

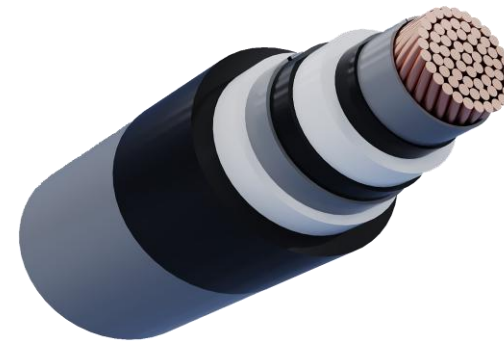


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

38/66 kV Single-core Cu/XLPE/Lead/HDPE power cable

Energya Power Cables



EPD HUB, HUB-5911

Published on 03.04.2026, last updated on 03.04.2026, valid until 02.04.2031

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.



Prepared By: EPD SUSTAIN
Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Energya Power Cables
Address	10th of Ramadan city, 3rd Industrial zone, Al-Sharqia Governorate, Egypt.
Contact details	Eng. Raafat Atta – QHSE & Sustainability Director. Mail: raafat.atta@energyacables.com Eng. Ahmed Samy – Quality Assurance Manager. Mail: ahmed.Sami@energyacables.com
Website	www.energyacables.com

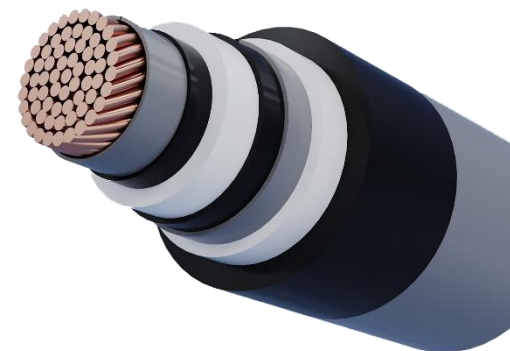
EPD STANDARDS, SCOPE AND VERIFICATION

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
Scope of the EPD	Cradle to gate with options, A4-A5, B6, and modules C1-C4 and D
EPD author	Samaa Ahmed Mohamed Mostafa - EPD Sustain
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	Sarah Curpen 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.

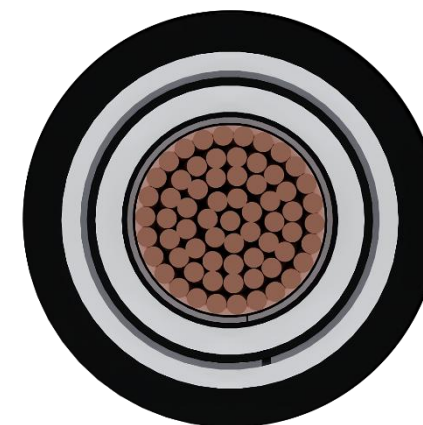
PRODUCT

Product name	38/66 kV Single-core 400 mm ² Cu/XLPE/Lead/HDPE power cable
Product reference	H66L14DULH
Place(s) of raw material origin	UAE, Egypt
Place of production	10 th of Ramadan City, Al-Sharqia Governorate, Egypt
Place(s) of installation and use	EU
Period for data	Financial year (1/7/2024 - 30/06/2025)
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	Not applicable
A1-A3 Specific data (%)	0,67



ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m high voltage cables
Declared unit mass	12,53 kg
Mass of packaging	2,57 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	39,4
GWP-total, A1-A3 (kgCO ₂ e)	36,1
Secondary material, inputs (%)	99
Secondary material, outputs (%)	56
Total energy use, A1-A3 (kWh)	167
Net freshwater use, A1-A3 (m ³)	0,88



PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Energya Industries is a leading regional manufacturer in the field of electrical industries and building materials with an exceptional history spanning over 80 years. Our commitment to excellence and innovation is the pillar that assists our goals in exceeding our customers' expectations. Over the last decades, Energya Industries successfully managed to build an extremely solid brand equity with elevated degree of quality and excellence in the field of electrical cables, steel fabrication, cement manufacturing, and arrangement of EPC construction solutions. Through its core divisions, Energya Industries continues to power progress on a global scale, delivering high-performance products and comprehensive industrial solutions. A flagship division of the group is recognized as one of the largest manufacturers of low, medium, high, and extra-high voltage power cables (up to 500 KV) in Egypt and the Middle East. The division also produces a wide range of specialty cables, delivering dependable energy solutions and comprehensive technical support tailored to meet diverse market needs.

PRODUCT DESCRIPTION

The declared product is a High-voltage (38/66 kV) 1-core power cable with a nominal cross-section of 400 mm², featuring a stranded circular compacted copper conductor (in compliance with IEC 60228) with swelling powder, insulated with cross-linked polyethylene (XLPE) in accordance with IEC 60840 and IEC 60811, screened with semi-conductive layers and a lead sheath, and finished with an outer sheath of high-density polyethylene (HDPE). The cable is designed for reliable transmission and distribution applications, and a reference service life (RSL) of 20 years under standard operating conditions. Energya Power Cables manufactures this product using 100% renewable energy—94% from wind (Gabal El-Zayt and Zafarana wind farms) and 6% from solar (Benban and Kom Ombo plants).

Further information can be found at:

www.energyacables.com

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	71	UAE, Egypt
Minerals	-	-
Fossil materials	29	Egypt
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	1,17

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m high voltage cables
Mass per declared unit	12,53 kg
Functional unit	1 m of installed high voltage cable to transmit electricity, expressed for 630 A for 20 years and a 100% use rate.
Reference service life	20 years

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
lead	EC 231-100-4	CAS-No. 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	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 product stage (A1–A3) for this high-voltage (38/66 kV) single-core 400 mm² copper power cable includes all upstream and core processes required to deliver 1 m of finished cable ready for transport to the construction site. Raw-material supply (A1) covers extraction and processing of copper rod, lead-alloy, XLPE and semi-conductive compounds, HDPE sheath compound, water-blocking materials, and all other ancillary materials, together with their respective manufacturing energy, auxiliary substances and emissions. Transport to manufacturing (A2) includes inbound delivery of all raw and packaging materials from suppliers to the Energya Power Cables production site using representative road and, where relevant, maritime transport scenarios.

Manufacturing (A3) comprises the full cable-making process: drawing copper rod to fine wires, stranding the wires into sector-shaped or concentric conductors, extrusion or taping of the semi-conductive conductor screen, triple extrusion and curing of the inner semi-conducting layer, XLPE insulation and outer semi-conducting layer, application of semi-conductive water-blocking tape, extrusion of the lead or lead-alloy sheath, and final extrusion of the HDPE outer sheath. All electricity and fuels used for wire drawing, extrusion, cooling, cutting to length, testing and plant services are included. Material losses and production scrap arising during conductor formation, insulation and sheathing, cutting, and quality control are modeled; copper scrap is routed to metal-recycling processes, while polymer and mixed wastes follow appropriate waste-treatment routes according to local regulations.

Packaging for finished cable lengths is included in A3 and consists primarily of wooden drums and plastic wrapping or film, together with any strapping and protective elements used for storage and transport. The production of wooden drums and plastic packaging materials, their average mass per

meter of cable, and their end-of-life treatment are all accounted for in the product stage. All primary electricity consumed in the manufacturing facility is supplied as certified renewable energy under contractual instruments, with approximately 94% originating from wind power (Gabal El-Zayt and Zafarana wind farms) and 6% from solar PV (Benban and Kom Ombo plants); this contractual green electricity is modeled in accordance with the EPD Hub PCR requirements for A3.

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

Transportation distance is defined according to the PCR. For 1 m of installed cable, transportation to site includes delivery of the product and its packaging over an average distance of 285 km by road and 5,300 km by ship from the manufacturing facility to the construction site. Road transport is modeled with lorries at 100% outbound load utilization; empty returns are assumed to serve other clients and are therefore not allocated to this product. Transport does not cause product losses because the cable is properly packaged, and a volume capacity utilization factor of 100% is assumed for the packed products.

Installation into the building (A5) considers material loss during handling and cutting to length on-site. This loss is treated as installation waste and follows the same end-of-life scenarios as for the product stage.

Environmental impacts from installation in the construction site include waste packaging materials and release of biogenic carbon dioxide from

waste processing of cardboard and wood drums. Electricity consumption for installation of the cable is considered negligible. Further, a 5% product loss during installation, as well as its waste treatment, is included.

Packaging waste generated during installation includes LDPE film and wood drum material. The LDPE is assumed to be sent for plastic waste treatment (landfill or incineration depending on local infrastructure), while the wood drum material is managed through wood waste treatment or recycling pathways.

Cable installation itself is assumed to be manual or mechanically assisted without significant additional resource consumption. No water consumption or hazardous waste generation occurs during the installation process beyond packaging and off-cut waste.

PRODUCT USE AND MAINTENANCE (B1-B7)

The use phase covers modules B1 to B7 in accordance with EN 15804. For the declared product, modules B1 (use), B2 (maintenance), B3 (repair), B4 (replacement), B5 (refurbishment), and B7 (operational water use) are declared not relevant, as the cable does not require maintenance, repair, replacement, or refurbishment, and does not consume water or emit substances during use under normal operating conditions.

Module B6 (operational energy use) is relevant and included. Energy losses are calculated based on resistive losses in the conductor using the equation $P = I^2 \times R$, where I is the operating current (A) and R is the electrical resistance per meter (Ω/m). The calculated power loss per meter (kW/m) is multiplied by the total operating hours over the reference service life to determine the cumulative energy loss (kWh/m). The total operating hours are calculated as $RSL \times 365 \times 24$, assuming continuous operation over the

declared service life.

Losses due to cable resistance, as recommended for ECO Platform EPDs, are calculated for the declared unit (1 m) using a representative continuous-operation scenario. The operating current is assumed to be 630 A, and the conductor resistance is $0.0000559 \Omega/m$ at operating temperature. This results in a power loss of approximately 22.1 W/m and a cumulative energy loss of approximately 3887 kWh per meter over a 20-year reference service life. Results reported for module B6 are scenario-dependent and are comparable only where identical operating assumptions are applied. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

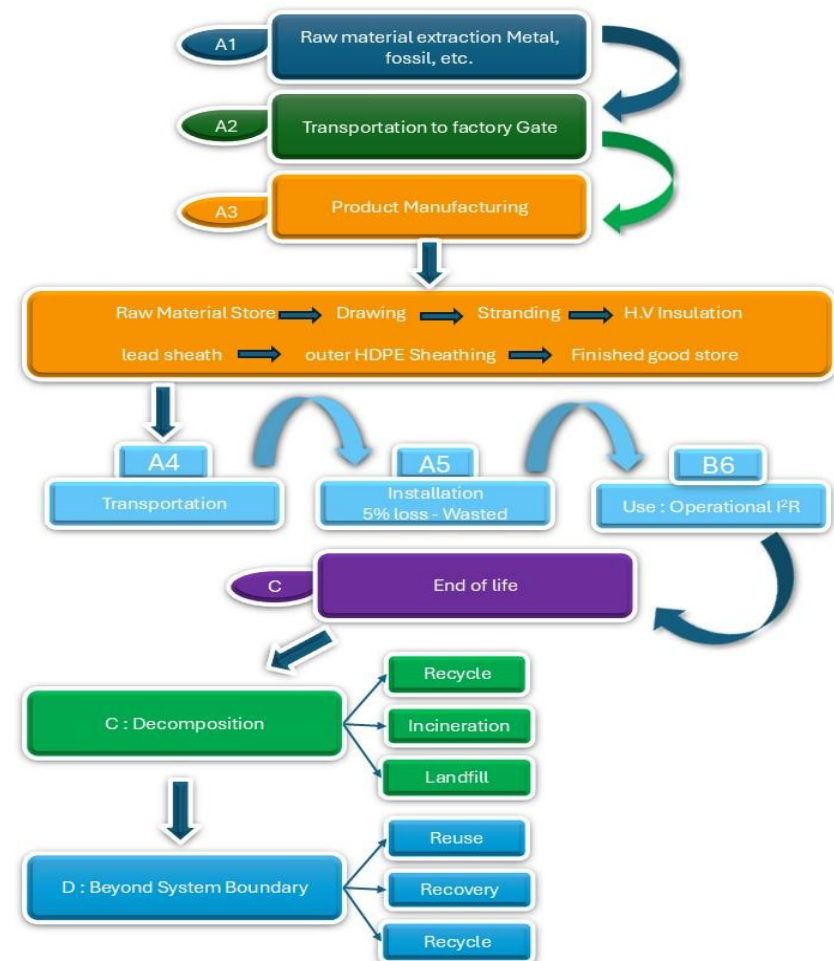
The End-of-Life stage (C1–C4) for the high-voltage single-core copper power cable includes deconstruction, transport, waste processing and final disposal in accordance with EN 15804+A2. At the end of its reference service life, the cable is removed from ducts, trays or buried installations using standard construction machinery as part of general demolition works, and no additional cable-specific processes are modeled; therefore, the environmental loads in C1 are assumed to be negligible.

Module C2 covers the transport of cable waste from the deconstruction site to appropriate treatment facilities. Transport is represented by the end-of-life datasets applied in the model: mixed plastic fractions (XLPE insulation, semi-conductive layers and HDPE outer sheath) use the “Other plastics, electr. dataset, while copper from the conductor and lead from the sheath use the “Copper, electrics (EN 50693) and “Lead, construction datasets, respectively, each of which includes typical European road-transport distances to waste-to-energy, landfill and metal-recycling plants.

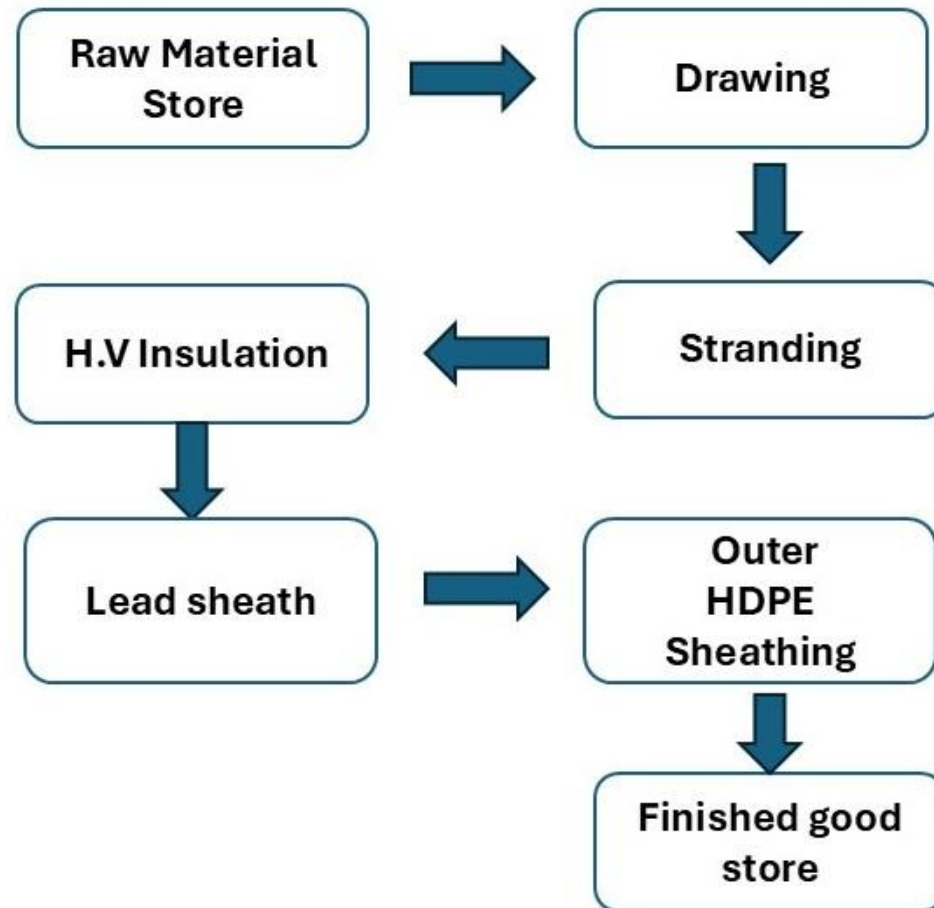
Module C3 (waste processing for reuse, recovery and recycling) is modeled through the same datasets, which include sorting, shredding and mechanical separation prior to recycling or disposal. For the polymer fraction, 50% of the mass is incinerated with energy recovery, 25% is incinerated without energy recovery and 25% is landfilled as inert waste; energy recovery is modeled with a calorific value of 30.79 MJ/kg and EU-average waste-to-energy efficiencies and electricity/heat shares. For copper, 60% of the end-of-life mass is recycled and 40% is sent to landfill as residual waste, in line with EN 50693 guidance for electrical components, while for lead, 90% is recycled and 10% is landfilled, reflecting typical European practice for lead from construction applications.

Module C4 accounts for emissions and burdens associated with the final disposal of unrecovered materials, including the polymer, copper and lead fractions that are not recycled or used for energy recovery. Landfill emissions are modeled using the landfill shares and characterization included in the "Other plastics, electr.", "Copper, electrics (EN 50693) and "Lead, construction datasets and are not modeled separately.

Module D (benefits and loads beyond the system boundary) captures the potential environmental benefits from material and packaging recovery. Credits are assigned for secondary copper and secondary lead replacing primary metal production using the corresponding Module D datasets for "Copper, electrics (EN 50693) and "Lead, construction, and for energy and material recovery from wood and plastic packaging using the EPD Hub Module D datasets for "Wood packaging EU scenario and "Plastic packaging EU scenario. All Module D benefits are calculated using the system-expansion / avoided-burden approach according to EN 15804+A2 and the applicable EPD Hub rules and are reported separately from life-cycle stages A–C.



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.

All relevant processes for raw material supply (A1), transport to manufacturing (A2), manufacturing (A3), construction installation (A4–A5), use stage (B1–B7, where applicable) and end-of-life (C1–C4, D) are included in the system boundaries. The following minor processes are excluded in accordance with EN 15804 and the EPD Hub PCR due to their negligible contribution to total impacts: (i) materials and substances each representing less than 0.1 % of product mass where detailed data are unavailable (e.g. trace additives or catalysts in polymer compounds), (ii) packaging of incoming raw materials such as protective wrapping on copper rod and fillers, (iii) capital goods, buildings and infrastructure (factory construction, maintenance and depreciation of machinery), and (iv) personnel-related energy and water use such as office operations and general lighting. These exclusions do not significantly affect the overall LCA results or omit any known environmental hotspots for the assessed cable.

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	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable

This EPD represents a single high-voltage (38/66 kV) 1-core 400 mm² copper power cable with XLPE insulation, lead sheath and HDPE outer sheath, manufactured at one production site using one defined manufacturing process and bill of materials. No grouping of multiple products, factories or manufacturers is applied; therefore, the declared results are fully representative of this specific cable design and manufacturing site only.

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'. Waste treatment and packaging recycling scenarios are based on : Eurostat. (2023). Packaging waste by waste management operations [Data set]. European Commission. Online data code: env_waspac (custom datasets: env_waspac__custom_8519242; env_waspac__custom_8519174). Available at: https://ec.europa.eu/eurostat/databrowser/view/env_waspac/default/table (Accessed: February 2026).

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	3,83E+01	2,22E-01	-2,44E+00	3,61E+01	1,27E+00	5,59E+00	ND	ND	ND	ND	ND	2,83E+03	ND	ND	4,50E-01	4,47E+00	2,26E+00	-1,64E+01
GWP – fossil	kg CO ₂ e	3,82E+01	2,22E-01	9,58E-01	3,94E+01	1,27E+00	2,18E+00	ND	ND	ND	ND	ND	2,82E+03	ND	ND	4,50E-01	4,47E+00	2,26E+00	-1,66E+01
GWP – biogenic	kg CO ₂ e	8,64E-02	3,97E-05	-3,40E+00	-3,32E+00	2,33E-04	3,40E+00	ND	ND	ND	ND	ND	4,26E+00	ND	ND	9,82E-05	-6,57E-04	-1,89E-04	2,68E-01
GWP – LULUC	kg CO ₂ e	5,10E-02	1,13E-04	2,40E-03	5,35E-02	6,51E-04	2,85E-03	ND	ND	ND	ND	ND	5,61E+00	ND	ND	1,99E-04	2,37E-04	3,04E-05	-2,60E-02
Ozone depletion pot.	kg CFC ₋₁₁ e	5,01E-07	3,23E-09	1,27E-08	5,17E-07	1,90E-08	2,86E-08	ND	ND	ND	ND	ND	1,96E-05	ND	ND	6,29E-09	3,70E-09	1,40E-09	-2,44E-07
Acidification potential	mol H ⁺ e	2,36E+00	4,45E-03	5,66E-03	2,37E+00	2,52E-02	1,20E-01	ND	ND	ND	ND	ND	1,46E+01	ND	ND	1,50E-03	2,91E-03	6,53E-04	-5,06E-01
EP-freshwater ²⁾	kg Pe	1,29E-01	1,07E-05	2,49E-04	1,29E-01	6,15E-05	6,48E-03	ND	ND	ND	ND	ND	1,28E+00	ND	ND	3,50E-05	1,16E-04	8,86E-06	-2,58E-01
EP-marine	kg Ne	9,69E-02	1,13E-03	1,50E-03	9,95E-02	6,28E-03	5,85E-03	ND	ND	ND	ND	ND	2,78E+00	ND	ND	4,86E-04	9,87E-04	2,23E-03	-1,10E-01
EP-terrestrial	mol Ne	1,36E+00	1,25E-02	1,64E-02	1,39E+00	6,97E-02	7,50E-02	ND	ND	ND	ND	ND	2,81E+01	ND	ND	5,28E-03	9,59E-03	3,05E-03	-1,58E+00
POCP (“smog”) ³⁾	kg NMVOCe	4,34E-01	3,52E-03	6,09E-03	4,43E-01	1,98E-02	2,39E-02	ND	ND	ND	ND	ND	8,39E+00	ND	ND	2,09E-03	2,63E-03	8,47E-04	-3,20E-01
ADP-minerals & metals ⁴⁾	kg Sbe	3,75E-02	3,62E-07	5,29E-06	3,75E-02	2,09E-06	1,87E-03	ND	ND	ND	ND	ND	1,61E-02	ND	ND	1,48E-06	1,16E-05	1,97E-07	-1,13E-02
ADP-fossil resources	MJ	6,19E+02	2,90E+00	1,41E+01	6,36E+02	1,67E+01	3,42E+01	ND	ND	ND	ND	ND	3,65E+04	ND	ND	6,31E+00	3,00E+00	9,37E-01	-1,88E+02
Water use ⁵⁾	m ³ e depr.	1,99E+01	1,06E-02	4,66E-01	2,04E+01	6,11E-02	1,06E+00	ND	ND	ND	ND	ND	7,12E+02	ND	ND	2,93E-02	3,21E-01	1,45E-01	-9,10E+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	4,70E-06	1,22E-08	1,37E-07	4,85E-06	6,80E-08	2,57E-07	ND	ND	ND	ND	ND	1,25E-04	ND	ND	3,57E-08	3,15E-08	6,09E-09	-3,41E-06
Ionizing radiation ⁶⁾	kBq 11235e	2,26E+00	1,79E-03	4,04E-02	2,30E+00	1,03E-02	1,19E-01	ND	ND	ND	ND	ND	3,85E+02	ND	ND	5,11E-03	1,68E-02	1,19E-03	-8,44E-01
Ecotoxicity (freshwater)	CTUe	2,18E+03	2,92E-01	6,15E+00	2,18E+03	1,68E+00	1,10E+02	ND	ND	ND	ND	ND	7,52E+03	ND	ND	9,98E-01	9,72E+00	7,44E+00	-3,98E+03
Human toxicity, cancer	CTUh	3,32E-07	4,34E-11	4,67E-09	3,37E-07	2,48E-10	1,69E-08	ND	ND	ND	ND	ND	5,02E-07	ND	ND	7,65E-11	5,12E-10	1,97E-10	-4,05E-08
Human tox. non-cancer	CTUh	3,37E-05	1,18E-09	9,77E-09	3,37E-05	6,76E-09	1,69E-06	ND	ND	ND	ND	ND	2,71E-05	ND	ND	3,95E-09	2,25E-08	8,57E-09	-3,89E-06
SQP ⁷⁾	-	8,48E+02	1,31E+00	4,37E+02	1,29E+03	7,53E+00	6,62E+01	ND	ND	ND	ND	ND	6,59E+03	ND	ND	3,77E+00	4,41E+00	1,21E+00	-3,25E+02

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	8,51E+01	2,92E-02	3,80E+01	1,23E+02	1,68E-01	-3,29E+01	ND	ND	ND	ND	ND	5,53E+03	ND	ND	8,65E-02	4,18E-01	2,39E-02	-6,40E+01
Renew. PER as material	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	ND	0,00E+00	0,00E+00	0,00E+00	2,14E+00
Total use of renew. PER	MJ	8,51E+01	2,92E-02	3,80E+01	1,23E+02	1,68E-01	-3,29E+01	ND	ND	ND	ND	ND	5,53E+03	ND	ND	8,65E-02	4,18E-01	2,39E-02	-6,19E+01
Non-re. PER as energy	MJ	4,63E+02	2,90E+00	9,24E+00	4,76E+02	1,67E+01	2,49E+01	ND	ND	ND	ND	ND	3,65E+04	ND	ND	6,31E+00	-6,28E+01	-6,52E+01	-1,88E+02
Non-re. PER as material	MJ	1,56E+02	0,00E+00	1,29E+00	1,57E+02	0,00E+00	-1,34E+00	ND	ND	ND	ND	ND	0,00E+00	ND	ND	0,00E+00	-1,16E+02	-3,85E+01	1,23E+00
Total use of non-re. PER	MJ	6,19E+02	2,90E+00	1,05E+01	6,32E+02	1,67E+01	2,35E+01	ND	ND	ND	ND	ND	3,65E+04	ND	ND	6,31E+00	-1,78E+02	-1,04E+02	-1,87E+02
Secondary materials	kg	1,24E+01	1,32E-03	9,48E-02	1,25E+01	7,64E-03	6,26E-01	ND	ND	ND	ND	ND	5,23E+00	ND	ND	2,83E-03	3,36E-03	5,38E-04	2,79E+00
Renew. secondary fuels	MJ	7,19E-03	8,08E-06	7,89E-01	7,96E-01	4,67E-05	3,98E-02	ND	ND	ND	ND	ND	3,31E-02	ND	ND	3,61E-05	1,45E-04	1,56E-05	-9,12E-03
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	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	8,69E-01	2,90E-04	1,03E-02	8,80E-01	1,69E-03	4,07E-02	ND	ND	ND	ND	ND	2,00E+01	ND	ND	8,36E-04	5,95E-03	-6,23E-04	-2,98E-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	1,16E+01	4,27E-03	8,35E-02	1,17E+01	2,46E-02	5,95E-01	ND	ND	ND	ND	ND	2,46E+02	ND	ND	1,10E-02	8,91E-02	3,80E-02	-1,99E+00
Non-hazardous waste	kg	9,19E+02	6,75E-02	1,99E+00	9,21E+02	3,88E-01	5,20E+01	ND	ND	ND	ND	ND	6,19E+03	ND	ND	2,06E-01	2,50E+00	5,54E+00	-3,16E+01
Radioactive waste	kg	3,66E-03	4,38E-07	9,92E-06	3,67E-03	2,53E-06	1,84E-04	ND	ND	ND	ND	ND	9,40E-02	ND	ND	1,25E-06	4,27E-06	2,97E-07	-2,08E-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	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	1,25E-01	1,25E-01	0,00E+00	1,54E+00	ND	ND	ND	ND	ND	0,00E+00	ND	ND	0,00E+00	7,02E+00	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	5,00E-04	5,00E-04	0,00E+00	1,83E+00	ND	ND	ND	ND	ND	0,00E+00	ND	ND	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	4,27E+00	ND	ND	ND	ND	ND	0,00E+00	ND	ND	0,00E+00	2,12E+01	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	1,80E+00	ND	ND	ND	ND	ND	0,00E+00	ND	ND	0,00E+00	8,92E+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	2,47E+00	ND	ND	ND	ND	ND	0,00E+00	ND	ND	0,00E+00	1,23E+01	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	3,82E+01	2,22E-01	9,60E-01	3,94E+01	1,27E+00	2,18E+00	ND	ND	ND	ND	ND	2,83E+03	ND	ND	4,50E-01	4,48E+00	2,26E+00	-1,66E+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

1. Electricity production, wind, 1-3MW turbine, onshore, World, Ecoinvent, 0.0156 kgCO₂e/kWh
2. Electricity production, solar thermal parabolic trough, 50 MW, World, Ecoinvent, 0.0538 kgCO₂e/kWh
3. Diesel, burned in diesel-electric generating set, 18.5kW, World, Ecoinvent, 0.10 kgCO₂e/MJ

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry >32 metric ton, EURO6, 285 km
2. Market for transport, freight, sea, container ship, 5300 km

Transport scenario documentation A4

Scenario parameter	Value
Capacity utilization (including empty return) %	100% (outbound full load; return trips used to transport other materials)
Volume capacity utilization factor	1

Installation scenario documentation - A5 (Installation waste)

1. Treatment of waste polyethylene, for recycling, unsorted, sorting, Ecoinvent, Materials for recycling, 0.013 kg
2. Treatment of waste polyethylene, municipal incineration, Ecoinvent, Materials for energy recovery, 0.012 kg
3. Exported Energy: Electricity, Ecoinvent, 0.079 MJ
4. Exported Energy: Electricity, Ecoinvent, 1.72 MJ
5. Exported Energy: Thermal, Ecoinvent, 0.11 MJ
6. Exported Energy: Thermal, Ecoinvent, 2.36 MJ
7. Treatment of waste polyethylene, sanitary landfill, Ecoinvent, Materials for energy recovery, 0.0072 kg
8. Treatment of waste wood, post-consumer, sorting and shredding, Ecoinvent, Materials for recycling, 0.851 kg
9. Treatment of waste wood, untreated, municipal incineration, Ecoinvent, Materials for energy recovery, 0.798 kg
10. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, Materials for energy recovery, 1.011 kg
11. Treatment of used cable, Ecoinvent, Materials for recycling, 0.67 kg

Scenario information	Value
Scenario assumptions e.g. transportation	<p>At end of life, the cable is mechanically removed from ducts, trays or buried installations using standard construction machinery as part of general demolition works; no additional cable-specific machinery or consumables are modeled, and the environmental loads in C1 are therefore assumed to be negligible. Cable waste is then collected and transported by Euro VI 16–32 t trucks to appropriate treatment facilities. Mixed polymer fractions (XLPE insulation, semi-conductive layers and HDPE outer sheath) follow the “Other plastics, electr. end-of-life route, which represents typical European practice with transport to waste-to-energy plants and landfill sites and a split of 50% incineration with energy recovery, 25% incineration without energy recovery and 25% landfill, using average road-transport distances (150 km to incineration and 50 km to landfill). Metal fractions are treated using dedicated end-of-life datasets: copper from the conductor is modeled with “Copper, electrics (EN 50693), which assumes transport of 60% of the copper mass 250 km to metal-recycling facilities and 40% 50 km to landfill as residual waste; lead from the sheath is modeled with “Lead, construction, assuming that 90% of the lead is transported 250 km to specialized lead-recycling facilities and 10% 50 km to landfill. All sorting, shredding, mechanical separation and pre-treatment steps prior to recycling or disposal are included within these datasets, and no additional processes beyond those represented in the background data are modeled. This scenario ensures consistency between the qualitative description in the EPD and the quantitative assumptions implemented in the LCA model for modules C1–C4.</p>

Use stages scenario documentation - B6 (Energy data source)

1. Market group for electricity, low voltage, World, Ecoinvent, 3887.0 kWh

Use stages scenario documentation - B6-B7 Use of energy and use of water

Scenario information	Value
Ancillary materials specified by material / kg or units as appropriate	None – no ancillary materials required during use
Characteristic performance, e.g., energy efficiency, emissions, variation of performance with capacity utilization, etc.	Electrical transmission losses modeled using $P = I^2 \times R$ based on nominal current and conductor resistance; cumulative energy loss calculated over 20-year RSL.
Further assumptions for scenario development, e.g., frequency and period of use, number of occupants	Continuous operation over a 20-year reference service life (175,200 h)

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

1. Treatment of waste plastic, mixture, municipal incineration, Ecoinvent, 1.81 kg
2. Treatment of waste plastic, mixture, municipal incineration, Ecoinvent, 0.91 kg
3. Exported Energy: Electricity, Ecoinvent, 8.92 MJ
4. Exported Energy: Thermal, Ecoinvent, 12.3 MJ
5. Treatment of waste plastic, mixture, sanitary landfill, Ecoinvent, 0.91 kg
6. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 1.97 kg
7. Treatment of scrap steel, inert material landfill, Ecoinvent, 1.31 kg
8. Treatment of scrap steel, inert material landfill, Ecoinvent, 0.56 kg
9. Sorting and pressing of iron scrap, Ecoinvent, Materials for recycling, 5.052 kg

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

Sarah Curpen as an authorized verifier for EPD Hub Limited 03.04.2026



ANNEX: CONVERSION TABLE FOR PRODUCT STAGE (A1-A3) GWP – EN15804+A2

The scaling table in an Environmental Product Declaration (EPD) shows the relationship between the declared unit of a product and the environmental impact in a tabulated form. The scaling table is used to provide a standardized way to compare different products and to adjust the environmental performance data of the product according to its declared unit

No .	Item Code	Description	Unit	Product Weight (kg/m)	(A1-A3) GWP - Fossil (kgCO ₂ e/m)	(A1-A3) GWP - Total (kgCO ₂ e/m)	Scaling Factor by mass	Scaling Factor by total GWP (A1-A3)
1	H66L14DULH	38/66 KV,Cu Cond.,1*400,Lead,HDPE	m	12.5	3.94E+01	3.61E+01	1.00	1.00
2	H66L16DULH	38/66 KV,Cu Cond.,1*630,Lead,HDPE	m	15.8	5.70E+01	5.01E+01	1.26	1.39
3	H66L18DXLH	38/66 KV,Cu Cond.,1*800,XLPE,Lead,HDPE	m	17.6	6.57E+01	6.24E+01	1.41	1.73