epd-norge
The Norwegian EPD Foundation

# ENVIRONMENTAL PRODUCT DECLARATION

in accordance with ISO 14025, ISO 21930 and EN 15804

| | |
|---|---|
| Owner of the declaration: | Materia AB |
| Program operator: | The Norwegian EPD Foundation |
| Publisher: | The Norwegian EPD Foundation |
| Declaration number: | NEPD-3582-2245-EN |
| Registration number: | NEPD-3582-2245-EN |
| ECO Platform reference number: | - |
| Issue date: | 06.07.2022 |
| Valid to: | 06.07.2027 |

# Domino chair

## Materia AB

MATERIA®

www.epd-norge.no

# General information

**Product:**

Domino chair

**Owner of the declaration:**

Materia AB
Contact person: Jan Jismyr
Phone: +46 (0)727 48 54 54
e-mail: jan.j@materia.se

**Program operator:**

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

**Manufacturer:**

Materia AB

**Declaration number:**

NEPD-3582-2245-EN

**Place of production:**

Materia AB
Box 340 SE-573 24 Tranås
Sweden

**ECO Platform reference number:**

**Management system:**

ISO 9001, ISO 14001, ISO 45001, FSC

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

CEN Standard EN 15804:2012+A1:2013 serves as core PCR
NPCR 026:2018 Part B for furniture

**Organisation no:**

556396-9491

**Statement of liability:**

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

**Issue date:** 06.07.2022

**Valid to:** 06.07.2027

**Declared unit:**

1 Pcs Domino chair

**Year of study:**

2021

**Declared unit with option:**

A1,A2,A3,A4

**Comparability:**

EPDs from programmes other than the Norwegian EPD Foundation may not be comparable

**Functional unit:**

1 pcs, Domino chair

**Development and verification of EPD:**

The declaration has been developed and verified using EPD tool lca.tools ver EPD2020.11, developed by LCA.no AS. The EPD tool is integrated into the company's environmental management system, and has been approved by EPD-Norway

Developer of EPD:

Jan Jismyr

Reviewer of company-specific input data and EPD:

Moa Ulfsson

**General information on verification of EPD from EPD tools:**

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Individual third party verification of each EPD is not required when the EPD tool is i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPDNorway, and iii) the proccess is reviewed annualy. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools.

**Verification of EPD tool:**

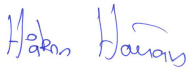
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Erik Svanes, Norsus AS

(no signature required)

**Approved:**

Sign



Håkon Hauan, CEO EPD-Norge

| Key environmental indicators | Unit | Cradle to gate A1 - A3 |
|---|---|---|
| Global warming | kg CO2 eqv | 16,72 |
| Total energy use | MJ | 421,16 |
| Amount of recycled materials | % | 0,02 |

## Product

**Market:**

Mainly Europe, but is available word wide

**Product description:**

The Domino chair and tables are characterised by light organic shapes and an appealing character. The series is made of FSC®-labelled wood, which means that it generates a minimal carbon footprint. The chair's frame is made of solid wood, while the seat and back are made of moulded veneer, and the finish is white pigmented or black stained ash. The warm feel of the wood, the concealed fixings, and the oval shape of the legs contribute to the elegant design. The chair, which is stackable, is an all-round chair suitable for many different spaces, such as cafes, dining rooms, and offices. The chair is available non-upholstered, with an upholstered seat, or with an upholstered seat and inner back.
For more informationplease visit our webpage:
https://materia.se/en/product/domino-2/

**Product specification**

Solid ash frame, with a seat and back of moulded veneered ash, white pigmented or black stained. FSC®-labelled wood. Non-upholstered, with upholstered seat, or upholstered seat and inner back. When upholstered, the seat and back have moulded polyurethane foam padding. Felt glides available as an accessory. Up to 6 non-upholstered chairs can be stacked (on the floor). The chair stacks 12 pcs.

**Technical data:**

Total weight 5,4 kg

**Reference service life, product**

15 yars service life, 5 years warrant if no other indicated

**Reference service life, building**

| Materials | kg | % | Recycled share in material (kg) | Recycled share in material (%) |
|---|---|---|---|---|
| Wood - Solid oak | 2,70 | 56,72 | 0,00 | 0,00 |
| Glue for wood | 0,21 | 4,41 | 0,00 | 0,00 |
| Lacquer, water based | 0,05 | 1,05 | 0,00 | 0,00 |
| Wood - Veneer | 1,80 | 37,82 | 0,00 | 0,05 |
| Total: | 4,76 | | 0,00 | |

## LCA: Calculation rules

**Declared unit:**

1 Pcs Domino chair

**Cut-off criteria:**

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

**Allocation:**

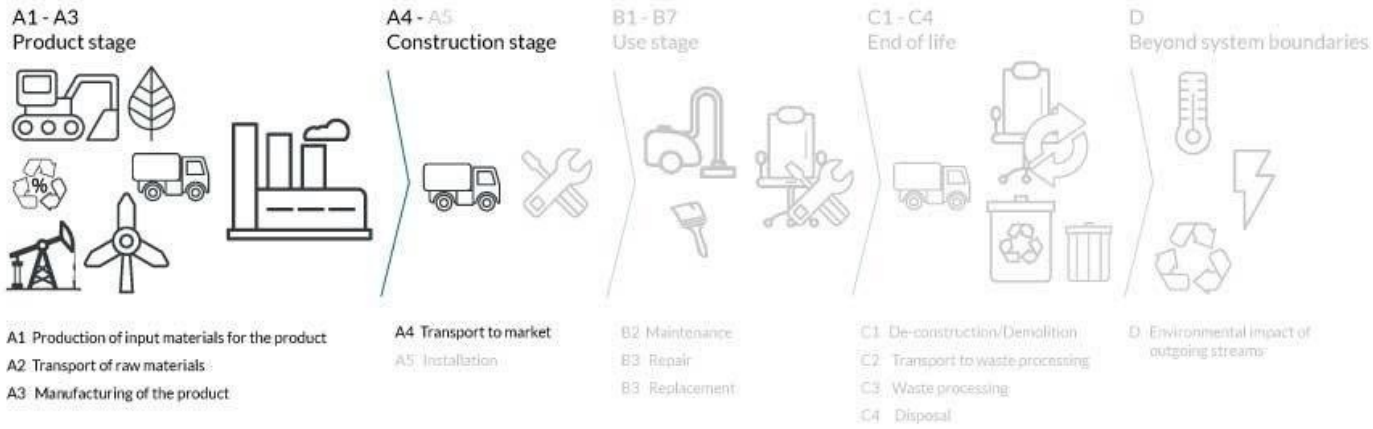
The allocation is made in accordance with the provisions of EN 15804. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

**Data quality:**

Specific data for the product composition are provided by the manufacturer. They represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on registered EPDs according to EN 15804, Ostfold Research databases, ecoinvent and other LCA databases. The data quality of the raw materials in A1 is presented in the table below.

| Materials | Source | Data quality | Year |
|---|---|---|---|
| Glue for wood | ecoinvent 3.4 | Database | 2017 |
| Lacquer, water based | ecoinvent 3.4 | Database | 2017 |
| Wood - Veneer | S-P-00172 | EPD | 2017 |
| Wood - Solid oak | ecoinvent 3.6 | Database | 2019 |
| Glue for wood | NORSUS | Database | 2020 |

**System boundary:**




**Additional technical information:**
Domino is tested according to EN 16139:2013 Furniture – Strength, durability and safety – Requirements for non-domestic seating.

Domino chair is made of FSC certified* ash from responsible forestry. (*FSC-C010544)

## LCA: Scenarios and additional technical information

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

At our site in Tranås, we only use electricity renewable sources. A4 transport includes transport from Materia, Tranås to Kinnarps (140km)

**Transport from production place to user (A4)**

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|---|---|---|---|---|---|---|
| Truck | 38,8 % | Truck, 16-32 tonnes, EURO 6 | 165 | 0,043626 | l/tkm | 7,20 |
| Railway | | | | | l/tkm | |
| Boat | 50,0 % | Ship, Ferry transport (kgkm) | 400 | 0,033522 | l/tkm | 13,41 |
| Other Transportation | | | | | l/tkm | |

**Assembly (A5)**

| . | Unit | Value |
|---|---|---|
| Auxiliary | kg | |
| Water consumption | $m^3$ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | |
| Material loss | kg | |
| Output materials fr ste treatment | kg | |
| Dust in the air | kg | |
| VOC emissions | kg | |

**Use (B1)**

| . | Unit | Value |
|---|---|---|
| | | |

**Maintenance (B2)/Repair (B3)**

| . | Unit | Value |
|---|---|---|
| Maintenance cycle* | | |
| Auxiliary | | |
| Other resources | | |
| Water consumption | $m^3$ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | |
| Material loss | kg | |
| VOC emissions | kg | |

**Replacement (B4)/Refurbishment (B5)**

| . | Unit | Value |
|---|---|---|
| Replacement cycle* | | |
| Electricity consumption | kWh | |
| Replacement of worn parts | | |

* Described above if relevant

**Operational energy (B6) and water consumption (B7)**

| . | Unit | Value |
|---|---|---|
| Water consumption | $m^3$ | |
| Electricity consumption | kWh | |
| Other energy carriers | MJ | |
| Power output of equipment | kW | |

**End of Life (C1, C**

| . | Unit | Value |
|---|---|---|
| Hazardous waste disposed | kg | |
| Collected as mixed construction wa | kg | |
| Reuse | kg | |
| Recycling | | |
| Energy recovery | | |
| To landfill | kg | |

Scenarios after A1-A4 are not included

**Transport to waste processing (C2)**

| Type | Capacity utilisation (incl. return) % | Type of vehicle | Distance km | Fuel/Energy consumption | Unit | Value (l/t) |
|---|---|---|---|---|---|---|
| Truck | | | | | l/tkm | |
| Railway | | | | | l/tkm | |
| Boat | | | | | l/tkm | |
| Other Transportation | | | | | l/tkm | |

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

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

| Product stage | | | Construction installation stage | User stage | | | | | | | | End of life stage | | | | . | Beyond the system bondaries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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-potential |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | . | D |
| X | X | X | X | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | MND | . | MND |

## Environmental impact

| Parameter | Unit | A1 | A2 | A3 | A4 |
|---|---|---|---|---|---|
| GWP | kg $CO_2$ -eq | 7,15E-01 | 3,59E-01 | 1,56E+01 | 5,96E-01 |
| ODP | kg CFC11 -eq | 9,79E-08 | 6,48E-08 | 8,66E-07 | 1,07E-07 |
| POCP | kg $C_2H_4$-eq | 4,61E-04 | 1,17E-04 | 3,01E-03 | 1,97E-04 |
| AP | kg $SO_2$ -eq | 4,24E-03 | 3,72E-03 | 7,54E-02 | 6,55E-03 |
| EP | kg $PO_4^{3-}$ -eq | 5,64E-04 | 4,18E-04 | 9,96E-03 | 7,98E-04 |
| ADPM | kg Sb -eq | 1,33E-05 | 7,46E-07 | 2,54E-05 | 1,24E-06 |
| ADPE | MJ | 1,29E+01 | 5,14E+00 | 1,74E+02 | 8,57E+00 |

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

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009
*INA Indicator Not Assessed

## Resource use

| Parameter | Unit | A1 | A2 | A3 | A4 |
|---|---|---|---|---|---|
| RPEE | MJ | 5,34E+01 | 6,31E-02 | 3,99E+01 | 1,05E-01 |
| RPEM | MJ | 1,30E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TPE | MJ | 5,34E+01 | 6,31E-02 | 3,99E+01 | 1,05E-01 |
| NRPE | MJ | 1,35E+01 | 5,24E+00 | 3,09E+02 | 8,73E+00 |
| NRPM | MJ | 7,67E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| TRPE | MJ | 1,35E+01 | 5,24E+00 | 3,09E+02 | 8,73E+00 |
| SM | kg | 9,51E-04 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| RSF | MJ | 0,00E+00 | 0,00E+00 | 5,34E-03 | 0,00E+00 |
| NRSF | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| W | $m^3$ | 2,54E-02 | 8,36E-04 | 2,62E-01 | 1,39E-03 |

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

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009
*INA Indicator Not Assessed

## End of life - Waste

| Parameter | Unit | A1 | A2 | A3 | A4 |
|---|---|---|---|---|---|
| HW | kg | 1,27E-04 | 3,55E-06 | 3,63E-04 | 5,88E-06 |
| NHW | kg | 5,17E-01 | 2,07E-01 | 3,78E+00 | 3,43E-01 |
| RW | kg | INA* | INA* | INA* | INA* |

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

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009
*INA Indicator Not Assessed

## End of life - Output flow

| Parameter | Unit | A1 | A2 | A3 | A4 |
|---|---|---|---|---|---|
| CR | kg | 2,65E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MR | kg | 0,00E+00 | 0,00E+00 | 2,30E+00 | 0,00E+00 |
| MER | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| EEE | MJ | INA* | INA* | INA* | INA* |
| ETE | MJ | INA* | INA* | INA* | INA* |

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

Reading example: 9,0 E-03 = 9,0*10-3 = 0,009
*INA Indicator Not Assessed

# Additional Norwegian requirements

**Greenhouse gas emissions 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 process (A3).

| Electricity mix | Data source | Amount | Unit |
|---|---|---|---|
| El-mix, Sweden (kWh) | ecoinvent 3.4 Alloc Rec | 42,67 | g CO2-ekv/kWh |
| Energy, electricity, European average: 1 kWh | ecoinvent 3.4 | 594,20 | g CO2-ekv/kWh |

**Dangerous substances**

The product contains substances given by the REACH Candidate list and the Norwegian priority list that are less than 0,1 % by weight.

**Indoor environment**

The product is low-emmitting and tested acording to swedish Möbelfakta.

# Additional environmental information

Key environmental indicators for variants for this EPD: Cradle to Gate analyse from A1 to A3

| Variant number | Global warming (kg CO2) | Total energy use (MJ) | Share of recycled material in product(%) |
|---|---|---|---|
| Domino chair with an upholstered seat and inner back | 22,85 | 517,29 | 0,00 |
| Domino chair with an upholstered seat | 20,27 | 480,55 | 0,00 |

# 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+A1:2013 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.
Iversen et al., (2018) eEPD v3.0 - Background information for EPD generator system. LCA.no report number 04.18
Vold et al., (2019) EPD generator for Norsk Industri, Background information for industry application and LCA data, LCA.no report number 06.19.
NPCR Part A: Construction products and services. Ver. 1.0. April 2017, EPD-Norge.
NPCR 026 Part B for Furniture. Ver. 2.0 October 2018, EPD-Norge.



| | | | |
|---|---|---|---|
| epd-norge The Norwegian EPD Foundation | **Program operator and publisher**<br>The Norwegian EPD Foundation<br>Post Box 5250 Majorstuen, 0303 Oslo,Norway | Phone:<br>e-mail:<br>web: | +47 23 08 80 00<br>post@epd-norge.no<br>www.epd-norge.no |
| MATERIA | **Owner of the declaration**<br>Materia AB<br>Box 340 SE-573 24 Tranås | Phone:<br>e-mail:<br>web: | +46 (0)727 48 54 54<br>jan.j@materia.se<br>www.materia.se |
| LCA.no | **Author of the Life Cycle Assessment**<br>LCA.no AS<br>Dokka 6B 1671 Kråkerøy | Phone:<br>e-mail:<br>web: | +47 916 50 916<br>post@lca.no<br>www.lca.no |
| LCA.no | **Developer of EPD generator**<br>LCA.no AS<br>Dokka 1C 1671 Kråkerøy | Phone:<br>e-mail:<br>web: | +47 916 50 916<br>post@lca.no<br>www.lca.no |