



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Tenel Terra Balcony Post
Tenel Oy



EPD HUB, HUB-6108

Published on 23.04.2026, last updated on 23.04.2026, valid until 22.04.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Tenel Oy
Address	Tehontie 45, 45200, Kouvola, Finland
Contact details	jani.julin@tenel-elements.fi
Website	https://tenel-elements.fi/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Elias Tukonen, Tenel Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	D.V as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. 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	Tenel Terra Balcony Post
Additional labels	-
Product reference	-
Place(s) of raw material origin	Finland, Norway
Place of production	Finland, Kouvola
Place(s) of installation and use	Finland
Period for data	01/01/2025 - 31/12/2025
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	N/A
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	92,2

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2 of Tenel Terra Balcony Post
Declared unit mass	470 kg
Mass of packaging	0 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	53,3
GWP-total, A1-A3 (kgCO ₂ e)	53,3
Secondary material, inputs (%)	4,91
Secondary material, outputs (%)	70,2
Total energy use, A1-A3 (kWh)	132
Net freshwater use, A1-A3 (m ³)	0,53

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Tenel is a precast concrete element producer specialised in sustainable products. Tenel services construction sites in the South-Finland region and operates with the goal of delivering quality products with lower environmental impact.

PRODUCT DESCRIPTION

The product is a low-carbon precast concrete balcony post element. Product calculations are made for an element with 200mm thickness.

The element is always made to tailor the specific needs of a customer.

Further information can be found at <https://tenel-elements.fi/>

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<https://tenel-elements.fi/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	1	Norway
Minerals	99	Finland
Fossil materials	<0.01	Finland
Bio-based materials	N/A	N/A

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m2 of Tenel Terra Balcony Post
Mass per declared unit	470 kg
Functional unit	N/A
Reference service life	50 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	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Not declared = ND.

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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

Raw materials and ready-mix concrete are transported to the factory. At the factory plywood framework is installed to the casting bed and oil is applied. Rebar, reinforcement mesh and auxiliary equipment such as lifting rings are installed to the cast.

The ready-mix concrete is then poured into the mold and finished for even setting. The cast element is then left to cure. After 16-24 hours the cast is removed, and the product is moved to storage. The cast is cleaned with water daily and the plywood framework is re-used. No packaging is added to the product. Before continuing with the casting process for the new element, the cast is oiled.

The production facility is heated with district heating supplied additionally by natural gas if necessary during cold months. Production facility equipment and electronics are powered with electricity procured from carbon dioxide-free energy sources.

During the process of rebaring, the production facility assumes a 3% peril rate for processed steel. Peril rate for plywood is assumed at 10%, and therefore is modelled as reused 10 times before incineration.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

TRANSPORT AND INSTALLATION (A4-A5)

These modules were not included in the scope of this EPD.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

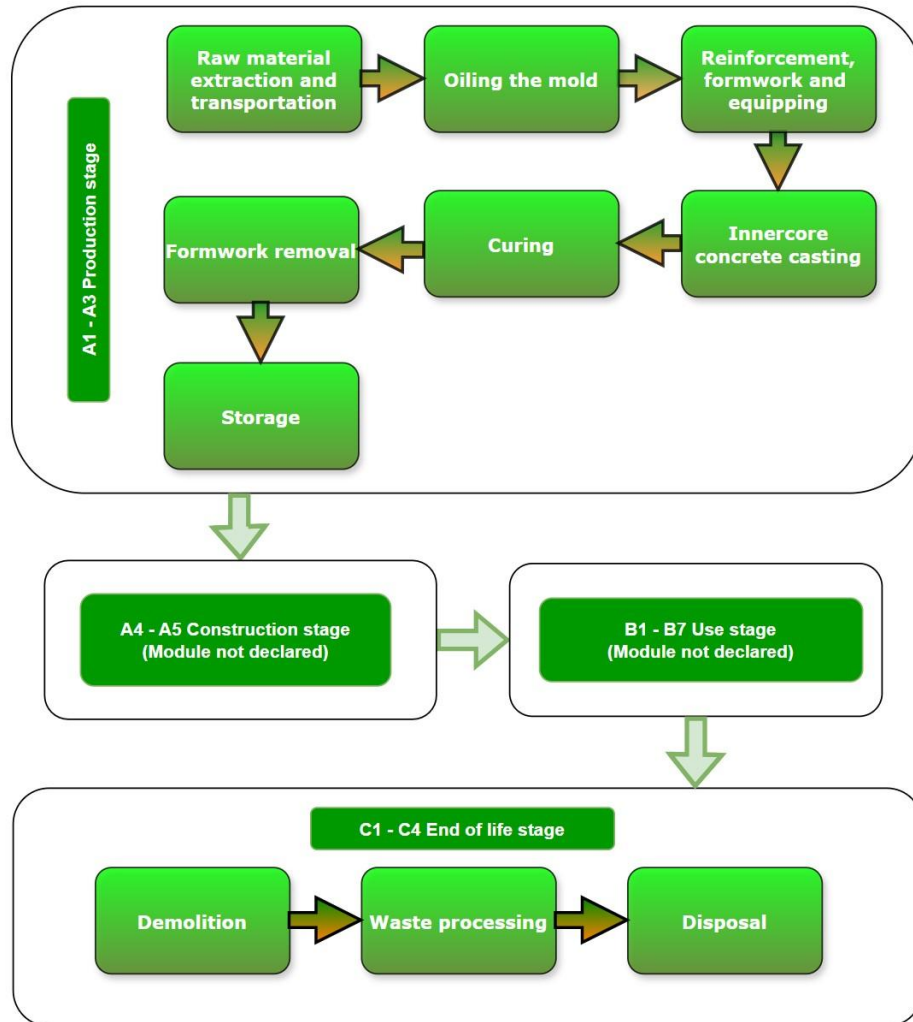
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end of service life, it is assumed that 100% of demolition waste is collected for construction waste processing. Demolition process consumes energy in diesel fuel form at an assumed rate of 10kWh / ton (C1).

The demolished concrete wall is transported to a construction waste treatment plant without mass loss. Transport to the recycling and landfill site is assumed at 50km. (C2).

SYSTEM DIAGRAM



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard 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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	N/A

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.4. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

End of life references:

(World Steel Association, 2020)
(RC Technical report, 2018)

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	4,90E+01	1,60E+00	2,74E+00	5,33E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,67E+00	4,72E+00	1,52E+00	8,75E-01	-1,11E+01
GWP – fossil	kg CO ₂ e	4,90E+01	1,60E+00	2,74E+00	5,33E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,67E+00	4,72E+00	1,52E+00	8,75E-01	-1,11E+01
GWP – biogenic	kg CO ₂ e	0,00E+00	2,36E-06	-9,47E-07	1,41E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,40E-04	-3,61E-04	-2,78E-04	0,00E+00
GWP – LULUC	kg CO ₂ e	2,36E-02	7,17E-04	2,10E-03	2,65E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,72E-04	1,69E-03	2,71E-04	5,00E-04	-4,36E-03
Ozone depletion pot.	kg CFC-11e	1,09E-06	2,36E-08	1,07E-07	1,22E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,56E-08	9,26E-08	2,32E-08	2,53E-08	-5,92E-08
Acidification potential	mol H ⁺ e	1,38E-01	5,85E-03	5,72E-03	1,49E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,51E-02	1,48E-02	1,41E-02	6,20E-03	-5,01E-02
EP-freshwater ²⁾	kg Pe	2,11E-03	1,24E-04	2,72E-04	2,50E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,84E-05	3,16E-04	1,06E-04	7,19E-05	-4,25E-03
EP-marine	kg Ne	1,48E-02	1,89E-03	2,26E-03	1,90E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	7,01E-03	4,98E-03	6,23E-03	2,36E-03	-1,14E-02
EP-terrestrial	mol Ne	5,20E-01	2,06E-02	2,21E-02	5,63E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	7,68E-02	5,42E-02	6,83E-02	2,58E-02	-1,31E-01
POCP (“smog”) ³⁾	kg NMVOce	1,30E-01	8,30E-03	9,72E-03	1,48E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,29E-02	2,31E-02	2,04E-02	9,25E-03	-4,10E-02
ADP-minerals & metals ⁴⁾	kg Sbe	4,15E-05	4,44E-06	4,42E-06	5,04E-05	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,01E-07	1,54E-05	7,70E-06	1,39E-06	-9,10E-05
ADP-fossil resources	MJ	1,69E+02	2,32E+01	1,02E+02	2,94E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,19E+01	6,63E+01	2,00E+01	2,15E+01	-1,12E+02
Water use ⁵⁾	m ³ e depr.	1,17E+01	1,14E-01	1,37E+00	1,31E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,47E-02	3,25E-01	7,10E-02	6,20E-02	-6,18E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

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	6,51E+00	1,59E-07	1,08E-07	6,51E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,30E-07	3,71E-07	2,80E-06	1,41E-07	-8,05E-07
Ionizing radiation ⁶⁾	kBq 11235e	2,43E+03	2,01E-02	4,93E+00	2,44E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	9,71E-03	8,30E-02	1,98E-02	1,35E-02	-5,72E-02
Ecotoxicity (freshwater)	CTUe	2,81E+01	3,27E+00	2,89E+00	3,42E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,21E+00	8,79E+00	1,82E+00	1,80E+00	-2,80E+01
Human toxicity, cancer	CTUh	9,96E-08	2,65E-10	4,03E-09	1,04E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,72E-10	8,04E-10	2,37E-10	1,61E-10	-2,11E-09
Human tox. non-cancer	CTUh	5,89E-02	1,49E-08	1,30E-08	5,89E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,73E-09	4,16E-08	8,47E-09	3,71E-09	-8,56E-08
SQP ⁷⁾	-	8,61E+02	2,32E+01	1,17E+02	1,00E+03	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,54E+00	3,95E+01	3,95E+00	4,23E+01	-5,89E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

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 ⁸⁾	MJ	6,38E+01	3,17E-01	1,24E+01	7,64E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,39E-01	1,13E+00	3,72E-01	2,07E-01	-8,72E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	6,38E+01	3,17E-01	1,24E+01	7,64E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,39E-01	1,13E+00	3,72E-01	2,07E-01	-8,72E+00
Non-re. PER as energy	MJ	2,07E+02	2,32E+01	9,79E+01	3,28E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,19E+01	6,63E+01	2,00E+01	2,15E+01	-1,12E+02
Non-re. PER as material	MJ	2,40E+00	0,00E+00	1,04E+00	3,44E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,92E+00	-4,79E-01	0,00E+00
Total use of non-re. PER	MJ	2,09E+02	2,32E+01	9,89E+01	3,31E+02	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,19E+01	6,63E+01	1,81E+01	2,10E+01	-1,12E+02
Secondary materials	kg	2,31E+01	9,88E-03	8,50E-03	2,31E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	9,10E-03	3,03E-02	9,39E-03	5,40E-03	4,13E+00
Renew. secondary fuels	MJ	3,15E+01	1,25E-04	7,31E-05	3,15E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,38E-05	3,83E-04	9,74E-05	1,12E-04	-9,26E-04
Non-ren. secondary fuels	MJ	3,82E+01	0,00E+00	0,00E+00	3,82E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	4,89E-01	3,41E-03	3,23E-02	5,25E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,45E-03	8,91E-03	1,95E-03	2,23E-02	-1,34E-01

8) PER = Primary energy resources.

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	3,12E-01	3,92E-02	6,01E-02	4,12E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,44E-02	9,61E-02	2,96E-02	2,37E-02	-2,81E+00
Non-hazardous waste	kg	1,26E+01	7,24E-01	2,29E+01	3,63E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	3,32E-01	2,01E+00	6,04E-01	5,42E-01	-2,50E+01
Radioactive waste	kg	1,65E-03	4,92E-06	1,03E-03	2,68E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,38E-06	2,06E-05	4,98E-06	3,29E-06	-6,68E-06

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	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	9,57E-01	0,00E+00	1,49E-01	1,11E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	3,30E+02	0,00E+00	0,00E+00
Materials for energy rec	kg	7,32E-03	0,00E+00	6,96E-01	7,03E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	3,27E+00	0,00E+00	8,06E+00	1,13E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Electricity	MJ	0,00E+00	0,00E+00	1,21E+00	1,21E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	6,84E+00	6,84E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	4,90E+01	1,60E+00	2,74E+00	5,33E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,67E+00	4,72E+00	1,52E+00	8,75E-01	-1,11E+01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, deep geothermal, World, Ecoinvent, (0.2%) Electricity production, hydro, run-of-river, World, Ecoinvent, (13.5%) Electricity production, peat, Finland, Ecoinvent, (5.5%) Electricity production, photovoltaic, 3kWp flat-roof installation, multi-Si, World, Ecoinvent, (5.4%) Electricity production, wind, 1-3MW turbine, onshore, Finland, Ecoinvent, (3.4%) Electricity production, nuclear, boiling water reactor (72%)
Electricity CO2e / kWh	0.583
District heating data source and quality	Market for heat, district or industrial, natural gas (Reference product: heat, district or industrial, natural gas)
District heating CO2e / kWh	0.0564

End-of-life scenario documentation - C1-C4 (Data source)

Scenario information	Value
Deconstructing process – kWh of energy used	4.646 kWh
Collection process – kg collected with mixed waste	0 kg
Recovery process – kg for re-use	0 kg
Recovery process – kg for recycling	329.71 kg
Recovery process – kg for energy recovery	0 kg
Disposal (total) – kg for final deposition	140.17 kg
Scenario assumptions e.g. transportation	50 km transportation to landfill, 50km to concrete recycling, 250km for steel recycling

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

D.V as an authorized verifier for EPD Hub Limited 23.04.2026

