
| EP-freshwater   | [kg PO <sub>4</sub> eq.]  | 1.94E-04 | 0.00E+00 | 8.18E-08 | 5.58E-07 | 0.00E+00 | -6.30E-05 |
| EP-marine   | [kg N eq.]  | 5.65E-04 | 0.00E+00 | 1.59E-06 | 1.84E-05 | 0.00E+00 | -1.10E-04 |
| EP-terrestrial  | [mol N eq.]   | 5.97E-03 | 0.00E+00 | 1.74E-05 | 2.02E-04 | 0.00E+00 | -1.20E-03 |
| POCP  | [kg NMVOC eq.]  | 6.26E-03 | 0.00E+00 | 5.43E-06 | 4.98E-05 | 0.00E+00 | -2.90E-04 |
| ADPm <sup>1</sup>   | [kg Sb eq.]   | 6.20E-06 | 0.00E+00 | 3.93E-09 | 1.24E-08 | 0.00E+00 | -4.60E-07 |
| ADPf <sup>1</sup>   | [MJ]  | 1.55E+01 | 0.00E+00 | 1.96E-02 | 3.17E-02 | 0.00E+00 | -3.14E+00 |
| WDP <sup>1</sup>  | [m <sup>3</sup> world eq. deprived]   | 6.16E-01 | 0.00E+00 | 6.20E-05 | 1.06E-03 | 0.00E+00 | -2.94E-02 |
| Caption   | 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 use |          |          |          |          |          |           |
| Disclaimer  | <sup>1</sup> 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.  |          |          |          |          |          |           |

**Table 14: Core environmental impact indicators for 1 m<sup>2</sup> of floor surface treatment with lacquer**

| Lacquer Treatment<br>ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> |  |          |          |          |          |          |           |
|--|--|----------|----------|----------|----------|----------|-----------|
| Parameter  | Unit   | A1-A3    | C1       | C2       | C3       | C4       | D         |
| PM   | [Disease incidence]  | 3.22E-08 | 0.00E+00 | 1.25E-10 | 3.27E-10 | 0.00E+00 | -2.00E-09 |
| IRP <sup>2</sup>   | [kBq U235 eq.]   | 5.57E-02 | 0.00E+00 | 1.00E-04 | 1.41E-04 | 0.00E+00 | -2.13E-02 |
| ETP-fw <sup>1</sup>  | [CTUe]   | 1.80E+01 | 0.00E+00 | 1.53E-02 | 1.28E-01 | 0.00E+00 | -1.88E+00 |
| HTP-c <sup>1</sup>   | [CTUh]   | 2.63E-10 | 0.00E+00 | 4.70E-13 | 3.44E-10 | 0.00E+00 | -3.80E-11 |
| HTP-nc <sup>1</sup>  | [CTUh]   | 8.11E-09 | 0.00E+00 | 1.63E-11 | 1.46E-09 | 0.00E+00 | -1.10E-09 |
| SQP  | -  | INA      | INA      | INA      | INA      | INA      | INA       |
| Caption  | 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)  |          |          |          |          |          |           |
| Disclaimer   | <sup>1</sup> 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.   |          |          |          |          |          |           |
|  | <sup>2</sup> 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. |          |          |          |          |          |           |

Table 15: Additional environmental impact indicators for 1 m<sup>2</sup> of floor surface treatment with lacquer

| Lacquer Treatment<br>RESOURCE USE PER 1 m <sup>2</sup> |   |          |          |          |           |          |           |
|--|---|----------|----------|----------|-----------|----------|-----------|
| Parameter  | Unit  | A1-A3    | C1       | C2       | C3        | C4       | D         |
| PERE   | [MJ]  | 5.51E-01 | 0.00E+00 | 2.67E-04 | 1.47E-03  | 0.00E+00 | -9.91E-01 |
| PERM   | [MJ]  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  | 0.00E+00 | 0.00E+00  |
| PERT   | [MJ]  | 5.51E-01 | 0.00E+00 | 2.67E-04 | 1.47E-03  | 0.00E+00 | -9.91E-01 |
| PENRE  | [MJ]  | 9.92E+00 | 0.00E+00 | 1.96E-02 | 3.17E-02  | 0.00E+00 | -3.14E+00 |
| PENRM  | [MJ]  | 5.60E+00 | 0.00E+00 | 0.00E+00 | -5.60E+00 | 0.00E+00 | 0.00E+00  |
| PENRT  | [MJ]  | 1.55E+01 | 0.00E+00 | 1.96E-02 | -5.57E+00 | 0.00E+00 | -3.14E+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   | [m <sup>3</sup> ]   | 1.56E-02 | 0.00E+00 | 2.24E-06 | 1.06E-04  | 0.00E+00 | -3.36E-03 |
| 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 |          |          |          |           |          |           |

Table 16: Parameters describing resource use for 1 m<sup>2</sup> of floor surface treatment with lacquer

| Lacquer Treatment<br>WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m <sup>2</sup> |  |          |          |          |          |          |           |
|---|--|----------|----------|----------|----------|----------|-----------|
| Parameter   | Unit   | A1-A3    | C1       | C2       | C3       | C4       | D         |
| HWD   | [kg]   | 8.92E-06 | 0.00E+00 | 4.99E-08 | 1.02E-06 | 0.00E+00 | -2.80E-06 |
| NHWD  | [kg]   | 9.59E-02 | 0.00E+00 | 1.31E-03 | 5.88E-03 | 0.00E+00 | -8.40E-03 |
| RWD   | [kg]   | 2.79E-05 | 0.00E+00 | 1.33E-07 | 8.47E-08 | 0.00E+00 | -5.40E-06 |
| 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]   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.12E+00 | 0.00E+00 | 0.00E+00  |
| EET   | [MJ]   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.20E+00 | 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; EE = Exported energy |          |          |          |          |          |           |

Table 17: End-of-life (waste categories and output flows) for 1 m<sup>2</sup> of floor surface treatment with lacquer

**2) Supplementary Datasets – Oil Treatment:**

| Oil Treatment<br>ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> |   |          |          |          |          |          |           |
|---|---|----------|----------|----------|----------|----------|-----------|
| Parameter   | Unit  | A1-A3    | C1       | C2       | C3       | C4       | D         |
| GWP-total   | [kg CO <sub>2</sub> eq.]  | 4.43E-01 | 0.00E+00 | 1.29E-03 | 1.19E-01 | 0.00E+00 | -6.55E-02 |
| GWP-fossil  | [kg CO <sub>2</sub> eq.]  | 1.30E-01 | 0.00E+00 | 1.29E-03 | 1.19E-01 | 0.00E+00 | -6.40E-02 |
| GWP-biogenic  | [kg CO <sub>2</sub> eq.]  | 1.54E-01 | 0.00E+00 | 1.15E-06 | 1.22E-05 | 0.00E+00 | -1.39E-03 |
| GWP-luluc   | [kg CO <sub>2</sub> eq.]  | 1.57E-01 | 0.00E+00 | 4.89E-07 | 2.36E-07 | 0.00E+00 | -5.80E-05 |
| ODP   | [kg CFC 11 eq.]   | 2.44E-08 | 0.00E+00 | 3.01E-10 | 9.02E-11 | 0.00E+00 | -2.90E-09 |
| AP  | [mol H <sup>+</sup> eq.]  | 8.95E-04 | 0.00E+00 | 5.27E-06 | 9.97E-06 | 0.00E+00 | -1.30E-04 |
| EP-freshwater   | [kg PO <sub>4</sub> eq.]  | 9.58E-04 | 0.00E+00 | 8.18E-08 | 1.39E-07 | 0.00E+00 | -2.10E-05 |
| EP-marine   | [kg N eq.]  | 6.81E-04 | 0.00E+00 | 1.59E-06 | 4.60E-06 | 0.00E+00 | -3.70E-05 |
| EP-terrestrial  | [mol N eq.]   | 2.39E-03 | 0.00E+00 | 1.74E-05 | 5.04E-05 | 0.00E+00 | -4.00E-04 |
| POCP  | [kg NMVOC eq.]  | 7.63E-03 | 0.00E+00 | 5.43E-06 | 1.24E-05 | 0.00E+00 | -9.70E-05 |
| ADPm <sup>1</sup>   | [kg Sb eq.]   | 1.40E-06 | 0.00E+00 | 3.93E-09 | 3.09E-09 | 0.00E+00 | -1.50E-07 |
| ADPf <sup>1</sup>   | [MJ]  | 2.28E+00 | 0.00E+00 | 1.96E-02 | 7.92E-03 | 0.00E+00 | -1.05E+00 |
| WDP <sup>1</sup>  | [m <sup>3</sup> world eq. deprived]   | 2.60E-01 | 0.00E+00 | 6.20E-05 | 2.64E-04 | 0.00E+00 | -9.81E-03 |
| Caption   | 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 use |          |          |          |          |          |           |
| Disclaimer  | <sup>1</sup> 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.  |          |          |          |          |          |           |

**Table 18: Core environmental impact indicators for 1 m<sup>2</sup> of floor surface treatment with oil**

| Oil Treatment<br>ADDITIONAL ENVIRONMENTAL IMPACTS PER 1 m <sup>2</sup> |  |          |          |          |          |          |           |
|--|--|----------|----------|----------|----------|----------|-----------|
| Parameter  | Unit   | A1-A3    | C1       | C2       | C3       | C4       | D         |
| PM   | [Disease incidence]  | 8.66E-09 | 0.00E+00 | 1.25E-10 | 8.17E-11 | 0.00E+00 | -6.70E-10 |
| IRP <sup>2</sup>   | [kBq U235 eq.]   | 3.16E-02 | 0.00E+00 | 1.00E-04 | 3.52E-05 | 0.00E+00 | -7.09E-03 |
| ETP-fw <sup>1</sup>  | [CTUe]   | 9.20E+00 | 0.00E+00 | 1.53E-02 | 3.20E-02 | 0.00E+00 | -6.28E-01 |
| HTP-c <sup>1</sup>   | [CTUh]   | 1.91E-10 | 0.00E+00 | 4.70E-13 | 8.60E-11 | 0.00E+00 | -1.30E-11 |
| HTP-nc <sup>1</sup>  | [CTUh]   | 4.60E-09 | 0.00E+00 | 1.63E-11 | 3.65E-10 | 0.00E+00 | -3.70E-10 |
| SQP  | -  | INA      | INA      | INA      | INA      | INA      | INA       |
| Caption  | 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)  |          |          |          |          |          |           |
| Disclaimer   | <sup>1</sup> 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.   |          |          |          |          |          |           |
|  | <sup>2</sup> 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. |          |          |          |          |          |           |

**Table 19: Additional environmental impact indicators for 1 m<sup>2</sup> of floor surface treatment with oil**

| Oil Treatment<br>RESOURCE USE PER 1 m <sup>2</sup> |   |          |          |          |           |          |           |
|--|---|----------|----------|----------|-----------|----------|-----------|
| Parameter  | Unit  | A1-A3    | C1       | C2       | C3        | C4       | D         |
| PERE   | [MJ]  | 2.26E-01 | 0.00E+00 | 2.67E-04 | 3.67E-04  | 0.00E+00 | -3.30E-01 |
| PERM   | [MJ]  | 1.85E+00 | 0.00E+00 | 0.00E+00 | -1.85E+00 | 0.00E+00 | 0.00E+00  |
| PERT   | [MJ]  | 2.08E+00 | 0.00E+00 | 2.67E-04 | -1.85E+00 | 0.00E+00 | -3.30E-01 |
| PENRE  | [MJ]  | 2.46E+00 | 0.00E+00 | 1.96E-02 | 7.92E-03  | 0.00E+00 | -1.05E+00 |
| PENRM  | [MJ]  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  | 0.00E+00 | 0.00E+00  |
| PENRT  | [MJ]  | 2.46E+00 | 0.00E+00 | 1.96E-02 | 7.92E-03  | 0.00E+00 | -1.05E+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   | [m <sup>3</sup> ]   | 7.07E-03 | 0.00E+00 | 2.24E-06 | 2.64E-05  | 0.00E+00 | -1.12E-03 |
| 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 |          |          |          |           |          |           |

**Table 20: Parameters describing resource use for 1 m<sup>2</sup> of floor surface treatment with oil**

| Oil Treatment  |  |          |          |          |          |          |           |
|--|--|----------|----------|----------|----------|----------|-----------|
| WASTE CATEGORIES AND OUTPUT FLOWS PER 1 m <sup>2</sup> |  |          |          |          |          |          |           |
| Parameter  | Unit   | A1-A3    | C1       | C2       | C3       | C4       | D         |
| HWD  | [kg]   | 1.23E-04 | 0.00E+00 | 4.99E-08 | 2.54E-07 | 0.00E+00 | -9.40E-07 |
| NHWD   | [kg]   | 3.91E-02 | 0.00E+00 | 1.31E-03 | 1.47E-03 | 0.00E+00 | -2.80E-03 |
| RWD  | [kg]   | 1.39E-05 | 0.00E+00 | 1.33E-07 | 2.12E-08 | 0.00E+00 | -1.80E-06 |
| 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]   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.70E-01 | 0.00E+00 | 0.00E+00  |
| EET  | [MJ]   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.39E+00 | 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; EE = Exported energy |          |          |          |          |          |           |

**Table 21: End-of-life (waste categories and output flows) for 1 m<sup>2</sup> of floor surface treatment with oil**

**Interpretation:**

The [LCA results](#) for the declared products indicate, that the majority of environmental impacts are associated with raw material extraction and production of components (A1) particularly due to sawmill activities. In this respect, the electricity supply is considered one of the largest contributors within the dataset, which is why it was modified to reflect local conditions. For this reason, emissions for 1 m<sup>3</sup> of wooden boards will vary significantly depending on the geographical location of production. Conversely, the environmental impacts in the supplementary datasets for the optional surface treatment (See [Additional Information](#)) are quite evenly distributed between the raw material supply stage (A1) and municipal incineration during waste processing (C3).

**Technical Information on Scenarios:**

**End-of-life (C1-C4)**

| Scenario information                 | Unit           | Value |
|--------------------------------------|----------------|-------|
| For reuse                            | %              | 0     |
| For recycling                        | %              | 0     |
| For incineration                     | %              | 100   |
| For final disposal                   | %              | 0     |
| Assumptions for scenario development | As appropriate | N/A   |

**Table 22 Scenario information for the end-of-life stage (C1-C4)**

**Re-use, recovery, and recycling potential (D)**

| Scenario information | Unit | Value |
|----------------------|------|-------|
| Electricity          | %    | 20%   |
| Heat                 | %    | 75%   |
| Loss                 | %    | 5%    |

**Table 23 Scenario information for re-use, recovery, and recycling potential (D)**

**Indoor Air:**

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonized test methods according to the provisions of the respective technical committees for European product standards are not available.

Certificates for indoor Air Comfort can be found at [Hørning Parket's webpage](#)

- <https://www.horningfloor.dk/miljoe/>

**Soil and Water:**

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on measurement of release of regulated dangerous substances from construction products using harmonized test methods according to the provisions of the respective technical committees for European product standards are not available.

## References

|                                       |  |
|---------------------------------------|--|
| <b>Publisher</b>                      |  epddanmark<br><a href="http://www.epddanmark.dk">www.epddanmark.dk</a>   |
| <b>Programme operator</b>             | Danish Technological Institute<br>Buildings & Environment<br>Gregersensvej<br>DK-2630 Taastrup<br><a href="http://www.teknologisk.dk">www.teknologisk.dk</a>   |
| <b>LCA-practitioner</b>               | <br>NIRAS A/S<br>Østre Havnegade 12<br>9000 Aalborg, Denmark<br>Project manager: Jesper Jakobsen<br>LCA practitioners: Asbjørn Uldbjerg Bundgaard & Jesper Jakobsen<br>QA/internal review: Ninkie Bendtsen |
| <b>LCA software / background data</b> | SimaPro 9.3 / ecoinvent 3.8  |
| <b>3<sup>rd</sup> party verifier</b>  | Life Cycle Assessment Consulting<br>Linda Højbye   |

### General Programme Instructions

Version 2.0

[www.epddanmark.dk](http://www.epddanmark.dk)

### ecoinvent 3.8

<https://ecoinvent.org/>

### EN 15804:2012+A2:2019

Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

### EN 14342:2013

Wood flooring - Characteristics, evaluation of conformity and marking.

### EN 16449:2014

Wood and wood-based products – Calculation of the biogenic carbon content of wood and conversion to carbon dioxide

### EN 16485:2014

Round and sawn timber – Environmental Product Declarations – Product category rules for wood and wood-based products for use in construction

### CEN/TC 16970

Sustainability of construction works – Guidance for the implementation of EN 15804

**EPD-Norge NPCR 015 v4.0**

Part B for wood and wood-based products

**ISO 14025:2010**

Environmental labels and declarations – Type III environmental declarations – Principles and procedures

**ISO 14040:2008**

Environmental management – Life cycle assessment – Principles and framework

**ISO 14044:2008**

Environmental management – Life cycle assessment – Requirements and guidelines