ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Highlight Special
Temal Oy

EPD HUB, HUB-0067
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Temal Oy
Address	Huoltamotie 3, Nakkila
Contact details	temal@temal.fi
Website	www.temal.fi

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with modules A4, A5, C1-C4, D
EPD author	Temal Oy, Heidi Seppä
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	E.A as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Highlight Special 600
Additional labels	Highlight Special
Product reference	LPKLPR
Place of production	Nakkila, Finland
Period for data	Calendar year 2021
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit, mirror cabinet with white melamine frame and two mirror glass doors
Declared unit mass	15,8 kg
GWP-fossil, A1-A3 (kgCO2e)	6,87E1
GWP-total, A1-A3 (kgCO2e)	6,07E1
Secondary material, inputs (%)	9,58E-1
Secondary material, outputs (%)	5,79E1
Total energy use, A1-A3 (kWh)	2,97E2
Total water use, A1-A3 (m3e)	6,05E-1

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Temal is a family-owned company, that manufactures furniture for bathroom, laundry, kitchen and storage in own factory in Nakkila. Headquarters, showroom and concept store are located in Helsinki. Office and showroom are also available in Stockholm. Temal currently has about 50 employees. Business activities are conducted in Finland and Sweden. Furnitures are manufactured with an innovative method that allows them to be available in 5 centimetres intervals, both in width and depth. The core of our enamelled sinks is made of steel, which provides a higher durability than traditional crockery. All furniture is also made of impregnated, moisture-proofed frames.

PRODUCT DESCRIPTION

Temal's product range includes furniture for bathroom, utility room, storage and kitchen. These products represent the lucid Nordic style, which is well-known for its long-lasting quality and versatile sense of functionality. Fittings with a tailored design are harmoniously suitable for furnishing the whole home. The flexible 5 cm dimensioning ensures that Temal fits perfectly into all homes – from small to large spaces – without compromising on style, quality or functionality.

The vanity unit is partly recyclable and mostly used and suitable for energy use. Steel parts are recycled, and wood-based and plastic parts go into energy production. Some raw materials used in Temal products have already been recycled, but the percentages are small and difficult to determine, therefore they have been ignored in the present study. Temal products are manufactured at the Nakkila factory from wood-based furniture boards by sawing, drilling and painting (painting on Temal production line does not include in this product). Assembly is also carried out at the factory. Temal mainly supplies ready assembled furniture.

Width 600 mm
Depth (160 frame) 250 mm with LED flag
Height 680 mm
Two mirror glass doors

Further information can be found at www.temal.fi.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	7,6 %	Europe
Minerals	36,1 %	Europe
Fossil materials	3,8 %	Europe
Bio-based materials	52,3 %	Europe

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	3.73
Biogenic carbon content in packaging, kg C	0.77

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit, mirror cabinet with white melamine frame and two mirror glass doors
Mass per declared unit	15,8 kg
Reference service life	25 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission. Temal products are manufactured at the Nakkila factory from wood-based furniture boards by sawing, painting and drilling. The furniture assembly is also carried out at the factory.

Dispersion glue is used with the wooden pegs in the assembly phase. This glue is harmless to health and the environment and accounts for approximately one per mil of the total mass and has therefore been ignored in the present study. The glue goes to energy use with the furniture board. The tools are electrically operated, and no water is used in the process. No water is used on the paint line due to solvent-based paints. The factory halls are heated with propane gas. Components are transported inside the factory by roller cages or pump carts by manpower. Products are packaged manually in cardboard boxes made of partly recycled material and then transferred onto a forklift truck pallet for plastic coating.

The amount of plastic wrapper is kept at a minimum. The small amount of plastic just ensure that the packaging remains on the pallet. Products are loaded onto trucks using an electric forklift.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The furniture is delivered assembled except the mirror doors are installed afterwards. Trucks transporting products also transport other products, so the product is loaded in the remaining space of the truck. Smaller delivery trucks are sometimes used instead of regular trucks. The product is delivered approximately 17 km from the Nakkila factory to the Posti terminal in Pori, from where the delivery then continues to the terminal closest to the delivery address. From this point, the average transport distance to the customer is approximately 220 km (European lorry > 32 tonnes). Before installation and after leaving the factory, the furniture is stored in dry and warm premises.

The product is installed either by a private person or by an installer if the installation takes place, for example, in a housing company, installation is responsible for installer. Installation is usually carried out using only plain tools, such as a spirit level and battery-operated screwdriver. So therefore, Module A5 have not been studied .

PRODUCT USE AND MAINTENANCE (B1-B7)

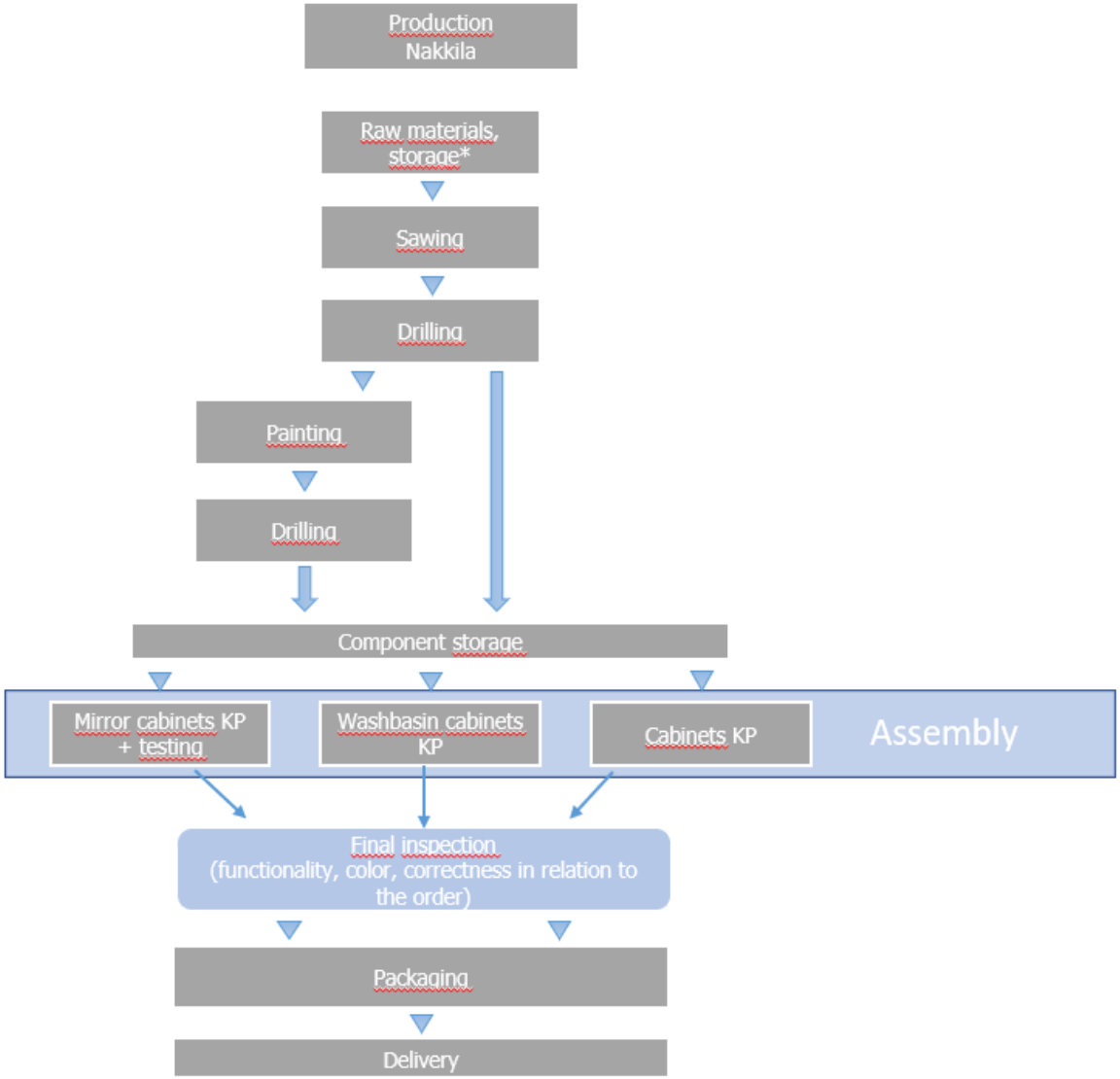
This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The vanity unit is fully recyclable and suitable for energy use. Steel parts are recycled, mirror glass will be delivered to the landfill and wood-based and plastic parts go into energy production. Some raw materials used in Temal products have already been recycled.

When the furniture has reached the end of its life cycle, it can be disposed by sorting the wood-based parts into the recycling centre's wood recycling point and the metal parts into the metal recycling point. Disassembly can be performed with the help of manual tools. The furniture can be easily disassembled into different waste types for recycling and disposal. The product cannot be recycled among the household mixed waste, instead the components of the furniture must be delivered to a separate recycling station. The vanity unit does not contain harmful substances, WEEE waste or any other material that is not reusable or recyclable. The average distance from the final destination to the recycling station is assumed to be 23 km.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

Materials representing less than 1% of all the product materials, in relation to the mass of the whole furniture, are excluded from the calculation. The quantities of glue, rubber stopper and wooden fastening pegs are excluded from the calculation. The amount of glue in the furniture accounts for approximately 0.2% of the total mass of the furniture. The wooden pegs weigh a total of 0.0015 kg and plastic shelf holders 0,003, i.e. less than one per mil of the total weight. In total less than 1%. Acquisition, maintenance and use of production equipment and construction activities on the premises of the production plant or on the site, infrastructure and personnel-related activities are not included in the calculation. Activities related to the management and sales of the company and the use of energy and water by the headquarters and the factory's recreational facilities are not included in the calculation.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. In this study, as per the reference standard, allocation is conducted in the following order;

Allocation should be avoided.
Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
Allocation should be based on economic values.

Manufacturing materials - A1

The raw material consumption data have been obtained for the product examined and therefore no allocation of these data was necessary. In the structure of the product, wood-based materials and glue have been included in the bio-based raw materials. In the calculations of wood based material has been used average densities of melamine- 700 kg/m3 and mdf furniture board 700 kg/m3 . In this project has been used m3 instead kg in calculations of wood based material.

Possible recycled steel as a raw material has not been taken into account. All steel has been assumed to be virgin steel in the calculation. The paint density has been assumed to be 1.6 kg/litre for each layer of paint, according to which the per-furniture mass of the paint has been calculated using known litres of paint consumption. The correctness of the paint feed in the paint shop is determined by weighing a 100 cm2 test plate before and after the application of the paint. The primer and topcoat have a slightly different feed, which has, however, been found to be insignificant in relation to the final mass of the paint.

Ancillary and packaging materials – A3

Packaging material consumption, reason for allocation: measured at the production plant level Waste generation, reason for allocation: measured at the production plant level The inputs were allocated to the product under examination on the basis of the production volumes.

Depending on the situation and order, the forklift pallet may contain several vanity units or, for example, only one vanity unit, storage cabinets and mirror cabinets. The capacity of utilization of the forklift pallet has been calculated on average. Average unit of products packed on the same pallet is four.

Manufacturing energy use – A3

The energy used in manufacturing is delivered by Lammaisten Energia Oy and distribution of bought energy is as follows: renewable energy 16,4 %, nuclear power 46,8 % and fossil energy sources 36,9%

Production flows could not be allocated in terms of the following flows, as the data is only measured at the level of the production plant: Electricity, heat and

propane gas consumption, reason for allocation: measured at the production plant level. The separate electricity consumption of the painting line is not verified, because the share of energy used by the painting line is low.
Energy use for whole production of all white painted Highlight Special mirror cabinets which have two doors is less than 3% of whole energy used by production of painted furniture parts. The electricity used in the painting line is included in the calculation by dividing the total electricity consumption by the total production.

In this study, energy consumption has been divided equally and is by default equal for all the furniture manufactured. The separate electricity consumption of the painting line cannot be verified, so the share of energy used by the painting line is also calculated in relation to all the products. There is no precise information on the quality of electricity, so the resource market for electricity, medium voltage has been used.

Manufacturing waste and wastewater - A3
The generated waste has also been divided equally for all the furniture manufactured in the factory during the year, with the exception of the waste generated on the painting line, which has been divided equally for the painted furniture manufactured during the year.
In the furniture board materials, the waste percentage has been calculated to be 15%. By default, the waste percentage is the same regardless of the size of the furniture to be manufactured. The vanity furniture covered by the study, two doors Highlight Special, represented approximately 6,5% of Temal's total production in 2021. The amount of waste per furniture also includes the 3% waste of the paint line and the waste parts of wood-based materials obtained per furniture by calculating the weight loss percentage of the boards using 15%. This 15% is used as energy resource not as waste. Wood-based waste materials are used in energy production. The wood chips are not a commodity for Temal and those are free for end user. Temal does not get cost compensation from wood-based waste material.

Because water is not used during the manufacturing process there is no wastewater coming out of the process.

Packaging of raw materials are mostly carton, plastic and wood (pallets). Wooden pallets are reused where products are sent to delivery. Carton will be recycled and plastics are used in energy recovery.

Transport to the building site - A4
The transport distance from the factory to the customer is an average estimate. If all deliveries within Finland are studied, the average delivery distance is 220 km (average European lorry > 32 tonnes).

Installation into the building – A5
The product generates waste for the end user when installed.
Waste suitable for recycling includes a cardboard box and supports as well as filling paper. The plastic wrap is sorted as energy waste.
Temal products are already pre-assembled, there is no waste during installation. Installation will be implemented with simple so called hand tools so there is not much energy used.

Transport to waste processing - C2
At the end of the life cycle, the average distance transported to waste treatment is 23 km. The figure is based on the average distance and the estimate of the dispersion in the distances of the sorting points.

Waste processing for reuse, recovery and/or recycling - C3
At the end of the life cycle, it is assumed that wood-based and plastic materials are completely burned into energy and the steel washbasin and metal parts are recycled, as well as the aluminium handle. It has been assumed in the calculation that 2–4% of the demolition waste from the furniture will end up in final disposal.

Waste from wood-based materials replace fossil fuels. The same average effective calorific value of 18.7 MJ/kg has been used in the calculation of energy efficiency for MDF and melamine boards (wood-based materials). The used efficiency of the CHP plant in the calculation was approximately 73% as a whole of which the efficiency for electricity is 11% and for heat production 62%. Source: The fuel efficiency of the power plant is 73%, of which heat accounts for 62% (Eriksson, O & Finnveden, G. 2017). The calorific value of wood waste is 4.7 kWh/kg (VTT. 2016)
At the end of the life cycle, the assumption is that 95% of steel is recycled, assuming, that all recycled steel material replaces the use of virgin metal.

1. **Glass**: EN standard 17213 states that 30% of glass ends in recycling and 70% in landfilling
   2. **Passive Electronics**: It is assumed that all the involved electronics components contain 35% metals and 65% Plastics.
   According to EN 50693:2019, End of Life for the following materials are assumed as follows: Metals Including steel: Recycling- 80%; landfilling-20% ; Plastics: 50% energy recovery; 50%- landfilling
   3. **Electronics (LED):** From Ecoinvent database, the LED light consists of following % of materials: Steel- 50%, Copper-23%, Glass-27%
   According to EN 50693:2019, EOL are assumed as follows:
   Metals: Steel: Recycling- 80%; landfilling-20%; Metals: Copper: Recycling- 60%; landfilling-40%; Glass: Recycling-60%; landfilling-40%
   Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 - standard.

Allocation used in environmental data sources is aligned with the above.

Disposal - C4

Led light electronics plastic and some of the steel parts will end of the disposal and landfill as the same as mirror glass.

Benefits and loads beyond the system boundary – D

Specific materials such as Wooden based products, passive electronics, ABS rubber are sent to the incineration facility where they are incinerated and exported as electricity & heat. Similarly metal based products & glasses are sorted and sent to the recycling center, where they are used as secondary material in their next phase of life.

AVERAGES AND VARIABILITY

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO_2e	4,95E1	3,49E-1	1,08E1	6,07E1	3,92E-1	4,78E0	MND	MND	MND	MND	MND	MND	MND	0E0	3,31E-2	6,22E0	4,03E-1	2,66E1
GWP – fossil	kg CO_2e	5,72E1	3,49E-1	1,12E1	6,87E1	3,96E-1	1,96E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,3E-2	4,01E-1	3,94E-1	-5,06E0
GWP – biogenic	kg CO_2e	-7,85E0	2,53E-4	-4,4E-1	-8,29E0	2,88E-4	4,59E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,4E-5	5,82E0	9,57E-3	3,16E1
GWP – LULUC	kg CO_2e	1,84E-1	1,05E-4	5,74E-2	2,41E-1	1,19E-4	1,15E-4	MND	MND	MND	MND	MND	MND	MND	0E0	9,94E-6	2,87E-4	2,51E-5	1,84E-2
Ozone depletion pot.	kg CFC_{-11}e	4,14E-6	8,21E-8	8,85E-7	5,11E-6	9,31E-8	2,13E-8	MND	MND	MND	MND	MND	MND	MND	0E0	7,76E-9	2,07E-8	1,84E-8	-1,06E-6
Acidification potential	mol H^+e	4,44E-1	1,47E-3	4,33E-2	4,89E-1	1,66E-3	8,47E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,39E-4	1,24E-3	1,14E-3	-2,27E-2
EP-freshwater	kg Pe	5,36E-3	2,84E-6	3,63E-4	5,73E-3	3,22E-6	4,77E-6	MND	MND	MND	MND	MND	MND	MND	0E0	2,69E-7	1,24E-5	5,35E-6	-1,64E-4
EP-marine	kg Ne	7,13E-2	4,42E-4	8,23E-3	7,99E-2	5,01E-4	2,64E-4	MND	MND	MND	MND	MND	MND	MND	0E0	4,18E-5	2,64E-4	1,95E-4	-2,28E-3
EP-terrestrial	mol Ne	8,65E-1	4,88E-3	8,36E-2	9,53E-1	5,53E-3	2,82E-3	MND	MND	MND	MND	MND	MND	MND	0E0	4,62E-4	2,97E-3	2,3E-3	-3,38E-2
POCP (“smog”)	kg NMVOCe	2,31E-1	1,57E-3	2,54E-2	2,58E-1	1,78E-3	9,39E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,48E-4	8,42E-4	9,86E-4	-9,97E-3
ADP-minerals & metals	kg Sbe	6,24E-3	5,96E-6	4,48E-5	6,3E-3	6,76E-6	4,21E-6	MND	MND	MND	MND	MND	MND	MND	0E0	5,64E-7	4,2E-6	6,24E-7	-4,53E-3
ADP-fossil resources	MJ	7,63E2	5,43E0	1,83E2	9,51E2	6,16E0	2,19E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,14E-1	3,17E0	2,04E0	-1,09E2
Water use	m^3e depr.	3,24E1	2,02E-2	3,92E0	3,63E1	2,29E-2	2,87E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,91E-3	5,44E-2	5,03E-2	-2,23E0

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	4,13E-6	3,16E-8	2,94E-7	4,46E-6	3,58E-8	1,4E-8	MND	MND	MND	MND	MND	MND	MND	0E0	2,99E-9	1,22E-8	1,38E-8	-6,23E-8
Ionizing radiation	kBq U235e	2,49E0	2,37E-2	5,67E0	8,19E0	2,69E-2	1,04E-2	MND	MND	MND	MND	MND	MND	MND	0E0	2,25E-3	1,94E-2	5,25E-3	-2,26E-1
Ecotoxicity (freshwater)	CTUe	2,62E3	4,15E0	2,95E2	2,91E3	4,71E0	2,89E0	MND	MND	MND	MND	MND	MND	MND	0E0	3,93E-1	1,12E1	4,9E0	-2,55E2
Human toxicity, cancer	CTUh	2E-7	1,06E-10	3,89E-9	2,04E-7	1,2E-10	1,69E-10	MND	MND	MND	MND	MND	MND	MND	0E0	1E-11	8,37E-10	8,99E-10	-2,95E-9
Human tox. non-cancer	CTUh	1,49E-6	4,92E-9	9,35E-8	1,59E-6	5,58E-9	2,67E-9	MND	MND	MND	MND	MND	MND	MND	0E0	4,65E-10	4,26E-8	2,51E-8	-1,74E-7
SQP	-	1,49E2	8,2E0	1,41E1	1,71E2	9,3E0	6E-1	MND	MND	MND	MND	MND	MND	MND	0E0	7,76E-1	9,23E-1	3,75E0	-5,41E0

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	9,73E1	6,83E-2	3,89E1	1,36E2	7,75E-2	1,39E-1	MND	MND	MND	MND	MND	MND	MND	0E0	6,47E-3	3,94E-1	3,57E-2	-2,02E1
Renew. PER as material	MJ	7,16E1	0E0	4,08E1	1,12E2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-3,36E1	0E0	-1,5E1
Total use of renew. PER	MJ	1,69E2	6,83E-2	7,97E1	2,49E2	7,75E-2	1,39E-1	MND	MND	MND	MND	MND	MND	MND	0E0	6,47E-3	-3,32E1	3,57E-2	-3,52E1
Non-re. PER as energy	MJ	7,53E2	5,43E0	1,74E2	9,33E2	6,16E0	2,19E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,14E-1	3,17E0	2,04E0	-1,09E2
Non-re. PER as material	MJ	9,1E0	0E0	9,56E0	1,87E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-4,28E0	0E0	0E0
Total use of non-re. PER	MJ	7,63E2	5,43E0	1,83E2	9,51E2	6,16E0	2,19E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,14E-1	-1,11E0	2,04E0	-1,09E2
Secondary materials	kg	1,38E-1	0E0	1,39E-2	1,51E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	1,27E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	4,81E-1	1,13E-3	1,23E-1	6,05E-1	1,28E-3	5,94E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,07E-4	1,12E-3	1,66E-3	-4,49E-2

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	9,42E0	5,28E-3	2,31E-1	9,65E0	5,98E-3	9,63E-3	MND	MND	MND	MND	MND	MND	MND	0E0	4,99E-4	0E0	4,2E-2	-2,71E-1
Non-hazardous waste	kg	1,98E2	5,84E-1	8,03E0	2,07E2	6,62E-1	3,1E-1	MND	MND	MND	MND	MND	MND	MND	0E0	5,52E-2	0E0	4,21E0	1,17E1
Radioactive waste	kg	2,03E-3	3,73E-5	2,16E-3	4,23E-3	4,23E-5	1,22E-5	MND	MND	MND	MND	MND	MND	MND	0E0	3,53E-6	0E0	8,12E-6	-1,72E-4

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2E-3	2E-3	0E0	1E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	3,08E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	2,19E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	6,06E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	4,66E1	0E0	0E0

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	5,55E1	3,46E-1	1,11E1	6,7E1	3,92E-1	2,04E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,27E-2	4E-1	3,86E-1	-4,76E0
Ozone depletion Pot.	kg CFC_{-11}e	3,78E-6	6,52E-8	1,17E-6	5,01E-6	7,4E-8	1,8E-8	MND	MND	MND	MND	MND	MND	MND	0E0	6,17E-9	1,94E-8	1,51E-8	-8,37E-7
Acidification	kg SO_2e	3,37E-1	7,1E-4	3,56E-2	3,73E-1	8,05E-4	6,21E-4	MND	MND	MND	MND	MND	MND	MND	0E0	6,72E-5	8,95E-4	8,34E-4	-2,05E-2
Eutrophication	kg PO_4^3e	1,49E-1	1,43E-4	8,82E-3	1,58E-1	1,63E-4	4,41E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,36E-5	6,08E-4	5,33E-4	-4,15E-3
POCP (“smog”)	kg C_2H_4e	2,09E-2	4,5E-5	1,81E-3	2,28E-2	5,1E-5	4,21E-5	MND	MND	MND	MND	MND	MND	MND	0E0	4,26E-6	5,07E-5	2,54E-4	-9,64E-4
ADP-elements	kg Sbe	6,24E-3	5,96E-6	4,48E-5	6,3E-3	6,76E-6	4,21E-6	MND	MND	MND	MND	MND	MND	MND	0E0	5,64E-7	4,2E-6	6,24E-7	-4,53E-3
ADP-fossil	MJ	7,63E2	5,43E0	1,83E2	9,51E2	6,16E0	2,19E0	MND	MND	MND	MND	MND	MND	MND	0E0	5,14E-1	3,17E0	2,04E0	-1,09E2

ENVIRONMENTAL IMPACTS – TRACI 2.1. / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	5,56E1	3,45E-1	1,12E1	6,71E1	3,92E-1	2,05E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,27E-2	4,01E-1	3,75E-1	-4,8E0
Ozone Depletion	kg CFC_{-11}e	4,83E-6	8,69E-8	1,42E-6	6,33E-6	9,86E-8	2,37E-8	MND	MND	MND	MND	MND	MND	MND	0E0	8,22E-9	2,51E-8	1,95E-8	-1,15E-6
Acidification	kg SO_2e	3,68E-1	1,28E-3	3,59E-2	4,05E-1	1,45E-3	7,44E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,21E-4	1,05E-3	9,41E-4	-1,84E-2
Eutrophication	kg Ne	5,43E-2	1,8E-4	5,05E-3	5,96E-2	2,04E-4	1,12E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,7E-5	1,56E-4	9,52E-5	-8,32E-4
POCP (“smog”)	kg O_3e	4,22E0	2,8E-2	4,49E-1	4,69E0	3,18E-2	1,56E-2	MND	MND	MND	MND	MND	MND	MND	0E0	2,65E-3	1,61E-2	1,19E-2	-1,39E-1
ADP-fossil	MJ	6,64E1	7,78E-1	7,06E0	7,42E1	8,82E-1	2,41E-1	MND	MND	MND	MND	MND	MND	MND	0E0	7,36E-2	2,45E-1	1,91E-1	-1,45E1

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Elma Avdyli as an authorized verifier acting for EPD Hub Limited
21.06.2022

VERIFIED ISO 14025