



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

HDG Steel Safety pole
Sähkö-Jokinen Oy



EPD HUB, HUB-5712

Published on 13.03.2026, last updated on 13.03.2026, valid until 12.03.2031

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	Sähkö-Jokinen Oy
Address	Rauhalammintie 13, 29600 Noormarkku, Finland
Contact details	asiakaspalvelu@sahkojokinen.fi
Website	https://sahkojokinen.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	Manufactured product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Iida Aaltonen, project engineer, Sähkö-Jokinen Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Elma Avdyli 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	HDG Steel Safety pole
Additional labels	KAPU® safety pole product family
Product reference	KAPU®-HE group, KAPU®-NE group
Place(s) of raw material origin	Finland, Sweden
Place of production	Pori, Finland
Place(s) of installation and use	Estonia, Finland, Iceland, Lithuania, Sweden, United Kingdom
Period for data	01/01/2025-31/12/2025
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	+5% / +33%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	45,7

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of hot-dip galvanized steel pole
Declared unit mass	1 kg
Mass of packaging	0,0082 kg
GWP-fossil, A1-A3 (kgCO₂e)	1,96
GWP-total, A1-A3 (kgCO₂e)	1,96
Secondary material, inputs (%)	88,7
Secondary material, outputs (%)	85
Total energy use, A1-A3 (kWh)	10,2
Net freshwater use, A1-A3 (m³)	0,02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Sähkö-Jokinen is a leading developer and manufacturer of outdoor lighting products in Finland. The core of our operations lies in collision-safe lighting poles and their high-quality concrete bases. Our innovative product design and use of modern technology have made us a forerunner in our field.

PRODUCT DESCRIPTION

The declared product is a hot-dip galvanized safety lighting pole. The unique structure of the KAPU® pole reduces the risk passenger injury. Sähkö-Jokinen Oy manufactures two types of KAPU® poles, KAPU®-HE and KAPU®-NE. In the event of a collision, the body of the KAPU®-HE pole absorbs the kinetic energy of the colliding vehicle and reduces the speed to a safe level, protecting the passengers in the vehicle as well as other road users. The cone-shaped pole complies with the requirements the highest energy absorption category of the EN 12767 standard, HE,100. KAPU-HE poles in this category can be used on all roads to increase safety. The KAPU®-HE poles are recommended on busy roads where there is a pedestrian and bicycle way or trees behind the poles. The non-energy absorbing KAPU®-NE poles give way to a vehicle in the event of a collision. The Finnish Transport Agency recommends using the KAPU®-NE poles on busy roads where there is no pedestrian or bicycle way or trees behind the poles. the structure complies with the requirements of the safety category NE100,2, and KAPU-NE poles can also be mounted on bridges. All KAPU poles are manufactured by Sähkö-Jokinen Oy in the production plant located at Noormarkku in Pori, Finland. The safety pole is made from hot-dip galvanized steel sheet. Detailed technical information can be found from the manufacturers webpage on <https://sahkojokinen.fi/>.

Further information can be found at:
<https://sahkojokinen.fi/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	100	EU
Minerals	0	-
Fossil materials	0	-
Bio-based materials	0	-

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	0,00261

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of hot-dip galvanized steel pole
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

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	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.

The safety pole is made from hot-dip galvanized steel. The steel coils are shaped and rolled in Sweden and delivered to the manufacturer's site. The coils are cut and shaped to form the product in its final size and shape, then welded and assembled. The safety pole is hot-dip galvanized (HDG) offsite. The finished product is packed and prepared for distribution. The manufacturing process requires electricity for powering the production equipment and light oil burning for heating the manufacturing site. Wooden package material and plastic packaging rings are used as packaging materials for transporting the safety poles to the dedicated market places.

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.

The factory uses grid electricity for its operations. Production losses and other waste generated in the manufacture of this product are minimal and were not considered in the assessment.

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.

Average distance of transportation from production plant to retailers site is assumed as 400 km and the transportation method is assumed to be lorry. About 90-95% of all the transportations are made in Finland and they are less than 300km. This 400km distance is a calculated average from all the transportations made in Finland and outside Finland. The installation of the product is considered to be made with a diesel vehicle. Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. To be conservative, empty

returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as product is packaged properly. Environmental impacts from installation into the construction site include generation of waste packaging materials (A5) and release of biogenic carbon dioxide from wooden packaging material. The impacts of material production, its processing and its disposal as installation waste are also assessed. Diesel consumption for the assembly are considered, too.

Diesel consumption is based on the research by Bozdag, Ö. & Secer, M. 2007: Energy consumption of RC buildings during their life cycle. Waste treatment assumptions are the following:

- Wooden pallets: recycled 32%, incinerated 30%, landfilled 38%
- Plastic: recycled 40%, incinerated 37%, landfilled 23%

Waste is delivered to the nearest (50 km) waste treatment facility.

The distance of waste transport is estimated to be typical in the EU. Waste management of packaging materials is based on EU statistical data (<https://ec.europa.eu>). Wood waste management of packaging materials is based on EU statistical data (source:

https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519174/default/table?lang=en).

Plastic waste management of packaging materials is based on EU statistical data (source:

https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519242/default/table?lang=en).

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 product is considered to be dismantled by a diesel vehicle and energy use is estimated to be the same as in installation. Diesel consumption is

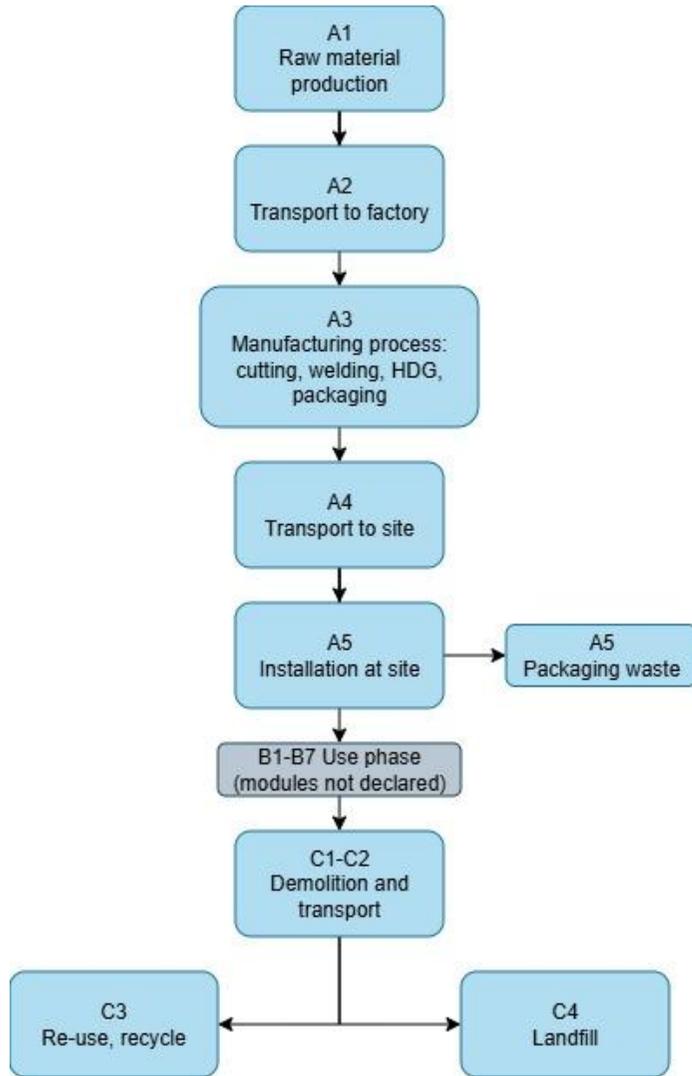
based on the research by Bozdag, Ö. & Secer, M. 2007: Energy consumption of RC buildings during their life cycle. It is assumed that the steel waste is collected separately and transported to the waste treatment facility. Transportation distance to waste treatment plant is assumed to be 150 km and the transportation method is assumed to be lorry (C2). Module C3 accounts for energy and resource inputs for sorting and treating of steel for recycling. Landfilled material is included in module C4. Due to the material recovery potential of the product and material and energy recovery potential of its packaging, recycled raw materials lead to avoided virgin material production and the energy recovered from incineration replaces electricity and heat from primary sources. Benefits and loads from incineration and recycling are included in Module D.

Waste treatment for steel is the following (source:

<https://worldsteel.org/wp-content/uploads/Life-cycle-inventory-LCI-study-2020-data-release.pdf>):

- recycled 85%
- landfilled 15%

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.

This LCA study includes the provision of all materials, transportation, energy and emission flows, and end of life processing of product. All industrial processes from raw material acquisition and pre-processing, production, product distribution and installation and end-of-life management are included. Due to lack of data, some ancillary materials are excluded but they do not exceed the 1% cut-off criteria. These include materials which are used in the product manufacturing only in very small amounts and have a negligible impact on the emissions of the product. 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	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

All estimations and assumptions regarding the cut off criteria and the allocation are declared in the part “Cut-off Criteria except the estimations/assumptions below:

Proxy data is used for certain materials due to their unavailability in the database.

- Module A1: Steel elements are assumed to be made of 30% recycled material.
- Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation

emission in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints.

- Module A4: Transportation does not cause losses as products are packaged properly. Also, volume capacity utilization factor is assumed to be 1 for the nested packaged products. Additionally, transportation distances are assumed based on a particular scenario of customer's premises in 400km and a lorry is the assumed vehicle type used.
- Module A5: Packaging waste is declared as installation waste.
- Module C2: Transportation distance to waste handling facility is estimated as 150km and the transportation method is assumed as lorry.
- Module C3, C4, D: The product undergoes separate collection and a certain percentage of each material is assumed to be recycled, incinerated and landfilled. Ash from incineration processes is assumed negligible. The recycled end-of-life materials are assumed to serve as secondary raw materials in manufacturing while the materials incinerated displace electricity and heat production.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on worst-case results
Variation in GWP-fossil for A1-A3, %	+5% / +33%

The averaging of products and manufacturing sites is calculated based on a representative product in the series. The variation in GWP fossil for modules A1-A3 between the representative product KAPU-HE 8S60, the smallest product KAPU-NE 6S60 (+33%) and the biggest product KAPU-HE 12T6025 (+5%). The representative product is KAPU-HE 8S60 and it is from KAPU-HE product family. The declared unit 1 kg of hot-dip galvanized safety pole is

representative for a product consisting of hot-dip galvanized steel with weight of 0,821 kg and thickness 2 mm, and general steel with weight of 0,177 kg and welding wire filler with weight of 0,003kg. The thickness of the galvanization coating is on average < 90 µm per side, the coating being double-sided. Certain variability is possible for products in the series depending on their size. The smallest product KAPU-NE 6S60 consists of hot-dip galvanized steel with weight of 0,987 kg and thickness 2 mm, general steel with weight of 0,009 kg and welding wire filler with weight of 0,004kg, and the largest product KAPU-HE 12T6025 consists of hot-dip galvanized steel with weight of 0.847 kg and thickness 2 mm, general steel with weight of 0.148 kg and welding wire filler with weight of 0.002kg.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.3. 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 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

EUROSTAT,
https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519174/default/table?lang=en

EUROSTAT,
https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519242/default/table?lang=en

Bozdag, Ö. & Secer, M. 2007. Energy consumption of RC buildings during their life cycle.

World Steel Association, <https://worldsteel.org/wp-content/uploads/Life-cycle-inventory-LCI-study-2020-data-release.pdf>

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	1,55E+00	1,16E-01	2,99E-01	1,96E+00	5,91E-02	1,36E-02	ND	3,61E-03	2,79E-02	1,92E-02	9,37E-04	-1,36E+00						
GWP – fossil	kg CO ₂ e	1,53E+00	1,15E-01	3,08E-01	1,96E+00	5,91E-02	4,00E-03	ND	3,60E-03	2,78E-02	1,92E-02	9,36E-04	-1,35E+00						
GWP – biogenic	kg CO ₂ e	1,26E-02	2,41E-05	-9,50E-03	3,09E-03	1,29E-05	9,57E-03	ND	3,68E-07	6,08E-06	-4,08E-05	-2,98E-07	-3,60E-03						
GWP – LULUC	kg CO ₂ e	2,20E-03	4,65E-05	9,03E-05	2,33E-03	2,62E-05	7,94E-07	ND	3,69E-07	1,23E-05	2,37E-05	5,35E-07	-2,22E-03						
Ozone depletion pot.	kg CFC ₋₁₁ e	1,91E-08	1,95E-09	5,01E-09	2,61E-08	8,26E-10	5,98E-11	ND	5,52E-11	3,89E-10	2,58E-10	2,71E-11	-4,96E-09						
Acidification potential	mol H ⁺ e	4,29E-02	4,24E-04	7,67E-04	4,41E-02	1,97E-04	3,41E-05	ND	3,25E-05	9,28E-05	2,29E-04	6,64E-06	-6,61E-03						
EP-freshwater ²⁾	kg Pe	5,79E-04	8,27E-06	6,45E-05	6,52E-04	4,59E-06	1,78E-07	ND	1,04E-07	2,16E-06	1,24E-05	7,70E-08	-6,58E-04						
EP-marine	kg Ne	2,73E-03	1,36E-04	1,52E-04	3,01E-03	6,38E-05	1,67E-05	ND	1,51E-05	3,01E-05	5,06E-05	2,53E-06	-1,25E-03						
EP-terrestrial	mol Ne	1,78E-01	1,48E-03	1,58E-03	1,81E-01	6,94E-04	1,72E-04	ND	1,65E-04	3,27E-04	5,72E-04	2,76E-05	-1,37E-02						
POCP (“smog”) ³⁾	kg NMVOCe	5,32E-03	5,88E-04	7,00E-04	6,61E-03	2,74E-04	5,14E-05	ND	4,93E-05	1,29E-04	1,69E-04	9,90E-06	-4,66E-03						
ADP-minerals & metals ⁴⁾	kg Sbe	1,20E-04	3,67E-07	2,67E-07	1,20E-04	1,94E-07	2,06E-09	ND	1,29E-09	9,14E-08	1,36E-06	1,49E-09	-9,38E-05						
ADP-fossil resources	MJ	2,24E+01	1,62E+00	4,42E+00	2,84E+01	8,29E-01	5,11E-02	ND	4,72E-02	3,90E-01	2,58E-01	2,30E-02	-1,24E+01						
Water use ⁵⁾	m ³ e depr.	6,97E-01	7,77E-03	2,83E-02	7,33E-01	3,84E-03	2,26E-04	ND	1,18E-04	1,81E-03	4,64E-03	6,63E-05	-3,93E-01						

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	4,11E-07	9,34E-09	3,92E-09	4,25E-07	4,69E-09	9,52E-10	ND	9,25E-10	2,21E-09	3,10E-09	1,51E-10	-8,92E-08						
Ionizing radiation ⁶⁾	kBq 11235e	1,34E-01	1,67E-03	4,54E-02	1,81E-01	6,71E-04	3,13E-05	ND	2,09E-05	3,16E-04	2,19E-03	1,44E-05	4,81E-02						
Ecotoxicity (freshwater)	CTUe	3,72E+01	2,31E-01	3,51E-01	3,78E+01	1,31E-01	3,94E-03	ND	2,60E-03	6,17E-02	1,50E-01	1,93E-03	-2,52E+01						
Human toxicity, cancer	CTUh	1,80E-09	1,97E-11	3,07E-11	1,85E-09	1,00E-11	5,11E-13	ND	3,71E-13	4,73E-12	1,72E-11	1,73E-13	-7,79E-10						
Human tox. non-cancer	CTUh	3,26E-08	1,01E-09	1,67E-09	3,53E-08	5,19E-10	1,34E-11	ND	5,87E-12	2,44E-10	1,17E-09	3,97E-12	-2,49E-08						
SQP ⁷⁾	-	4,78E+00	1,05E+00	7,67E-01	6,59E+00	4,95E-01	6,99E-03	ND	3,30E-03	2,33E-01	5,02E-01	4,52E-02	-4,15E+00						

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	8,16E+00	2,48E-02	2,12E-01	8,39E+00	1,14E-02	-1,17E-01	ND	2,99E-04	5,35E-03	4,81E-02	2,22E-04	-1,49E+00						
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,39E-01	1,39E-01	0,00E+00	-1,39E-01	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,20E-02						
Total use of renew. PER	MJ	8,16E+00	2,48E-02	3,51E-01	8,53E+00	1,14E-02	-2,56E-01	ND	2,99E-04	5,35E-03	4,81E-02	2,22E-04	-1,46E+00						
Non-re. PER as energy	MJ	2,24E+01	1,62E+00	4,41E+00	2,84E+01	8,29E-01	4,71E-02	ND	4,72E-02	3,90E-01	2,58E-01	2,30E-02	-1,24E+01						
Non-re. PER as material	MJ	0,00E+00	0,00E+00	4,79E-03	4,79E-03	0,00E+00	-4,79E-03	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,80E-03						
Total use of non-re. PER	MJ	2,24E+01	1,62E+00	4,41E+00	2,84E+01	8,29E-01	4,23E-02	ND	4,72E-02	3,90E-01	2,58E-01	2,30E-02	-1,24E+01						
Secondary materials	kg	8,87E-01	7,32E-04	4,97E-04	8,88E-01	3,72E-04	2,23E-05	ND	1,96E-05	1,75E-04	3,15E-04	5,78E-06	7,70E-01						
Renew. secondary fuels	MJ	2,26E-04	9,16E-06	4,93E-06	2,40E-04	4,74E-06	7,88E-08	ND	5,12E-08	2,23E-06	1,46E-05	1,20E-07	-1,09E-04						
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	1,60E-05	1,60E-05	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00						
Use of net fresh water	m ³	1,78E-02	2,19E-04	3,30E-03	2,13E-02	1,10E-04	-6,92E-06	ND	3,12E-06	5,17E-05	1,37E-04	2,39E-05	-6,86E-03						

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	2,49E-01	2,58E-03	1,76E-02	2,69E-01	1,44E-03	7,85E-05	ND	5,25E-05	6,81E-04	1,69E-03	2,54E-05	-4,23E-01						
Non-hazardous waste	kg	4,75E+00	5,06E-02	3,30E-01	5,13E+00	2,71E-02	1,85E-02	ND	7,15E-04	1,28E-02	6,09E-02	5,80E-04	-3,52E+00						
Radioactive waste	kg	8,50E-04	4,13E-07	1,06E-05	8,61E-04	1,64E-07	7,72E-09	ND	5,12E-09	7,74E-08	5,60E-07	3,52E-09	1,24E-05						

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	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00						
Materials for recycling	kg	0,00E+00	0,00E+00	1,40E-05	1,40E-05	0,00E+00	2,64E-03	ND	0,00E+00	0,00E+00	8,50E-01	0,00E+00	0,00E+00						
Materials for energy rec	kg	0,00E+00	0,00E+00	2,20E-06	2,20E-06	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00						
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,34E-02	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	0,00E+00	0,00E+00	0,00E+00	5,65E-03	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	0,00E+00	0,00E+00	0,00E+00	7,75E-03	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00						

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

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 ₂ e	1,64E+00	1,15E-01	3,06E-01	2,06E+00	5,88E-02	4,16E-03	ND	3,59E-03	2,77E-02	1,92E-02	9,28E-04	-1,35E+00						
Ozone depletion Pot.	kg CFC ₁₁ e	1,98E-08	1,55E-09	3,97E-09	2,53E-08	6,60E-10	4,74E-11	ND	4,37E-11	3,11E-10	2,13E-10	2,15E-11	-5,33E-09						
Acidification	kg SO ₂ e	2,53E-02	3,25E-04	6,26E-04	2,63E-02	1,51E-04	2,40E-05	ND	2,29E-05	7,10E-05	1,84E-04	4,91E-06	-5,43E-03						
Eutrophication	kg PO ₄ ³ e	5,77E-03	7,47E-05	8,95E-05	5,94E-03	3,67E-05	5,76E-06	ND	5,34E-06	1,73E-05	2,66E-05	1,56E-06	-8,62E-04						
POCP (“smog”)	kg C ₂ H ₄ e	5,40E-04	2,81E-05	4,42E-05	6,13E-04	1,35E-05	1,84E-06	ND	1,71E-06	6,36E-06	1,09E-05	4,65E-07	-7,15E-04						
ADP-elements	kg Sbe	1,20E-04	3,58E-07	2,64E-07	1,21E-04	1,89E-07	2,00E-09	ND	1,26E-09	8,92E-08	1,36E-06	1,46E-09	-9,38E-05						
ADP-fossil	MJ	1,81E+01	1,60E+00	3,70E+00	2,34E+01	8,18E-01	5,06E-02	ND	4,68E-02	3,85E-01	2,20E-01	2,28E-02	-1,33E+01						

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	1,53E+00	1,16E-01	3,08E-01	1,96E+00	5,91E-02	4,01E-03	ND	3,61E-03	2,78E-02	1,92E-02	9,37E-04	-1,36E+00						

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

1. Electricity, medium voltage, residual mix, Finland, Ecoinvent, 0.66 kgCO₂e/kWh
2. Heat production, light fuel oil, at boiler 100kW, non-modulating, Albania, Ecoinvent, 0.10 kgCO₂e/MJ

Transport scenario documentation - A4 (Transport resources)

1. Transport, freight, lorry 16-32 metric ton, EURO5, 400 km

Transport scenario documentation A4

Scenario parameter	Value
Capacity utilization (including empty return) %	100
Bulk density of transported products	7,10E+03
Volume capacity utilization factor	1

Installation scenario documentation - A5 (Installation resources)

1. Diesel, burned in building machine, Ecoinvent, 0.01 kWh

Installation scenario documentation - A5 (Installation waste)

1. Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Materials for recycling, 0.0026 kg
2. Treatment of waste wood, untreated, municipal incineration, Ecoinvent, 0.0024 kg
3. Exported Energy: Electricity, Ecoinvent, 0.0054 MJ
4. Exported Energy: Electricity, Ecoinvent, 2.5E-4 MJ
5. Exported Energy: Thermal, Ecoinvent, 0.0074 MJ
6. Exported Energy: Thermal, Ecoinvent, 3.5E-4 MJ
7. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 0.003 kg
8. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent,

Materials for recycling, 4.0E-5 kg

9. Treatment of waste polyethylene, municipal incineration, Ecoinvent, 3.7E-5 kg

10. Treatment of waste polyethylene, sanitary landfill, Ecoinvent, 2.3E-5 kg

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

1. Diesel, burned in building machine, Ecoinvent, 0.01 kWh
2. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 0.85 kg
3. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.15 kg

Scenario information	Value
Scenario assumptions e.g. transportation	0

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

Elma Avdyli as an authorized verifier for EPD Hub Limited 13.03.2026



ANNEX I: DECLARED KAPU-NE AND KAPU-HE PRODUCTS BY TYPE AND THEIR WEIGHTS

KAPU-NE straight poles

Type	Weight (kg)
KAPU-NE 6 S 60*	48
KAPU-NE 7 S 60	50
KAPU-NE 8 S 60	55
KAPU-NE 10 S 60	88
KAPU-NE 11 S 60	97
KAPU-NE 12 S 60	102

* Smallest product

KAPU-NE single-arm poles

Type	Weight (kg)
KAPU-NE 8 P 60 10	58
KAPU-NE 8 P 60 15	60
KAPU-NE 8 P 60 20	63
KAPU-NE 8 P 60 25	65
KAPU-NE 10 P 60 10	91
KAPU-NE 10 P 60 15	94
KAPU-NE 10 P 60 20	97
KAPU-NE 10 P 60 25	99
KAPU-NE 12 P 60 10	107
KAPU-NE 12 P 60 15	109
KAPU-NE 12 P 60 20	112
KAPU-NE 12 P 60 25	114

KAPU-NE double-arm poles

Type	Weight (kg)
KAPU-NE 8 T 60 10	64
KAPU-NE 8 T 60 15	69
KAPU-NE 8 T 60 20	73
KAPU-NE 8 T 60 25	77
KAPU-NE 10 T 60 10	97
KAPU-NE 10 T 60 15	102
KAPU-NE 10 T 60 20	106
KAPU-NE 10 T 60 25	110
KAPU-NE 12 T 60 10	117
KAPU-NE 12 T 60 15	119
KAPU-NE 12 T 60 20	124
KAPU-NE 12 T 60 25	129

KAPU-HE straight poles

Type	Weight (kg)
KAPU-HE 8 S 60**	70
KAPU-HE 10 S 60	106
KAPU-HE 11 S 60	118
KAPU-HE 12 S 60	123

** Representative product

KAPU-HE single-arm poles

Type	Weight (kg)
KAPU-HE 8 P 60 10	73
KAPU-HE 8 P 60 15	75
KAPU-HE 8 P 60 20	77
KAPU-HE 8 P 60 25	80
KAPU-HE 10 P 60 10	109
KAPU-HE 10 P 60 15	112
KAPU-HE 10 P 60 20	115
KAPU-HE 10 P 60 25	117
KAPU-HE 12 P 60 10	128
KAPU-HE 12 P 60 15	132
KAPU-HE 12 P 60 20	135
KAPU-HE 12 P 60 25	135

KAPU-HE double-arm poles

Type	Weight (kg)
KAPU-HE 8 T 60 10	79
KAPU-HE 8 T 60 15	82
KAPU-HE 8 T 60 20	85
KAPU-HE 8 T 60 25	87
KAPU-HE 10 T 60 10	115
KAPU-HE 10 T 60 15	120
KAPU-HE 10 T 60 20	125
KAPU-HE 10 T 60 25	128
KAPU-HE 12 T 60 10	135
KAPU-HE 12 T 60 15	140
KAPU-HE 12 T 60 20	145
KAPU-HE 12 T 60 25 ***	150

*** Largest product