ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Screened Separable Connector 630 A
Ensto Finland Oy

EPD HUB, HUB-6330
Published on 16.05.2026, last updated on 16.05.2026, valid until 16.05.2031

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	Ensto Finland Oy
Address	Ensio Miettisen katu 2 P.O.Box 77 06150 Porvoo Finland and Ensto Estonia As Keki tn 1, 76606 Keila Estonia
Contact details	ensto@ensto.com, sales@ensto.com
Website	ensto.com

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	Electrical product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5,B6, and modules C1-C4, D
EPD author	Xiang Hu, Ensto Finland Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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	Screened Separable Connector 630 A
Additional labels	-
Product reference	-
Place(s) of raw material origin	EU and Asia
Place of production	Finland, Porvoo and Estonia, Keila
Place(s) of installation and use	Europe and Globe
Period for data	Calendar year 2025
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	-18% / 2%
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	4,37

ENVIRONMENTAL DATA SUMMARY

Declared unit	1-Screened separable connector kit
Declared unit mass	5,94 kg
Mass of packaging	0,55 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	34,5
GWP-total, A1-A3 ($kgCO_2e$)	34,2
Secondary material, inputs (%)	5,92
Secondary material, outputs (%)	51
Total energy use, A1-A3 (kWh)	145
Net freshwater use, A1-A3 (m^3)	0,53

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Ensto is an international, growth-oriented family business and technology company, which creates sustainable solutions for electricity distribution. For 67 years, we have been dedicated to electricity with a long-term and human-centric approach. Our aim is to become a trusted partner for our customers and help them succeed and create a more sustainable tomorrow.

We offer innovative and reliable, long-lifecycle line and cable accessories, distribution and protection automation and control solutions as well as substations for electricity systems. Our own R&D, manufacturing, and laboratories give us the expertise to continually innovate and serve our customers on an individual level.

We are bound by our common purpose: making life better with electricity.

PRODUCT DESCRIPTION

Screened separable connector for 1-core cables with Al/Cu conductor, polymeric insulation and cu-wire screen. They are used for connecting 12 – 42 kV cables to oil or gas insulated transformers, switchgear and other equipment in indoor or outdoor installations. The kit contains components for three cable cores. Mechanical lugs and all components for screen connection are included in the kit. The nominal current of CONT630 connectors is 630 A and they are suitable for bushings type C1/C2 according to EN 50180 and EN 50181.
The separable connectors are designed to offer a safe, reliable and easy way of connecting medium voltage cables to transformers, motors and particularly gas-insulated switchgear in both indoor and outdoor settings. Ensto's extended range offers advanced 4S Technology and tested reliability especially for renewable energy grids, and primary and secondary substations internal cabling, meeting the growing demands of modern power distribution networks.

The innovative, unbeatable 4S Technology, Stepless Shearing Screw and Silicone, ensures a faster, easier and more reliable installation. As the silicone insulation is elastic it enhances durability and environmental resistance. The stepless shearing screw always cuts off at the right spot and guarantees the connection consistency. With the complete, wide product range of broad application possibilities, installers need fewer connector types for less product variations, which simplifies inventory and reduces costs.

PRODUCT

CONT630-24Lx(-y)
CONT630-42Lx(-y)
CONTB630-24Lx(-y)
CONTB630-42Lx(-y)
CONT630-24Lx-PL
CONT630-42Lx-PL
CONTB630-24Lx-PL
CONTB630-42Lx-PL
CONTW630-24Lx
CONTW630-42Lx-WIND
CONTWB630-24Lx
CONTWB630-42Lx-WIND
CONT630-24x.STE
CONT630-42x.STE
CONTB630-24x.STE
CONTB630-42x.STE

x-95, 150, 240, 300, 400; y-customer specific identifier.

More information from product web:
https://www.ensto.com/solutions/line-and-cable-accessories/underground-cable-accessories/separable-connectors/

Further information can be found at: ensto.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	30	EU
Minerals	48	EU
Fossil materials	22	EU
Bio-based materials	-	-

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	0,2457

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1-Screened separable connector kit
Mass per declared unit	5,94 kg
Functional unit	1-Screened separable connector kit to enable electrical interfacing within a medium-voltage cable system by providing one unit and its packaging that supports the connection of power cables and/or their termination to electrical equipment, operating under the same service conditions as the cable, with a reference service life (RSL) of 30 years, and ensuring a safe and reliable electrical performance throughout its intended use.
Reference service life	30 years

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
Lead	231-100-4	7439-92-1

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	x	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 environmental impacts considered during the product stage include the manufacturing of raw materials, packaging, and ancillary materials used in production and assembly. These ancillary materials cover machinery-related inputs and supporting materials.
Energy consumption by machines and the management of waste generated during production at the manufacturing facilities are also part of this stage. Material losses occurring during manufacturing and electricity transmission are considered. Manufacturing waste includes metal, plastic and chemical. All material loss represents less than 1% of the total material-related impacts in stages A1–A3.

The materials included in the product family of screened separable connectors primarily consist of metals (mainly aluminum and copper), silicone, plastics, polymer composites (e.g., sealing compounds, silicone greases), and various packaging, labeling, and printed instructional materials.
Along with packaging and ancillary additives, raw materials are transported by truck and ship to the production facilities. Metal preforms are machined, and some components undergo surface treatments, such as tinning and washing. Additional outsourced surface treatments are also included.
At Ensto site, finished metal parts are manufactured, and pre-assembled, silicone-based separable connectors are produced. Final assembly of the kits, including accessories, takes place at the Ensto site as well.
Renewable electricity is used in manufacturing sites.
A cut-off rule was applied for factory forklift fuel emissions. Material transport distances from suppliers to the factory were estimated based on each supplier's country of origin. Electricity consumption for manufacturing was allocated based on annual production data from January to December 2025. This allocation accounts for multiple parallel machining lines with different outputs and technologies, as each product component may be

produced across various lines in the same facility.
Final products are assembled at the same facility. After final assembly, components are packaged in plastic bags and cardboard boxes, which are placed on wooden pallets. These pallets are assumed to consist of 80% virgin and 20% recycled wood, reflecting the packaging manufacturing burden in the system.
The environmental impacts considered during the product stage include the manufacturing of raw materials, packaging materials, and ancillary components. All primary raw materials are sourced externally, while Ensto performs material conversion processes such as metal machining and silicone extrusion.
The representative product was selected based on items of the group's annual production in 2025, and all other products are in the same product group. The modeling and calculations are based on primary and secondary data collected from Ensto's manufacturing operations and suppliers.
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)

Transportation impacts (A4) include direct exhaust emissions from fuel combustion, environmental impacts from fuel production, and emissions related to transportation infrastructure. These impacts stem from delivering the final product to the construction site.
The products analyzed are sold globally. Average shipping and trucking distances were calculated, based on the modeling of representative products included in the averaged product system. On average, a product and its packaging are transported 1,500 km by truck. The truck loading factor accounts for partial loads and empty return trips.

The installation phase (A5) does not result in losses of the product itself.

Waste generated during installation is limited to packaging materials and minor installation accessories. These include cardboard and paper packaging, plastic packaging materials (e.g. films, ties), and wooden pallets used for transportation.
Packaging waste is modelled based on the declared unit and is treated according to typical European waste management practices. For paper and cardboard packaging, the applied treatment assumptions are 83% recycling and 17% energy recovery. Plastic packaging waste is treated through a combination of recycling (37%), energy recovery via incineration (63%), and no landfill disposal. Wooden packaging waste is assumed to be treated through a mix of recycling, energy recovery, and disposal, with 32% recycled wood waste, 30% untreated wood, and 38% energy recovery.
Waste collection, sorting, transport, and treatment processes are included in module A5. Transport distances for packaging waste treatment are modelled as 50 km for paper, cardboard, plastic and wood waste, and 100 km for mixed and textile-related waste streams, in accordance with default assumptions in One Click LCA and ecoinvent-based datasets.
The assumptions applied for installation waste generation and treatment are based on One Click LCA datapoints and underlying ecoinvent database references.

PRODUCT USE AND MAINTENANCE (B1-B7)

EPD follows additional requirements for products considered as Electronic or Electric Equipment. Maintenance is not investigated as actions are not needed or possible during connector's lifespan. Product is replaced when distribution network infrastructure is under maintenance or re-build. The B6 Energy consumption is investigated via energy losses. The respective grid electricity dataset has been used in the LCI stage. The connector's connection dissipates energy due to Joule effect throughout its lifetime. A reference service life (RSL) of 30 years has been defined for the separable connector, representing its expected technical lifetime under normal operating conditions in a medium-voltage cable system. Considering the

linear resistivity of the product (6,5 · 10-5 Ω/m) and lifetime (30 years), joule effect is calculated under 1 A of current.

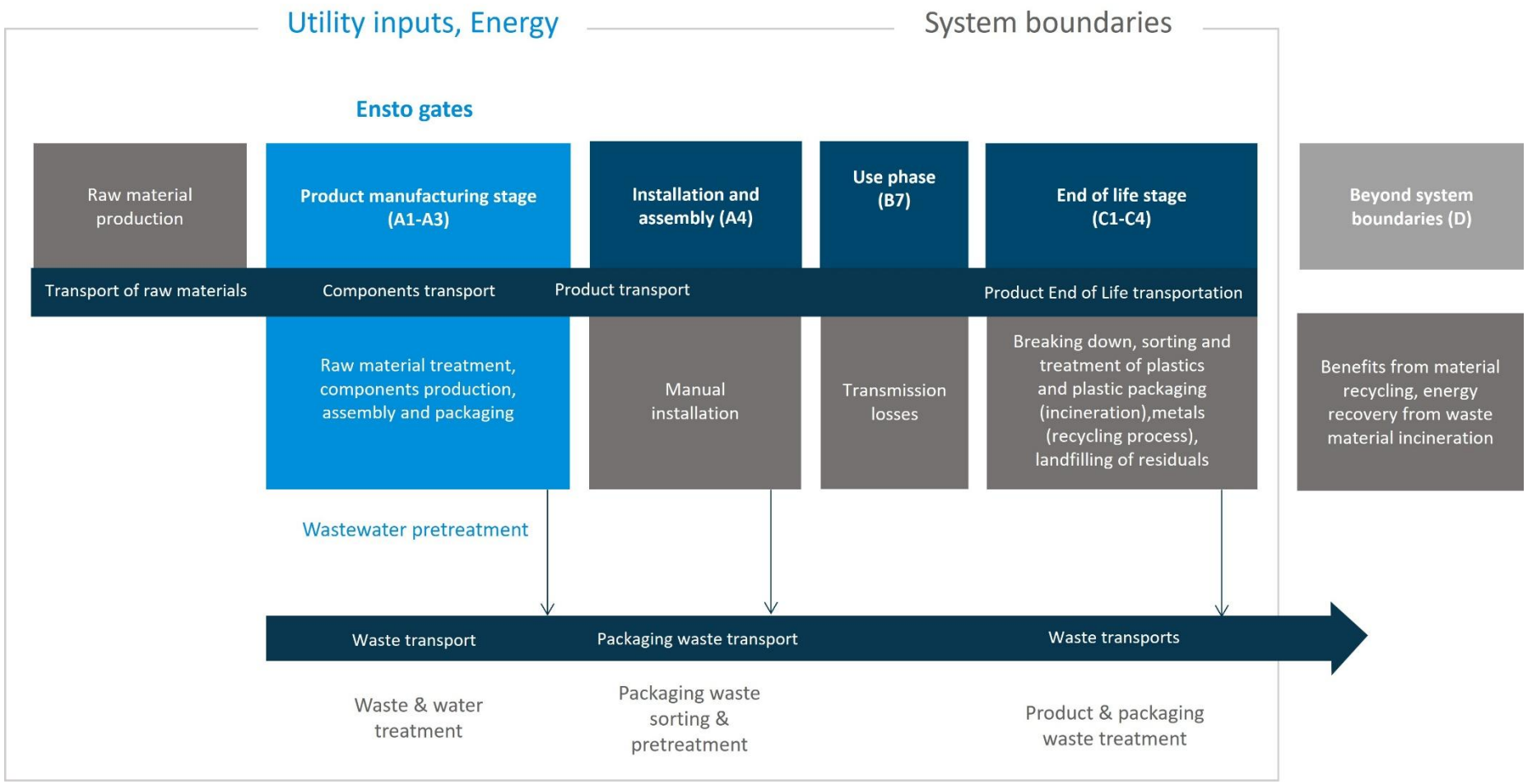
P(kWh)= I2 ·R·RSL·L·N
I: current (A),
R: resistivity (ρ),
RSL: reference service life (h), 100% use rate for 30 years,
L: length (m),
N: number of phases.

The respective grid electricity dataset has been used in the LCI stage (Energy supply, electricity transformation and distribution, distribution of medium voltage)
When comparing cable losses in the same scenario, the connector has less impact compared to cable. Following the principles of IEC 60228:2004, the maximum allowed resistance (20°C AC resistance) of a 240 mm aluminum conductor is defined to be 0,125 Ω/km. Connector's measured resistance in representative product is approximately 50% from the cable specification in example when comparing in the same geometrical proportion.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

It is assumed that if the product is de-installed, this will occur manually during an update of the electricity distribution system, or the product will enter the waste stream as part of the deconstruction of the entire underground electricity distribution network.
The recovered connector is assumed to undergo a shredding process, during which metals are separated for recycling. Waste is assumed to be collected separately and transported by lorry to a waste treatment facility.
The end-of-life scenario (C1-C4) has been modelled in accordance with EN 50693. Due to the broad geographical market in which the product may be sold, it is not possible to determine exact transport distances to waste treatment facilities. Therefore, conservative transport distances have been assumed based on expert judgement and common European practice. Transport of waste materials to treatment facilities is assumed to be carried out by road freight transport. The following average distances are applied: 250 km to recycling facilities, 150 km to incineration plants, and 50 km to landfill sites. These assumptions are applied consistently to different material fractions, including metals, plastics, and silicone materials (modelled under the "glass category in the LCA model), and are considered representative for a conservative end-of-life scenario.
Benefits and loads beyond the system boundary (Module D) are calculated based on the material flows defined in modules A5 and C1–C4, in accordance with the applicable PCR, EN 50693, and EN 15804. The potential environmental benefits and burdens from recycling and incineration processes are modelled using representative proxy datasets from the ecoinvent database.
No recycled content in raw materials or packaging materials is considered in the calculation of Module D benefits and loads, in order to avoid any potential double counting.
The products covered by this EPD are mainly sold and used within Europe. Accordingly, the end-of-life (EoL) scenarios described in modules C1–C4 and D are representative of typical European conditions.
End-of-life assumptions for the product are modelled in accordance with EN 50693, while packaging waste treatment is based on European waste management statistics published by Eurostat. The applied scenarios reflect current and commonly used practices in Europe and are considered representative of one of the most likely end-of-life scenarios for this product category.
The representativeness of the applied EoL scenarios is supported by publicly available Eurostat data, including statistics on packaging waste generation and treatment in the European Union (EUROSTAT references provided). These sources are used as a reference to ensure that the end-of-life modelling is consistent with prevailing European waste treatment practices.

MANUFACTURING PROCESS



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

The amount of raw materials, packaging material and ancillary materials are based on the actual measurements of the products' composition. Manufacturing energy and waste are allocated using a physical, by-mass approach.

EN 15804:2012 + A2:2019 and program operator's product category rules: EPD Hub's General Program Instructions v. 1.3 24 March 2025 and Core Product Category Rules v. 1.22 24 March 2025 ,and as well as according to ISO 21930:2017 Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services. EPD life cycle assessment follows also the rules of the ECO Platform, as set out in the Verification Guidelines document: Verification Guidelines for ECO EPD Programme Operators, Version 8.0, December 2024

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	-18% / 2%

The product series is produced in the same manufacturing location with similar or identical raw material and components. The products under the separable connectors have similar but non-linearly scalable geometrical form and share of raw materials and they serve similar function. The production covers Ensto Porvoo site and Ensto Keila site.
Variation in GWP fossil is from -18% to 2%, the CONT630-24L240 as the representative product, as the standard value of 0%.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.5. 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‘.

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 3.11 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.11 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.
This EPD follows requirements for construction products considered as electric equipment. Assessment EPD is Based on
- EPD Hub Core Product Category Rules version 1.2, March 2025
- EPD Hub General Program Instructions version 1.3, March 2025
- EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- EN 15941:2024 Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data
- EN 15942:2011 Sustainability of construction works - Environmental product declarations - Communication format business-to-business
- ISO 14025:2006 Environmental statements and programmes for products - Principles and general requirements
- ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework
- ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines
- EUROSTAT, https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519259/default/table?lang=en
- 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

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_2e	3,23E+01	1,43E+00	5,37E-01	3,42E+01	1,88E+00	8,09E-01	ND	ND	ND	ND	ND	3,78E-07	ND	0,00E+00	1,07E-01	1,28E+00	1,48E+00	-5,74E+00
GWP – fossil	kg CO_2e	3,20E+01	1,43E+00	1,10E+00	3,45E+01	1,88E+00	2,02E-01	ND	ND	ND	ND	ND	3,77E-07	ND	0,00E+00	1,06E-01	1,28E+00	1,48E+00	-5,36E+00
GWP – biogenic	kg CO_2e	6,68E-02	3,18E-04	-5,76E-01	-5,08E-01	3,73E-04	6,07E-01	ND	ND	ND	ND	ND	3,80E-10	ND	0,00E+00	2,41E-05	-3,08E-04	9,24E-04	-3,17E-01
GWP – LULUC	kg CO_2e	1,90E-01	6,34E-04	1,22E-02	2,03E-01	6,65E-04	2,78E-05	ND	ND	ND	ND	ND	2,60E-10	ND	0,00E+00	4,76E-05	2,17E-04	2,06E-04	-6,07E-02
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	2,07E-04	2,16E-08	3,13E-08	2,08E-04	3,74E-08	3,37E-10	ND	ND	ND	ND	ND	5,38E-15	ND	0,00E+00	1,57E-09	1,32E-09	1,10E-08	-6,58E-08
Acidification potential	mol H^+e	2,47E-01	4,80E-03	4,37E-03	2,56E-01	5,89E-03	1,52E-04	ND	ND	ND	ND	ND	2,96E-09	ND	0,00E+00	3,63E-04	1,09E-03	1,69E-03	-5,34E-02
EP-freshwater[2)]	kg Pe	4,40E-02	1,11E-04	4,09E-04	4,46E-02	1,25E-04	6,96E-06	ND	ND	ND	ND	ND	1,41E-09	ND	0,00E+00	8,29E-06	6,58E-05	7,42E-05	-2,18E-02
EP-marine	kg Ne	4,33E-02	1,56E-03	1,30E-03	4,62E-02	1,98E-03	1,84E-04	ND	ND	ND	ND	ND	1,40E-09	ND	0,00E+00	1,19E-04	3,17E-04	9,21E-04	-1,23E-02
EP-terrestrial	mol Ne	4,74E-01	1,70E-02	1,10E-02	5,02E-01	2,16E-02	5,80E-04	ND	ND	ND	ND	ND	1,20E-08	ND	0,00E+00	1,30E-03	3,11E-03	4,32E-03	-1,61E-01
POCP ("smog")[3)]	kg NMVOCe	1,48E-01	7,11E-03	5,07E-03	1,60E-01	9,23E-03	2,07E-04	ND	ND	ND	ND	ND	3,24E-09	ND	0,00E+00	5,35E-04	8,50E-04	1,78E-03	-3,87E-02
ADP-minerals & metals[4)]	kg Sbe	7,97E-04	4,04E-06	4,87E-06	8,06E-04	6,16E-06	1,50E-07	ND	ND	ND	ND	ND	1,17E-12	ND	0,00E+00	2,97E-07	2,99E-06	2,32E-06	-3,78E-04
ADP-fossil resources	MJ	4,87E+02	2,08E+01	2,42E+01	5,32E+02	2,64E+01	3,17E-01	ND	ND	ND	ND	ND	3,22E-06	ND	0,00E+00	1,55E+00	1,71E+00	6,89E+00	-6,84E+01
Water use[5)]	m^3e depr.	2,18E+01	1,03E-01	6,38E-01	2,26E+01	1,30E-01	1,32E-02	ND	ND	ND	ND	ND	4,49E-07	ND	0,00E+00	7,63E-03	1,07E-01	1,18E-01	-5,87E+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	1,88E-06	1,42E-07	4,25E-08	2,06E-06	1,48E-07	5,08E-09	ND	ND	ND	ND	ND	3,25E-14	ND	0,00E+00	1,07E-08	1,07E-08	1,94E-08	-5,09E-07
Ionizing radiation[6)]	kBq U235e	3,48E+00	1,86E-02	1,47E-01	3,64E+00	3,37E-02	9,46E-04	ND	ND	ND	ND	ND	6,82E-09	ND	0,00E+00	1,35E-03	1,48E-02	8,70E-03	-6,81E-01
Ecotoxicity (freshwater)	CTUe	1,78E+03	2,92E+00	1,10E+02	1,89E+03	3,47E+00	5,19E+00	ND	ND	ND	ND	ND	2,83E-06	ND	0,00E+00	2,19E-01	7,89E+00	1,37E+03	-1,80E+03
Human toxicity, cancer	CTUh	2,69E-08	2,37E-10	6,27E-10	2,78E-08	3,21E-10	3,87E-11	ND	ND	ND	ND	ND	7,08E-16	ND	0,00E+00	1,76E-11	1,55E-10	4,66E-10	-4,91E-09
Human tox. non-cancer	CTUh	3,60E-07	1,34E-08	7,72E-09	3,82E-07	1,66E-08	1,37E-09	ND	ND	ND	ND	ND	1,63E-14	ND	0,00E+00	1,00E-09	7,92E-09	5,25E-09	-7,32E-08
SQP[7)]	-	1,70E+02	2,05E+01	5,47E+01	2,45E+02	1,57E+01	3,30E-01	ND	ND	ND	ND	ND	1,91E-06	ND	0,00E+00	1,56E+00	1,16E+00	2,11E+00	-3,10E+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	5,03E+01	2,89E-01	4,20E+00	5,48E+01	4,57E-01	-9,58E+00	ND	ND	ND	ND	ND	1,16E-07	ND	0,00E+00	2,12E-02	2,41E-01	1,55E-01	-2,14E+01
Renew. PER as material	MJ	1,67E+00	0,00E+00	7,69E+00	9,36E+00	0,00E+00	-7,71E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	-1,65E+00	2,24E+00
Total use of renew. PER	MJ	5,20E+01	2,89E-01	1,19E+01	6,42E+01	4,57E-01	-1,73E+01	ND	ND	ND	ND	ND	1,16E-07	ND	0,00E+00	2,12E-02	2,41E-01	-1,50E+00	-1,92E+01
Non-re. PER as energy	MJ	4,30E+02	2,08E+01	1,66E+01	4,68E+02	2,64E+01	-6,41E+00	ND	ND	ND	ND	ND	3,22E-06	ND	0,00E+00	1,55E+00	-1,61E+01	-1,43E+01	-6,84E+01
Non-re. PER as material	MJ	2,99E+01	0,00E+00	7,42E+00	3,73E+01	0,00E+00	-7,53E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	-1,28E+01	-1,70E+01	3,55E+00
Total use of non-re. PER	MJ	4,60E+02	2,08E+01	2,40E+01	5,05E+02	2,64E+01	-1,39E+01	ND	ND	ND	ND	ND	3,22E-06	ND	0,00E+00	1,55E+00	-2,89E+01	-3,13E+01	-6,49E+01
Secondary materials	kg	3,51E-01	8,88E-03	2,55E-01	6,15E-01	1,21E-02	4,90E-04	ND	ND	ND	ND	ND	5,77E-06	ND	0,00E+00	6,58E-04	9,93E-04	9,77E-03	2,88E+00
Renew. secondary fuels	MJ	7,00E-02	1,13E-04	1,33E-01	2,04E-01	1,53E-04	3,84E-06	ND	ND	ND	ND	ND	2,84E-11	ND	0,00E+00	8,35E-06	7,87E-05	3,27E-05	1,17E-02
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	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	5,14E-01	3,06E-03	1,47E-02	5,31E-01	3,56E-03	-5,39E-04	ND	ND	ND	ND	ND	4,66E-09	ND	0,00E+00	2,28E-04	2,00E-03	-3,47E-03	-1,27E-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	4,89E+00	3,49E-02	6,29E-02	4,99E+00	3,79E-02	4,71E-03	ND	ND	ND	ND	ND	3,95E-07	ND	0,00E+00	2,62E-03	2,89E-02	2,50E-01	-1,16E+00
Non-hazardous waste	kg	1,04E+02	6,50E-01	4,73E+00	1,10E+02	8,00E-01	7,22E-01	ND	ND	ND	ND	ND	1,27E-05	ND	0,00E+00	4,84E-02	8,50E-01	4,71E+00	-1,67E+01
Radioactive waste	kg	8,78E-04	4,56E-06	3,75E-05	9,20E-04	8,38E-06	2,36E-07	ND	ND	ND	ND	ND	1,74E-12	ND	0,00E+00	3,29E-07	3,66E-06	2,22E-06	-1,80E-04

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	ND	ND	ND	ND	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	1,32E-02	1,32E-02	0,00E+00	4,26E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	3,03E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	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	1,42E+00	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	5,75E+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	5,96E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	2,42E+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	8,25E-01	ND	ND	ND	ND	ND	0,00E+00	ND	0,00E+00	0,00E+00	3,33E+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_2e	3,20E+01	1,43E+00	1,11E+00	3,46E+01	1,87E+00	2,84E-01	ND	ND	ND	ND	ND	3,73E-07	ND	0,00E+00	1,06E-01	1,28E+00	1,48E+00	-5,41E+00
Ozone depletion Pot.	kg CFC_{-11}e	2,21E-04	1,73E-08	2,54E-08	2,21E-04	2,98E-08	2,76E-10	ND	ND	ND	ND	ND	4,64E-15	ND	0,00E+00	1,25E-09	1,16E-09	9,73E-09	-5,58E-08
Acidification	kg SO_2e	2,03E-01	3,67E-03	3,47E-03	2,10E-01	4,47E-03	1,14E-04	ND	ND	ND	ND	ND	2,20E-09	ND	0,00E+00	2,77E-04	8,58E-04	1,36E-03	-4,03E-02
Eutrophication	kg PO_4^3e	5,58E-01	8,95E-04	1,23E-02	5,71E-01	1,14E-03	7,48E-05	ND	ND	ND	ND	ND	7,96E-10	ND	0,00E+00	6,76E-05	1,67E-04	2,59E-04	-8,11E-03
POCP (“smog”)	kg C_2H_4e	1,43E-02	3,29E-04	4,48E-04	1,50E-02	4,26E-04	3,04E-05	ND	ND	ND	ND	ND	1,56E-10	ND	0,00E+00	2,47E-05	5,01E-05	1,03E-04	-3,36E-03
ADP-elements	kg Sbe	7,80E-04	3,94E-06	4,75E-06	7,89E-04	6,02E-06	1,46E-07	ND	ND	ND	ND	ND	8,23E-13	ND	0,00E+00	2,90E-07	2,95E-06	1,57E-06	-3,74E-04
ADP-fossil	MJ	4,27E+02	2,05E+01	2,16E+01	4,69E+02	2,59E+01	3,01E-01	ND	ND	ND	ND	ND	3,11E-06	ND	0,00E+00	1,52E+00	1,47E+00	6,75E+00	-5,68E+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_2e	3,22E+01	1,43E+00	1,11E+00	3,47E+01	1,88E+00	2,02E-01	ND	ND	ND	ND	ND	3,77E-07	ND	0,00E+00	1,07E-01	1,28E+00	1,48E+00	-5,42E+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

Scenario parameter	Value
Electricity data source and quality	1. Wind Electricity in Finland
Electricity kg CO2e / kWh	0.0165
Electricity data source and quality	2. Wind Electricity in Estonia
Electricity kg CO2e / kWh	0.0165
Electricity data source and quality	3. Electricity from solar panel
Electricity kg CO2e / kWh	0.0802
District heating data source and quality	4. Heating from natural gas
District heating kg CO2e / MJ	0.0389
District heating data source and quality	5. Heating from propane
District heating kg CO2e / MJ	0.0945
District heating data source and quality	6. Heat from diesel
District heating kg CO2e / MJ	0.0359

Transport scenario documentation A4

Scenario parameter	Value
Fuel type, consumption, and vehicle type. Eg, electric truck, diesel powered truck	Diesel truck 16-32 metric ton, EURO5, 1500 km
Average transport distance, km	Truck 1500 km
Capacity utilization (including empty return) %	50
Bulk density of transported products	4,41E+02
Volume capacity utilization factor	<1

Installation scenario documentation - A5 (Installation waste)

Ancillary materials for installation (specified by material) / kg or other units as appropriate	• A5 x EoL Cardboard packaging EU scenario, 0.242 kg/ FU

	• A5 x EoL Paper packaging EU scenario, 0.1043 kg/ FU • A5 x EoL Plastic packaging EU scenario, 0.131803 kg/FU • Treatment of waste plastic, mixture, sanitary landfill, 0.02097 kg/FU • A5 x EoL Plastic packaging EU scenario, 0.0152 kg/FU • Treatment of waste yarn and waste textile, unsanitary landfill, 0.0364 kg/FU • A5 x EoL Wood packaging EU scenario, 0.25 kg/FU
Water use / m³	0.0000013
Other resource use / kg	0

Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	1,32
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	0
Scenario assumptions e.g. transportation	100 km truck transportation to collection

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

Scenario information	Value
Collection process – kg collected separately	4,62

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.

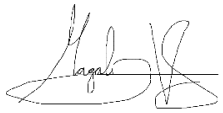
The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

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

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
23.05.2026



APPENDIX - SCALING TABLE

A1-A3 EN15804+A2					
Product	GWP total	GWP fossil	GWP biogenic	GWP -LULUC	Weight including packaging, scaling factor
	kg CO2e/FU	kg CO2e/FU	kg CO2e/FU	kg CO2e/FU	kg/kg
CONT630-24L240	5,27	5,32	-0,08	0,03	1,00
CONT630-24Lx(-y)	5,12	5,17	-0,09	0,03	0,94
CONT630-42Lx(-y)	4,87	4,92	-0,07	0,02	1,05
CONTB630-24Lx(-y)	5,36	5,41	-0,08	0,04	0,87
CONTB630-42Lx(-y)	5,24	5,27	-0,05	0,02	1,04
CONT630-24Lx-PL	5,12	5,17	-0,09	0,03	0,94
CONT630-42Lx-PL	4,87	4,92	-0,07	0,02	1,05
CONTB630-24Lx-PL	5,36	5,41	-0,08	0,04	0,87
CONTB630-42Lx-PL	5,24	5,27	-0,05	0,02	1,04
CONTW630-24Lx	5,30	5,33	-0,06	0,03	1,21
CONTW630-42Lx-WIND	5,38	5,40	-0,03	0,02	1,49
CONTWB630-24Lx	5,36	5,38	-0,05	0,03	1,17
CONTWB630-42Lx-WIND	5,28	5,28	-0,02	0,02	1,51
CONT630-24x.STE	4,46	4,51	-0,08	0,03	1,36
CONT630-42x.STE	4,30	4,35	-0,09	0,05	1,55
CONTB630-24x.STE	4,56	4,61	-0,07	0,03	1,29
CONTB630-42x.STE	4,62	4,66	-0,08	0,04	1,55

x-95, 150, 240, 300, 400; y-customer specific identifier.

These results are generated with OneClick LCA based on different designs. Result variations arise from differences in product dimensions, as all products in the series are manufactured at the same site using similar or identical materials and components.