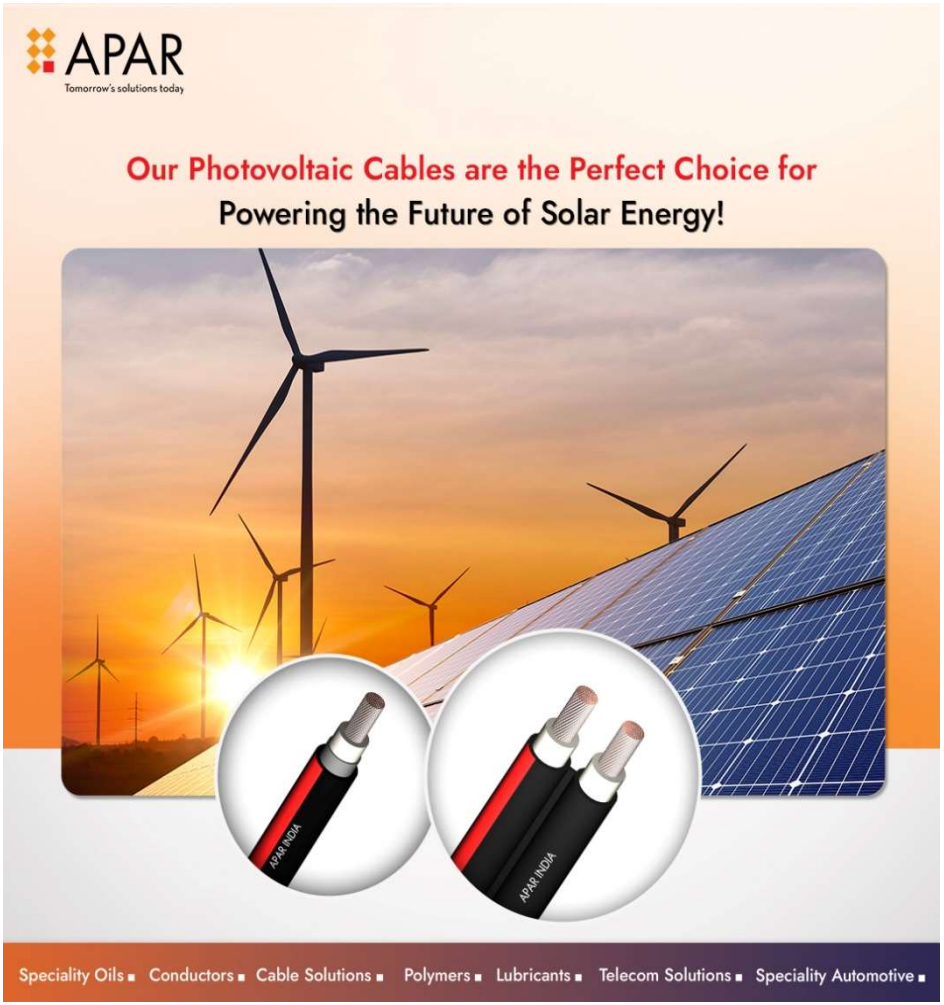


ENVIRONMENTAL PRODUCT DECLARATION

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

H1Z2Z2-K PV Solar Cable 4 Sqmm (ATC/XLPO/XLPO)

APAR Industries Limited

EPD HUB, EPD number AIL/CABLE/EPD/001
Published on 16-12-2024, last updated on 18-12-2024,
valid until 18-12-2029

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	APAR Industries Limited
Address	City Survey No. NA 1990, Village: Khatalwada & Revenue Survey No. 730 & 730/P1 Village: Manekpur, Khatalwada-Manekpur Road, Taluka: Umbergaon, District: Valsad, Gujarat, 396120, India Phone : +91 260 2406100
Contact details	epd.info@apar.com
Website	www.apar.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Manufactured product
Category of EPD	Self-declared EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Umashankar Chauhan & APAR Industries Limited
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☑ Internal verification ☐ External verification
EPD verifier	#VERIFIER#

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	H1Z2Z2-K PV Solar Cable 4 Sqmm (ATC/XLPO/XLPO)
Additional labels	These cables are designed for use at the direct current (DC) side of photovoltaic systems.
Product reference	EN 50618:2014
Place of production	India
Period for data	2024
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Km of PV Solar Cable	
Cable Size	4 Sqmm	6 Sqmm
Declared unit mass	59.62 kg	79.44 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	3.39E+02	4.65E+02
GWP-total, A1-A3 ($kgCO_2e$)	3.41E+02	4.68E+02
Secondary material, inputs (%)	0.18	0.17
Secondary material, outputs (%)	32.4	76.7
Total energy use, A1-A3 (kWh)	1820	2510
Net freshwater use, A1-A3 (m^3)	279	416

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

APAR Industries Limited is a billion-dollar company that holds a leadership position in its principal business segments. We, today, operate our businesses: Speciality Oils, Conductors, Cables, Lubricants, Speciality Automotives and Polymers across 125+ countries.

For over six decades, we have been leading the innovation curve and meeting various international performance standards. As a customer-focused, technology-driven company, our innovation-first mindset has helped us develop strong in-house research and development capabilities. We are a trusted name among major OEMs, Utilities, Power Generation, Transmission and Distribution Companies globally to deliver cost-effective, quality products and services.

These cables are used for water, renewable energy, distribution and power networks, nuclear and thermal power stations, airports and other manufacturing industries.

APAR is famous for pioneering work in the elastomer cable segment in India. Since 1981, we have manufactured a wide range of elastomer cables that cater to various industry segments like railways, ship building, steel, defense and mining.

We have an in-house R&D facility and compounding plant that processes various types of compounds like EPDM, Silicone, CSP, PCP and EVA.

We have set up four electron beam facilities (one 3.0 MeV, two 2.5 MeV and one 3 MeV). This ensures our manufacturing facilities have the most modern equipment. We are one of the largest manufacturers of solar cables in India.

We manufacture cables to various Indian and international standards like IS, IEC, VDE as well as Naval Defense specifications. We also customize products as per specific customer requirements.

PRODUCT DESCRIPTION

Purpose: These cables are designed for use at the direct current (DC) side of photovoltaic systems.

Voltage Rating: These have a nominal DC voltage up to 1.5 kV between conductors and between conductor and earth.

Construction: The cables are low smoke halogen-free, flexible, single-core with crosslinked insulation and sheath.

Temperature Rating: These are designed to operate at a normal maximum conductor temperature of 90°C. However, for a maximum of 20,000 hours, a maximum conductor temperature of 120°C at a maximum ambient temperature of 90°C is permitted.

Durability: The expected period of use under normal conditions is at least 25 years. This standard ensures that the cables used in photovoltaic systems are safe, reliable, and have a long service life.

Further information can be found at www.apar.com.

TECHNICAL DATA SHEET

Construction:-	
Conductor	Electrolytic annealed flexible tinned copper conductor As per (As Per EN- 60228:2004)
Insulation	E- Beam Cross Linked Co-Polymer Halogen Free XLPO-Polyolefin compound
Sheath	E- Beam Cross Linked Co-polymer Halogen Free XLPO-Polyolefin compound
Insulation Color	Natural
Sheath Color	Black / Black with Red Stripe

Characteristics:-	
Voltage Grade	1.0/1.0 Kv (AC) or 1.5 Kv (DC)(Nom)/ 1.8 KV DC Max
Conductor Temperature	Max. conductor temperature at rated current
1- Max. conductor temperature at rated current	90 °C
2- Short Circuit Temperature	250 °C for 5 Second
3- Conductor temperature when overload capacity	120 °C
4- Min. conductor temperature at rated current	-40 °C
5- Operating Temperature	-40 to 120 °C
Service life	Expected Service Life More than 25 Years
Acid & Alkali Resistance on sheath	As Per EN : 60811-404
Weathering & UV Resistance on sheath	As Per EN : 50618/2014
Ozone Resistance on complete cable	Method A (As Per EN : 60811- 403)
Thermal Endurance Test	As Per EN : 60216
Dynamic Penetration Test	As Per EN : 50618/2014
Damp heat Test	As Per EN : 60068-2-78
Smoke emission	60 % Transmittance (Min.) (As Per EN : 61034)
Water Resistance (Long Term Resistance of Insulation to DC)	As Per EN : 50395
Surface Resistance on Sheath	As Per EN : 50395
Halogen free	As Per EN : 60754-1
Vertical Flame Propagation Test	As Per EN : 60332-1
Min. Bending radius of cable	5 Times O.D.

Current Rating :-			
Cable Size	Single Cable in Air (up to 60°C)	Single cable on a surface	Two cables adjacent on a surface
1x4 Sqmm	55	52	44
1x6 Sqmm	70	67	57
1x10 Sqmm	98	93	79

Dimensions & Other Details :			
	1x4 Sqmm	1x6 Sqmm	1x10 Sqmm
Conductor Shape	Flexible Class-5	Flexible Class-5	Flexible Class-5
Nos of Strands	56	84	80
Max Wires Diameter	0.30 mm	0.30 mm	0.40 mm
Conductor Diameter	2.45 mm	2.98 mm	4.10 mm
Max DC Conductor Resistance	5.09 Ohm/km	3.39 Ohm/km	1.95 Ohm/km
Insulation nom. Radial Thickness	0.70 mm	0.70 mm	0.70 mm
Sheath nom. Radial Thickness	0.80 mm	0.80 mm	0.80 mm
Over All Diameter	5.6+/-0.3 mm	6.1+/-0.3 mm	7.5+/-0.3 mm
Test Voltage	6.5 KV AC for 5 min (Equivalent DC Voltage 15KV)		

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %			Material origin
Size	4 Sqmm	6 Sqmm	10 Sqmm	
Metals	51	58	66	UAE
Minerals				
Fossil materials	49	42	34	USA, GERMANY
Bio-based materials				

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	4.2

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Km of PV Solar Cable		
Cable Size	4 Sqmm	6 Sqmm	10 Sqmm
Mass per declared unit	59.62 kg	79.44 kg	125 kg
Functional unit	-		-
Reference service life	25 Years		

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0.1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

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

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

Modules not declared = MND. Modules not relevant = MNR

System Boundary							
A1	A2	A3	A4	A5	B1-B7	C1-C4	D
Manufacturing stage			Distribution Stage	Installation Stage	Use & Maintenance Stage	End-of life Stage	Disposal
Upstream Module		Core Module	Down Stream Module				
Copper Rod Processing Raw material of Insulation processing Raw material of Sheathing Processing Packing Material processing	Transport from supplier to Apar	Cable Processing / Production at APAR Packing	Transport finished product from APAR to Customer Site	No significant impact accounted for in EPD		The individual product parts will be transferred to recycling points Transport to waste treatment plant	Benefit from recycling points to specific users

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.

The cable production begins with the sourcing of essential materials: metals like copper, Chemical & rubber raw materials. These materials are transported to Apar's production facility, where the copper undergoes the initial processing phase. Here, copper wires are drawn down to the precise dimensions needed for the cable's construction. This drawn copper is then stranded, creating a conductor with the necessary mechanical flexibility and electrical performance characteristics.

In parallel, various raw materials such as chemicals and synthetic rubber are processed to produce insulation and sheath compounds in-house. specifically formulated to meet strict electrical and physical standards for insulation and sheathing. Once the compounds are ready, they are extruded onto the copper strands to form the cable's insulation and sheath layers, providing both electrical insulation and environmental protection.

After extrusion, the cables proceed to an irradiation process, which induces cross-linking in the polyethylene. This irradiation cures the materials, enhancing their heat resistance, durability, and mechanical properties, ensuring that they meet the rigorous physical and mechanical specifications required for performance.

For product identification, a printing process is applied to the outer sheath of the cable, ensuring that each cable is clearly marked according to required standards. Throughout production, electricity powers the various machines involved, and auxiliary materials are used to maintain and operate the equipment effectively.

Once manufacturing is complete, the finished cables are packaged in pine wood drums, which are durable enough to protect the product during storage and transport. These drums are then ready for dispatch to customers, ensuring safe handling and ease of use during installation.

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.

After final packing, the material is inspected to ensure it meets customer specifications and regulatory standards. It's then prepared for dispatch, with proper labeling, documentation, and secure loading onto transport vehicles. Safety protocols and tracking systems are used to monitor the shipment's progress, ensuring timely delivery. Once at the customer's facility, the product is confirmed to meet requirements, completing the process with a focus on quality and customer satisfaction.

PRODUCT USE AND MAINTENANCE (B1-B7)

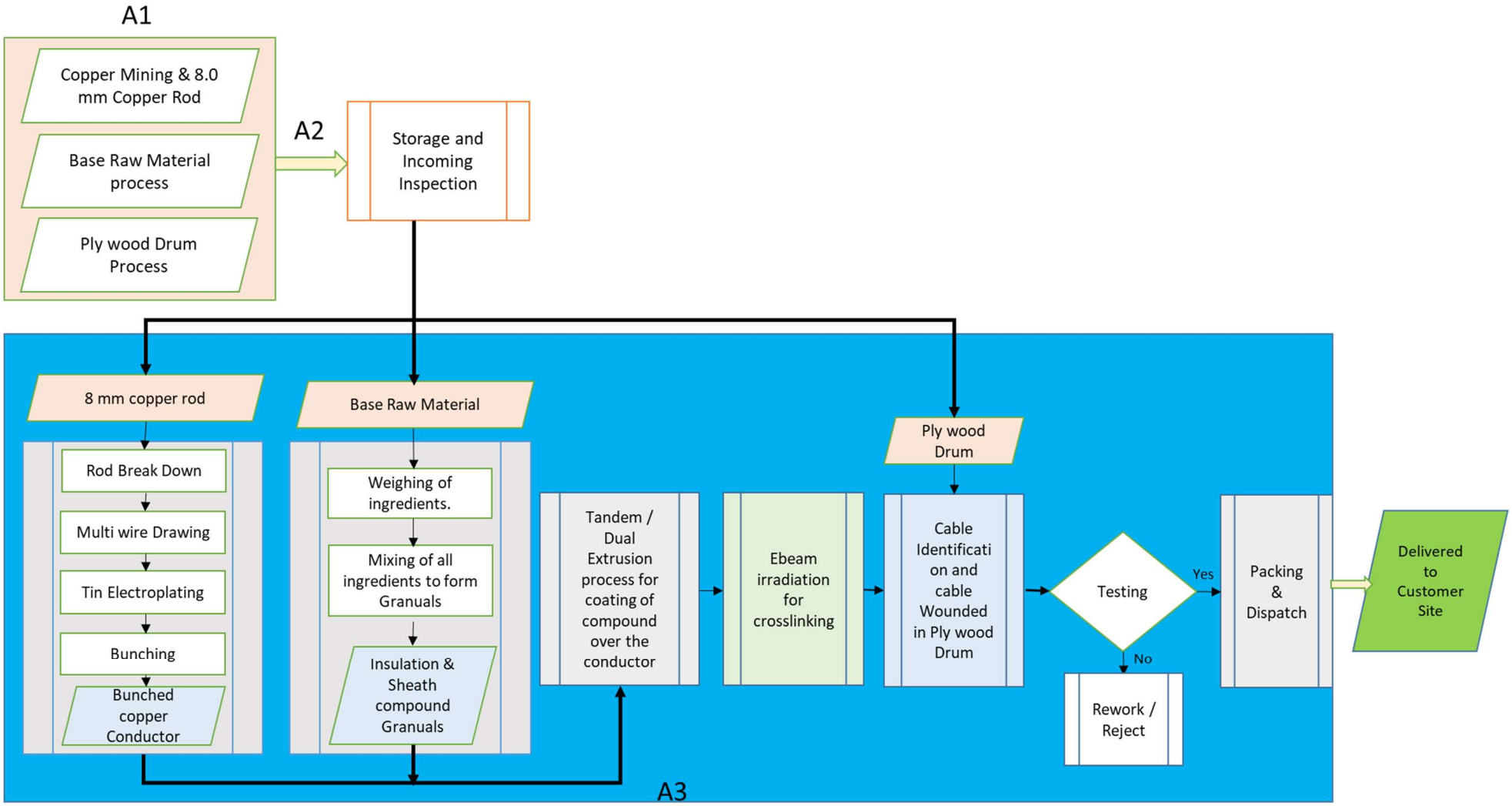
Not Applicable

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

PRODUCT END OF LIFE (C1-C4, D)

Energy consumption is assumed to be negligible for the process of cable de-construction. It is assumed that the waste is collected separately and transported to the waste treatment center. Transportation distance to treatment is assumed as 100 km and the transportation method is assumed to be lorry (C2). As per common practice, the cable is shredded and the metals and rubber from the product is sorted. Module C3 accounts for energy and resource inputs for sorting and treating these waste streams - 95% of metals (Copper) are assumed to be recycled while 100% of compound (XLPO compound) are incinerated for energy recovery. Due to the material and energy recovery potential of the materials, a part of the end-of-life product is converted into recycled raw materials while electric and heat energy are generated from incineration. The remaining materials from the product - 5% of metals is assumed to be sent to sanitary landfill to account for a conservative scenario.

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.

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	-
Packaging material	-
Ancillary materials	-
Manufacturing energy and waste	-

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	%

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

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Results per declared unit of 1x4 Sqmm are presented below

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	2.91E+02	2.01E+01	3.04E+01	3.41E+02	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.70E-01	9.09E+01	-7.20E-01	-1.66E+02
GWP – fossil	kg CO_2e	2.89E+02	2.01E+01	3.04E+01	3.39E+02	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.70E-01	9.21E+01	9.15E-02	-1.66E+02
GWP – biogenic	kg CO_2e	2.05E+00	0.00E+00	-2.03E-02	2.03E+00	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-1.22E+00	-8.11E-01	4.08E-01
GWP – LULUC	kg CO_2e	6.13E-02	8.17E-03	2.57E-03	7.21E-02	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.11E-04	9.99E-04	5.64E-05	-2.14E-01
Ozone depletion pot.	kg CFC_{-11}e	2.92E-05	4.56E-06	1.31E-06	3.50E-05	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.31E-07	2.01E-07	7.28E-09	-1.59E-06
Acidification potential	mol H^+e	1.31E+01	1.45E-01	1.08E-01	1.33E+01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.40E-03	1.87E-02	6.72E-04	-4.86E+00
EP-freshwater[2)]	kg Pe	1.08E+00	1.54E-04	1.11E-03	1.09E+00	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.67E-06	3.96E-05	1.06E-06	-1.77E-01
EP-marine	kg Ne	7.94E-01	4.04E-02	1.93E-02	8.53E-01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.10E-04	6.29E-03	2.95E-04	-1.34E+00
EP-terrestrial	mol Ne	1.04E+01	4.47E-01	2.23E-01	1.11E+01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.84E-03	7.00E-02	2.73E-03	-2.07E+01
POCP ("smog")[3)]	kg NMVOCe	2.78E+00	1.31E-01	6.34E-02	2.98E+00	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.51E-03	1.78E-02	9.78E-04	-4.01E+00
ADP-minerals & metals[4)]	kg Sbe	3.28E-01	4.66E-05	1.67E-04	3.28E-01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.34E-06	3.58E-05	1.76E-07	-6.46E-02
ADP-fossil resources	MJ	6.02E+03	2.97E+02	4.62E+02	6.78E+03	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.57E+00	1.92E+01	2.22E+00	-1.91E+03
Water use[5)]	m^3e depr.	2.68E+02	1.29E+00	9.64E+00	2.79E+02	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.84E-02	2.76E+00	7.45E-03	-6.47E+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, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	3.35E-05	2.15E-06	3.16E-07	3.59E-05	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.57E-08	1.37E-07	1.49E-08	-3.88E-05
Ionizing radiation[6]	kBq U235e	4.42E+01	1.42E+00	1.86E-01	4.58E+01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.08E-02	7.55E-02	2.35E-03	-4.99E+00
Ecotoxicity (freshwater)	CTUe	1.22E+05	2.59E+02	6.42E+02	1.23E+05	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.71E+00	1.55E+02	6.49E-01	-4.22E+04
Human toxicity, cancer	CTUh	2.53E-06	7.55E-09	7.35E-09	2.54E-06	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.89E-10	4.77E-09	3.48E-10	-7.23E-07
Human tox. non-cancer	CTUh	1.81E-04	2.55E-07	3.80E-07	1.82E-04	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.63E-09	8.90E-08	7.33E-10	-5.22E-06
SQP[7]	-	5.38E+03	3.09E+02	-3.48E+01	5.65E+03	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	9.88E+00	1.57E+01	4.53E+00	-3.70E+03

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	9.92E+02	3.28E+00	1.06E+02	1.10E+03	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	9.66E-02	1.55E+00	2.42E-02	-9.18E+02
Renew. PER as material	MJ	2.44E+00	0.00E+00	5.57E+01	5.81E+01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-3.68E+01	-2.13E+01	1.54E+01
Total use of renew. PER	MJ	9.94E+02	3.28E+00	1.62E+02	1.16E+03	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	9.66E-02	-3.53E+01	-2.13E+01	-9.03E+02
Non-re. PER as energy	MJ	4.69E+03	2.97E+02	4.68E+02	5.46E+03	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.57E+00	1.92E+01	2.22E+00	-1.91E+03
Non-re. PER as material	MJ	1.15E+03	0.00E+00	-1.14E+01	1.14E+03	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-4.22E-03	-1.14E+03	0.00E+00
Total use of non-re. PER	MJ	5.84E+03	2.97E+02	4.57E+02	6.60E+03	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.57E+00	1.92E+01	-1.13E+03	-1.91E+03
Secondary materials	kg	1.08E-01	8.79E-02	4.45E-02	2.40E-01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.38E-03	2.02E-02	5.98E-04	1.92E+01
Renew. secondary fuels	MJ	1.40E-01	8.10E-04	2.66E-04	1.41E-01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.40E-05	7.53E-04	1.49E-05	-1.00E-01
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	1.28E-02	1.28E-02	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	3.93E+06	3.67E-02	2.59E-01	3.93E+06	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.11E-03	1.20E-01	2.31E-03	-2.75E+00

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	3.77E+06	3.92E-01	1.67E+00	3.77E+06	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.14E-02	4.59E-02	2.02E-03	-3.48E+01
Non-hazardous waste	kg	8.41E+06	6.18E+00	4.39E+01	8.41E+06	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.87E-01	3.16E+01	1.65E+00	3.37E+01
Radioactive waste	kg	2.76E-02	2.00E-03	2.15E-04	2.98E-02	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.74E-05	6.75E-06	2.83E-07	-3.12E-03

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	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	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	2.95E-01	2.95E-01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.91E+01	0.00E+00	0.00E+00
Materials for energy rec	kg	2.39E+08	0.00E+00	4.75E-11	2.39E+08	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	2.90E+01	0.00E+00	0.00E+00
Exported energy	MJ	1.45E+09	0.00E+00	0.00E+00	1.45E+09	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	6.89E+00	0.00E+00	0.00E+00

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

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	2.47E+01	1.99E+01	3.22E+01	7.69E+01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.64E-01	9.21E+01	1.94E-01	-1.65E+02
Ozone depletion Pot.	kg CFC_{-11}e	0.00E+00	3.61E-06	1.36E-06	4.98E-06	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.04E-07	1.82E-07	5.78E-09	-1.34E-06
Acidification	kg SO_2e	7.85E-02	1.14E-01	9.75E-02	2.90E-01	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.87E-03	1.42E-02	5.00E-04	-3.28E+00
Eutrophication	kg PO_4^3e	5.71E-03	1.99E-02	3.75E-02	6.31E-02	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.25E-04	8.10E-03	4.73E-03	-1.18E+00
POCP ("smog")	kg C_2H_4e	2.76E-03	3.69E-03	4.59E-03	1.10E-02	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.31E-05	5.08E-04	6.36E-05	-1.57E-01
ADP-elements	kg Sbe	1.51E-05	4.52E-05	1.67E-04	2.27E-04	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.30E-06	3.36E-05	1.72E-07	-6.44E-02
ADP-fossil	MJ	2.68E+03	2.97E+02	4.62E+02	3.44E+03	MND	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.57E+00	1.92E+01	2.22E+00	-1.91E+03

SCALING TABLE FOR DIFFERENT SIZE OF SOLAR CABLE

THIS EPD COVERS THE FOLLOWING LISTED SOLAR CABLES;

Contents	**1 X 4 Sqmm**	**1 X 6 Sqmm**
Copper (Kg/Km))	30.6	46
XLPO- Insulation (Kg/Km)	10.1	12.37
XLPO- Sheath (Kg/Km)	18.92	21.06
Weight of Cable (Kg/Km)	**59.62**	**79.44**
GWP-fossil, A1-A3 (kgCO2e)	**3.39E+02**	**4.65E+02**
GWP-total, A1-A3 (kgCO2e)	**3.41E+02**	**4.68E+02**

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

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

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

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

THIRD-PARTY VERIFICATION STATEMENT

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

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

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

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

#SIGNATURE#