

Owner: DESIGNA A/S  
No.: MD-23027-EN  
Issued: 10-03-2023  
Valid to: 10-03-2028

3<sup>rd</sup> PARTY VERIFIED

**EPD**

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



**Owner of declaration**

DESIGNA A/S  
 Industriparken 1-2,  
 8620 Kjellerup, DK  
 CVR: 37521027



**Issued:**  
 10-03-2023

**Valid to:**  
 10-03-2028

**Programme**

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



- Industry EPD
- Product EPD

**Basis of calculation**

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

**Comparability**

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

**Validity**

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

**Use**

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

**Declared product**

Broad average range put together for a kitchen - variants assessed based on sales statistics – top 10 most commonly sold products. The door included is the most sold.

Number of declared datasets/product variations: 1

**Production site**

Kjellerup in Denmark

**Product use**

Home furnishings, central part of the home, daily use

**Declared unit**

1 kg of DESIGNA reference kitchen

**Year of production site data (A3)**

2021

**EPD version**

First version – version 1.0

**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

CEN standard EN 15804 serves as the core PCR

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

- internal
- external

Third party verifier:

Kim Christiansen

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 main product components are shown in the table below.

Material	Weight-% of declared product
Chipboard with white melamine	53%
MDF w. melamine backside and PVC-foil front	31%
Various steel components	9%
HDF with white coating	2%
Timber	1%
Cardboard	1%
Waste system (metal/plastic)	<1%
Chipboard without coating	<1%
Aluminium	<1%
Plastic (PP)	<1%
ABS	<1%
Glue (EVA)	<1%
Polystyrene	<0,1%
Zinc components	<0,1%
Nylon	<0,1%
Zamak components	<0,1%
Brass components	<0,1%

### Product packaging:

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

Material	Weight-% of packaging
EUR-pallet	95%
Plastic foil (PVC)	3%
Cardboard	1%
Cardboard corners	1%

### Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of a reference kitchen on the production site located in Kjellerup, Denmark. Product specific data are based on average values collected for the period of the year 2021. Background data are based on GaBi databases version 2022.2 and are less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

### Hazardous substances

The reference kitchen does not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

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

### Essential characteristics

The reference kitchen is not covered by harmonised technical specification. Declaration of performance according to EU regulation 305/2011 is available for all declared product variations.

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

<https://www.designa.dk/koekken>

### Reference Service Life (RSL)

20 years

Picture of product(s)



## LCA background

### Declared unit

The LCI and LCIA results in this EPD relates to the production of 1 kg of reference kitchen, based on the design of an actual kitchen, including fronts, backsides, cabinets, drawers, and shelves, along with all necessary ancillary materials and components, such as screws, hinges, and so forth.

The actual kitchen weighs a total of 557 kg. The results in this EPD are scaled from this weight down to one kilogram. The kitchen is comprised of the following key components:

- 2 x High cabinet
- 2 x Sideboards
- 1 x Colonial cabinet with 3 drawers
- 1 x Hob cabinet with 3 drawers
- 7 x Cabinets with 2 drawers
- 1 x Cabinet with 1 shelf
- 1 x Cabinet with 4 shelves
- 2 x Sideboards
- 5 x Plinth 2400x165

Name	Value	Unit
Declared unit	1	kg
Density	n/a	n/a
Conversion factor to 1 kg.	-	-
Packaging	0,125	kg/kg

### Functional unit

Not defined

### PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804+A2:2019.

### Guarantee of Origin – certificates

DESIGNA A/S has certificates of origin ensuring all electricity supplied comes from wind power, the production is therefore modelled using background data solely for wind power.

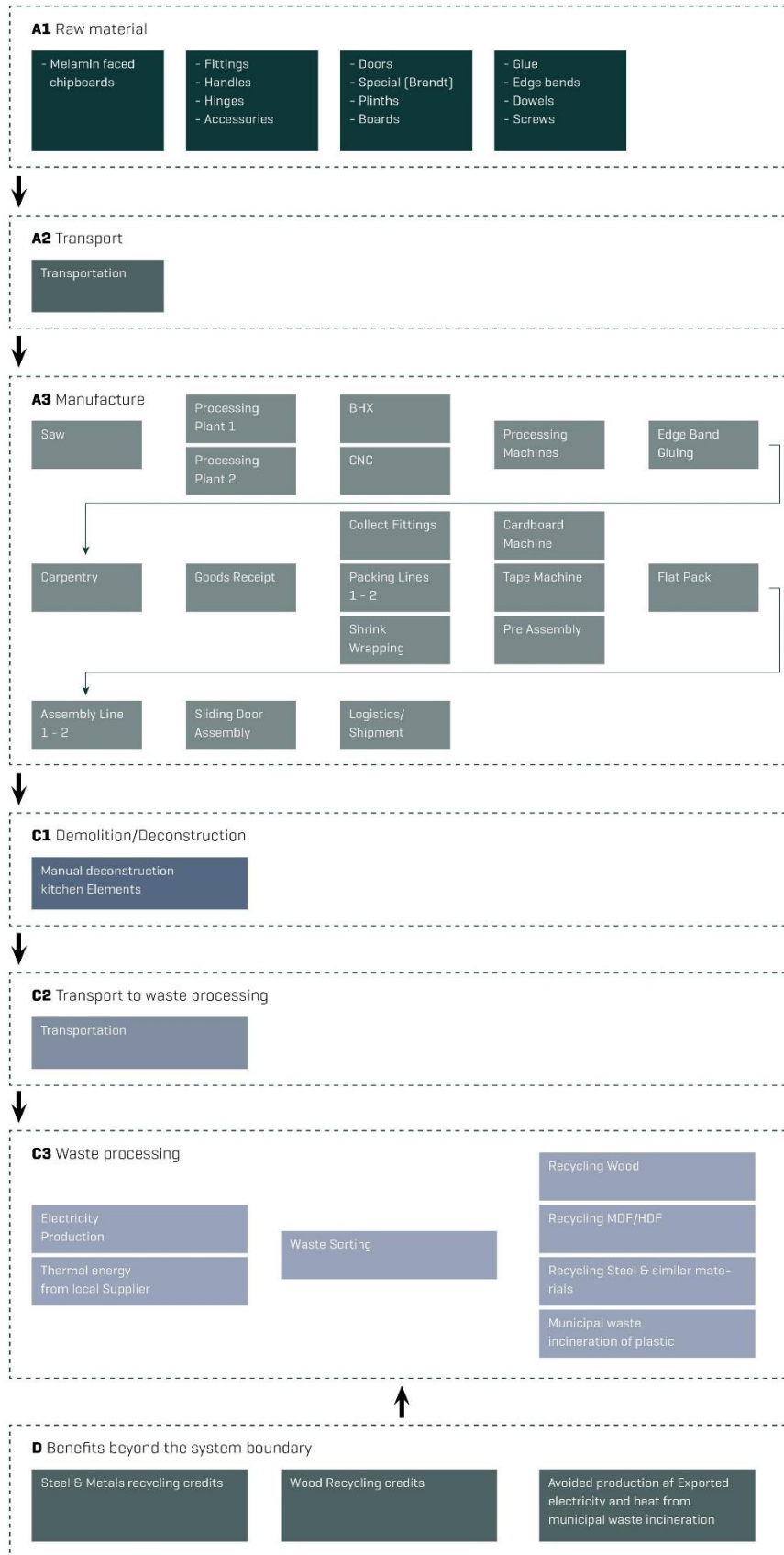
### Background system

Upstream and downstream processes are modelled using the electricity sources, which the applied datasets are based on. This information is rarely specified in the background documentation of the Sphera and eco-invent datasets. However, it is typically based on national electricity grid mix.

Processes with several inputs of materials and/or energy sources – such as plastic extrusions – are modelled with data for the geographical scenario where the manufacturing takes place.



Flowdiagram



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### System boundary

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

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

In accordance with this, the contribution from transportation of ingoing packaging has been deemed to be insignificant and is excluded from the EPD.

### Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

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

The reference kitchen is built using primarily pre-manufactured components, such as MDF-fronts, Chipboard-plates, or premanufactured steel components, and assembled in Kjellerup.

Manufacturing of components in the upstream are modelled using database processes that are representative of the full production of the component, including the extraction and processing of raw materials, transport, and manufacturing.

### End of Life (C1-C4) includes:

The end of life of the reference kitchen starts with a manual deconstruction, that occurs without the assistance of heavy machinery or equipment,

which is why the module C1 is without impacts in this EPD.

After deconstruction the various components of the reference kitchen are sent to waste sorting, with wood-based materials sent to material recycling, the same procedure is applied for steel and other metal components.

Any processes required to reach end-of-waste criteria for the materials are included in module C3.

This constitutes about 98% of the mass of the reference kitchen, and the remaining ~2% is assumed to be sent to municipal waste incineration.

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

Recycling potentials of MDF, HDF, chipboard, and other wooden components are included in module D. Materials that entered the system as secondary materials are not credited in the next system, as such the recycling potentials are quite small.

Recycling potentials of steel and other metals are included in module D. Materials that entered the system as secondary materials are not credited in the next system.

Energy output from municipal waste incineration is credited in module D, based on the outputs of electricity and heat from the waste incineration plants.

## LCA results

ENVIRONMENTAL IMPACTS PER KG OF REFERENCE KITCHEN							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	-7,03E-01	0	4,24E-03	1,50E+00	0	-1,64E+00
GWP-fossil	kg CO <sub>2</sub> eq.	7,96E-01	0	4,20E-03	1,29E-01	0	-1,59E-01
GWP-biogenic	kg CO <sub>2</sub> eq.	-1,37E+00	0	1,09E-05	1,37E+00	0	-1,48E+00
GWP-luluc	kg CO <sub>2</sub> eq.	7,42E-04	0	2,88E-05	3,90E-06	0	-3,22E-05
ODP	kg CFC 11 eq.	3,32E-10	0	4,20E-16	1,36E-13	0	-1,31E-13
AP	mol H <sup>+</sup> eq.	1,82E-03	0	5,05E-06	1,08E-04	0	-3,57E-04
EP-freshwater	kg PO <sub>4</sub> eq.	7,93E-06	0	1,53E-08	4,73E-08	0	-2,32E-07
EP-marine	kg N eq.	6,42E-04	0	1,68E-06	4,75E-05	0	-8,04E-05
EP-terrestrial	mol N eq.	5,82E-03	0	2,00E-05	5,36E-04	0	-8,51E-04
POCP	kg NMVOC eq.	1,88E-03	0	4,39E-06	1,29E-04	0	-2,55E-04
ADPm <sup>1</sup>	kg Sb eq.	3,16E-06	0	4,31E-10	4,35E-09	0	-8,74E-07
ADPf <sup>1</sup>	MJ	1,27E+01	0	5,61E-02	2,82E-01	0	-1,77E+00
WDP <sup>1</sup>	m <sup>3</sup>	1,32E-01	0	4,78E-05	5,65E-03	0	3,95E-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.						

ADDITIONAL ENVIRONMENTAL IMPACTS PER KG OF REFERENCE KITCHEN							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	3,40E-08	0	3,36E-11	2,07E-09	0	-4,05E-09
IRP <sup>2</sup>	[kBq U235 eq.]	3,10E-02	0	1,58E-05	8,88E-04	0	-6,49E-03
ETP-fw <sup>1</sup>	[CTUe]	5,84E+00	0	3,98E-02	7,11E-02	0	-3,35E-01
HTP-c <sup>1</sup>	[CTUh]	7,19E-10	0	8,20E-13	9,87E-12	0	-1,26E-11
HTP-nc <sup>1</sup>	[CTUh]	1,30E-08	0	4,44E-11	1,40E-10	0	-1,29E-09
SQP <sup>1</sup>	-	3,65E+01	0	2,38E-02	1,40E-01	0	-8,16E-01
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						
Disclaimers	<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.						



RESOURCE USE PER KG OF REFERENCE KITCHEN							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	6,15E+00	0	3,89E-03	2,03E-01	0	-4,75E-01
PERM	[MJ]	1,70E+01	0	0,00E+00	0,00E+00	0	0,00E+00
PERT	[MJ]	2,31E+01	0	3,89E-03	2,03E-01	0	-4,75E-01
PENRE	[MJ]	1,26E+01	0	5,63E-02	2,82E-01	0	-1,77E+00
PENRM	[MJ]	1,43E-01	0	0,00E+00	0,00E+00	0	0,00E+00
PENRT	[MJ]	1,27E+01	0	5,63E-02	2,82E-01	0	-1,77E+00
SM	[kg]	9,31E-01	0	0,00E+00	0,00E+00	0	0,00E+00
RSF	[MJ]	0,00E+00	0	0,00E+00	0,00E+00	0	0,00E+00
NRSF	[MJ]	0,00E+00	0	0,00E+00	0,00E+00	0	0,00E+00
FW	[m <sup>3</sup> ]	4,75E-03	0	4,49E-06	1,85E-04	0	-6,92E-05
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						

WASTE CATEGORIES AND OUTPUT FLOWS PER KG OF REFERENCE KITCHEN							
Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	5,96E-08	0	2,98E-13	2,22E-10	0	-1,47E-10
NHWD	[kg]	2,49E-02	0	9,18E-06	1,35E-03	0	-1,03E-02
RWD	[kg]	2,21E-04	0	1,05E-07	8,01E-06	0	-7,94E-06

CRU	[kg]	0,00E+00	0	0,00E+00	0,00E+00	0	0,00E+00
MFR	[kg]	4,00E-02	0	0,00E+00	8,71E-01	0	0,00E+00
MER	[kg]	4,34E-02	0	0,00E+00	2,09E-02	0	0,00E+00
EEE	[MJ]	3,16E-02	0	0,00E+00	1,01E-01	0	0,00E+00
EET	[MJ]	1,36E-01	0	0,00E+00	4,31E-01	0	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						

BIOGENIC CARBON CONTENT PER KG OF REFERENCE KITCHEN		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0,403
Biogenic carbon content in accompanying packaging	[kg C]	0,054
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO <sub>2</sub>	

## Additional information

### LCA interpretation

The majority of components in the reference kitchen are wood-related products, in the shape of MDF-boards, Chipboards, timber products, and HDF-boards. These components contribute to the negative values in the results for climate change for A1-A3, for which the maximum contribution presented in the second table below is calculated from the absolute value.

The negative values for climate change in A1-A3 are balanced by equal positive values in climate change for C3 (waste processing), where the biogenic carbon bound in the wooden products is counted as leaving the system, in an equal amount to the uptake calculated in A1-A3. This is done in accordance with Annex C of EN15804+A2 section C.2.4, which describes the calculation rules for biogenic CO<sub>2</sub> entering and leaving the product system. This results in the waste processing of C3 contributing more than 100% to the results of climate change and biogenic climate change.

Environmental Impact (All lifecycle stages)				
Impact Category	Unit	Maximum contribution in category	Process	Percentage of category
Climate Change - total	kg CO <sub>2</sub> eq.	1,45E+00	C3: Waste Processing	177%
Climate Change, fossil	kg CO <sub>2</sub> eq.	2,22E-01	A1: Front - MDF	29%
Climate Change, biogenic	kg CO <sub>2</sub> eq.	1,37E+00	C3: Waste Processing	100%
Climate Change, land use and land use change	kg CO <sub>2</sub> eq.	4,28E-04	A2: Transport	57%
Ozone depletion	kg CFC-11 eq.	1,57E-10	A1: Zinc components	47%
Acidification	Mole of H <sup>+</sup> eq.	5,07E-04	A1: Chipboard	32%
Eutrophication, freshwater	kg P eq.	2,82E-06	A1: Zinc components	36%
Eutrophication, marine	kg N eq.	2,52E-04	A1: Chipboard	41%
Eutrophication, terrestrial	Mole of N eq.	1,82E-03	A1: Chipboard	33%
Photochemical ozone formation, human health	kg NMVOC eq.	6,12E-04	A1: Chipboard	34%
Resource use, mineral and metals	kg Sb eq.	1,31E-06	A1: Zinc components	57%
Resource use, fossils	MJ	3,91E+00	A1: Chipboard	34%
Water use	m <sup>3</sup> world equiv.	4,52E-02	A1: Chipboard	32%

Environmental Impact (A1-A3)				
Impact Category	Unit	Maximum contribution in category	Process	Percentage of category
Climate Change - total	kg CO2 eq.	1,23E-01	A1: Lacquered steel	18%
Climate Change, fossil	kg CO2 eq.	2,20E-01	A1: Front - MDF	28%
Climate Change, biogenic	kg CO2 eq.	1,34E-01	A3: Waste incineration	10%
Climate Change, land use and land use change	kg CO2 eq.	4,24E-04	A2: Transport	57%
Ozone depletion	kg CFC-11 eq.	1,55E-10	A1: Zinc components	47%
Acidification	Mole of H+ eq.	5,02E-04	A1: Chipboard	28%
Eutrophication, freshwater	kg P eq.	2,79E-06	A1: Zinc components	35%
Eutrophication, marine	kg N eq.	2,50E-04	A1: Chipboard	39%
Eutrophication, terrestrial	Mole of N eq.	1,80E-03	A1: Chipboard	31%
Photochemical ozone formation, human health	kg NMVOC eq.	6,06E-04	A1: Chipboard	32%
Resource use, mineral and metals	kg Sb eq.	1,30E-06	A1: Zinc components	41%
Resource use, fossils	MJ	3,87E+00	A1: Chipboard	30%
Water use	m <sup>3</sup> world equiv.	4,48E-02	A1: Chipboard	34%

## Technical information on scenarios

### Reference service life

RSL information		Unit
Reference service Life	20	Years
Declared product properties	Additional information on the product may be found at the manufacturers website: <a href="https://www.designa.dk/koekken">https://www.designa.dk/koekken</a>	As appropriate
Design application parameters		As appropriate
Assumed quality of work		As appropriate
Outdoor environment		As appropriate
Indoor environment		As appropriate
Usage conditions		As appropriate
Maintenance		As appropriate

### End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	1	kg
Collected with mixed waste	-	kg
For reuse	-	kg
For recycling	0,979	kg
For energy recovery	0,0209	kg
For final disposal	0	kg
Assumptions for scenario development	-	As appropriate

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

Scenario information/Material	Value	Unit
Material sent to municipal waste incineration	0,0209	kg
Exported thermal energy	0,431	MJ
Exported electrical energy	0,101	MJ

**Indoor air**

*The EPD covers products certified with the Danish Indoor Climate Labelling scheme. Information can be found here:*  
<https://indeklimamaerket.dk/about-danish-indoor-climate-labelling/>

*Certificates can be found here:*  
<https://www.designa.dk/certificeringer>

**Soil and water**

*The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.*

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## References

<b>Publisher</b>	 <a href="http://www.epddanmark.dk">www.epddanmark.dk</a>
<b>Programme operator</b>	Danish Technological Institute Buildings & Environment Gregersensvej DK-2630 Taastrup <a href="http://www.teknologisk.dk">www.teknologisk.dk</a>
<b>LCA-practitioner</b>	Teknologisk Institut Center for Bygninger og Miljø Gregersensvej DK-2630 Taastrup <a href="http://www.teknologisk.dk">www.teknologisk.dk</a>
<b>LCA software / background data</b>	Thinkstep GaBi version 10.6.1.35, 2022 including databases <a href="http://www.gabi-software.com">www.gabi-software.com</a>
<b>3<sup>rd</sup> party verifier</b>	Kim Christiansen – <a href="http://kimconsult.dk">kimconsult.dk</a>

### General programme instructions

General Programme Instructions, version 2.0, spring 2020  
[www.epddanmark.dk](http://www.epddanmark.dk)

### EN 15804

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

### EN 15942

DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

### ISO 14025

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

### ISO 14040

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

### ISO 14044

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