ENVIRONMENTAL PRODUCT DECLARATION

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

HIK-AL-S 4x95 SM
TTkabeli d.o.o.

EPD HUB, HUB-0395
Publishing date 22 April 2023, last updated date 22 April 2023, valid until 22 April 2028

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	TTkabeli d.o.o.
Address	TTkabeli d.o.o., Knešpolje b.b., 88220 Široki Brijeg, Bosnia and Herzegovina
Contact details	info@ttcables.com
Website	https://www.ttcables.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 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Tamara Grgić
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	H.N, as an authorized verifier acting for EPD Hub Limited

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	HIK-AL-S 4x95 SM
Additional labels	NA2XH, Aluflex, YMz1K, ZH RZ1 (AS)
Product reference	-
Place of production	TTkabeli d.o.o., Knešpolje b.b., 88220 Široki Brijeg, Bosnia and Herzegovina
Period for data	10/2021-10/2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	Not relevant

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m
Declared unit mass	1.4 kg
GWP-fossil, A1-A3 (kgCO2e)	1,07E1
GWP-total, A1-A3 (kgCO2e)	1E1
Secondary material, inputs (%)	2.09
Secondary material, outputs (%)	64.8
Total energy use, A1-A3 (kWh)	49.1
Total water use, A1-A3 (m3e)	0.0694

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

TTkabeli d.o.o. are the leading manufacturer of low voltage cables in south-eastern Europe. We are producing wiring cables and wires, distribution power cables, self-supporting cable bundles, aluminium and steel ropes, AWG, Cu and other ropes for overhead conductors. More information about our company can be found at our home page: https://www.ttcables.com/

PRODUCT DESCRIPTION

Power cable 0,6/1 kV with Al conductor, XLPE insulated and HFFR sheathed. Halogen-free UV resistant cable for fixed installation in buildings, channels, tubes, in open air and in the ground. Further information can be found at https://www.ttcables.com/

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PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	68	EUROPE
Minerals	0	EUROPE
Fossil materials	32	EUROPE
Bio-based materials	0	EUROPE

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	0.27

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m
Mass per declared unit	1.4 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

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

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

Modules not declared = MND. Modules not relevant = MNR.

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.

Cable contains two main elements: metal and plastic. The raw materials are in form of aluminium wire 9-9,5 mm and plastic in form of granules. Aluminium is drawn to wires of required dimensions, wires are insulated with polyethylene. Insulated cores are stranded before sheathing with polyolefin sheathing material. Finished product is packed on drum, beginning and end of cable is sealed with thermoplastic cap. The manufacturing process require the electricity for all processes. The material losses during manufacturing are sent to a local recycling facility located 15 km away and waste lubricating oil is incinerated.

TRANSPORT AND INSTALLATION (A4-A5)

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

Average distance of transportation from production plant to the building site is assumed as 2013 km and the transportation method is assumed to be lorry. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of the other clients. Transportation does not cause any losses. Environmental impacts from installation in the construction site include waste packaging materials (A5) and release of biogenic carbon dioxide from waste processing of the wooden drum. Electricity consumption and product loss during installation is considered to be negligible.

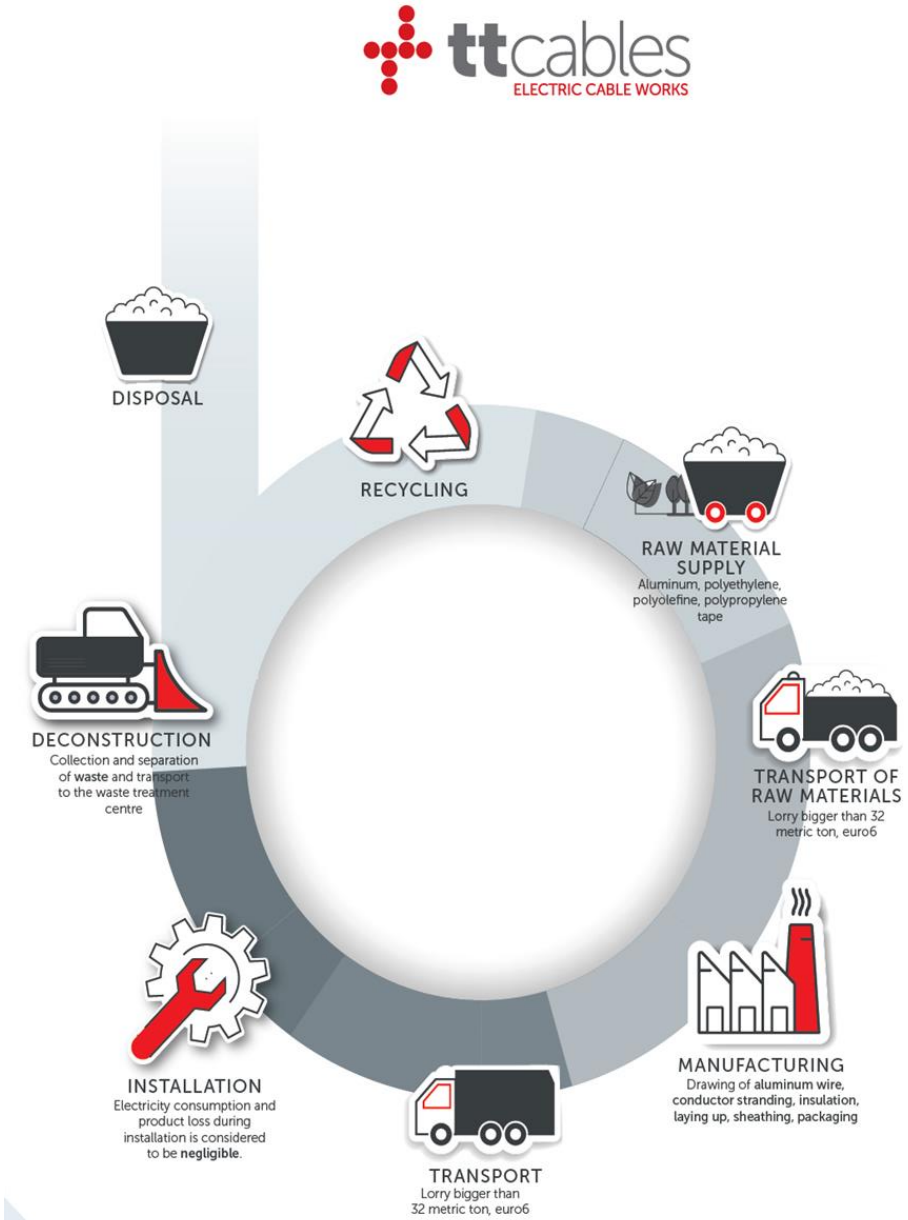
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

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 centre. Transportation distance to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2). The power cable is shredded and the metals and plastics from the product is sorted. Module C3 accounts for energy and resource inputs for sorting and treating these waste streams - 95% of metal (aluminium) are assumed to be recycled while 90% of plastics (XLPE and polyolefin) are incinerated for energy recovery. The remaining materials from the product - 5% of metals and 10% of plastics – are assumed to be sent to landfill. Module D claims the benefits and loads of metal recycling and exported energy from wood and plastic incineration.

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	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

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

There is no average result considered in this study since this EPD refers to one specific product produced in one production plant.

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. Ecoinvent and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE 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
GWP – total[1)]	kg CO_2e	1,07E1	1,45E-1	-8,41E-1	1E1	3,59E-1	1,11E0	MND	MND	MND	MND	MND	MND	MND	0E0	6,37E-3	1,04E0	5,47E-3	0E0
GWP – fossil	kg CO_2e	1,04E1	1,45E-1	1,5E-1	1,07E1	3,62E-1	1,22E-1	MND	MND	MND	MND	MND	MND	MND	0E0	6,36E-3	1,05E0	5,46E-3	-7,11E0
GWP – biogenic	kg CO_2e	1,54E-1	8,57E-5	-9,92E-1	-8,39E-1	2,11E-4	9,93E-1	MND	MND	MND	MND	MND	MND	MND	0E0	4,62E-6	-1,72E-3	3,94E-6	-4,22E-2
GWP – LULUC	kg CO_2e	1,81E-1	4,69E-5	5,4E-4	1,81E-1	1,18E-4	1,82E-3	MND	MND	MND	MND	MND	MND	MND	0E0	1,91E-6	1,71E-4	3,68E-7	-1,53E-1
Ozone depletion pot.	kg CFC_{-11}e	7,77E-7	3,43E-8	1,65E-8	8,28E-7	8,57E-8	1,05E-8	MND	MND	MND	MND	MND	MND	MND	0E0	1,5E-9	8,62E-9	2,5E-10	-9,23E-7
Acidification potential	mol H^+e	7,64E-2	4,87E-4	8,97E-4	7,77E-2	1,2E-3	8,99E-4	MND	MND	MND	MND	MND	MND	MND	0E0	2,67E-5	8,96E-4	6,72E-6	-4,14E-2
EP-freshwater[2)]	kg Pe	3,41E-4	1,41E-6	8,27E-6	3,51E-4	3,57E-6	3,69E-6	MND	MND	MND	MND	MND	MND	MND	0E0	5,18E-8	5,99E-6	1,29E-8	-3,35E-4
EP-marine	kg Ne	9,6E-3	1,09E-4	2,38E-4	9,95E-3	2,61E-4	1,52E-4	MND	MND	MND	MND	MND	MND	MND	0E0	8,05E-6	2,27E-4	7,6E-6	-4,63E-3
EP-terrestrial	mol Ne	1,05E-1	1,22E-3	2,69E-3	1,09E-1	2,9E-3	1,65E-3	MND	MND	MND	MND	MND	MND	MND	0E0	8,89E-5	2,52E-3	2,46E-5	-5,13E-2
POCP ("smog")[3)]	kg NMVOCe	3,53E-2	4,61E-4	1,09E-3	3,69E-2	1,12E-3	5,14E-4	MND	MND	MND	MND	MND	MND	MND	0E0	2,86E-5	6,41E-4	8,19E-6	-1,92E-2
ADP-minerals & metals[4)]	kg Sbe	9,09E-5	2,53E-6	2,61E-6	9,6E-5	6,34E-6	1,19E-6	MND	MND	MND	MND	MND	MND	MND	0E0	1,09E-7	3,76E-6	7,44E-9	-2,71E-5
ADP-fossil resources	MJ	1,26E2	2,31E0	2,62E0	1,31E2	5,78E0	1,49E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,89E-2	1,4E0	1,84E-2	-1,12E2
Water use[5)]	m^3e depr.	4,67E0	9,69E-3	4,9E-2	4,73E0	2,44E-2	4,09E-2	MND	MND	MND	MND	MND	MND	MND	0E0	3,68E-4	6,63E-2	8,25E-4	-4,92E-1

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	6,52E1	2,5E-2	2,47E0	6,77E1	6,21E-2	6,8E-1	MND	MND	MND	MND	MND	MND	MND	0E0	1,25E-3	1,69E-1	2,83E-4	-4,08E1
Renew. PER as material	MJ	0E0	0E0	9,54E0	9,54E0	0E0	-9,45E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	6,52E1	2,5E-2	1,2E1	7,72E1	6,21E-2	-8,77E0	MND	MND	MND	MND	MND	MND	MND	0E0	1,25E-3	1,69E-1	2,83E-4	-4,08E1
Non-re. PER as energy	MJ	1,04E2	2,31E0	2,62E0	1,09E2	5,78E0	1,27E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,89E-2	1,4E0	1,84E-2	-1,12E2
Non-re. PER as material	MJ	2,2E1	0E0	0E0	2,2E1	0E0	2,2E-1	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-1,98E1	-2,2E0	0E0
Total use of non-re. PER	MJ	1,26E2	2,31E0	2,62E0	1,31E2	5,78E0	1,49E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,89E-2	-1,84E1	-2,18E0	-1,12E2
Secondary materials	kg	2,93E-2	0E0	0E0	2,93E-2	0E0	2,93E-4	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	7,9E-1
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	6,82E-2	4,81E-4	7,87E-4	0.0694	1,21E-3	8,68E-4	MND	MND	MND	MND	MND	MND	MND	0E0	2,06E-5	2,05E-3	2,03E-5	-3,98E-2

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	3,07E0	2,75E-3	1,05E-2	3,09E0	6,98E-3	3,42E-2	MND	MND	MND	MND	MND	MND	MND	0E0	9,62E-5	0E0	2,85E-5	-1,55E0
Non-hazardous waste	kg	1,45E1	2,53E-1	2,53E-1	1,5E1	6,34E-1	7,58E-1	MND	MND	MND	MND	MND	MND	MND	0E0	1,06E-2	0E0	9,23E-2	-1,53E1
Radioactive waste	kg	4,41E-4	1,54E-5	7,98E-6	4,65E-4	3,86E-5	5,49E-6	MND	MND	MND	MND	MND	MND	MND	0E0	6,79E-7	0E0	1,14E-7	-6,11E-4

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	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	3,08E-2	3,08E-2	0E0	3,09E-4	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	9,07E-1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	6,95E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	1,4E1	0E0	0E0

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	1,01E1	1,43E-1	1,46E-1	1,04E1	3,59E-1	1,18E-1	MND	MND	MND	MND	MND	MND	MND	0E0	6,31E-3	1,04E0	3,96E-3	-7,12E0
Ozone depletion Pot.	kg CFC_{-11}e	7,72E-7	2,72E-8	1,39E-8	8,13E-7	6,81E-8	9,91E-9	MND	MND	MND	MND	MND	MND	MND	0E0	1,19E-9	8,2E-9	1,99E-10	-9,01E-7
Acidification	kg SO_2e	6,51E-2	3,38E-4	6,44E-4	6,61E-2	8,53E-4	7,43E-4	MND	MND	MND	MND	MND	MND	MND	0E0	1,29E-5	6,68E-4	1,18E-5	-3,57E-2
Eutrophication	kg PO_4^3e	1,62E-2	7,25E-5	2,46E-4	1,65E-2	1,83E-4	2,45E-4	MND	MND	MND	MND	MND	MND	MND	0E0	2,61E-6	3,18E-4	2,13E-4	-1,32E-2
POCP (“smog”)	kg C_2H_4e	5,09E-3	1,77E-5	6,68E-5	5,18E-3	4,41E-5	5,4E-5	MND	MND	MND	MND	MND	MND	MND	0E0	8,2E-7	2,47E-5	8,53E-7	-3,6E-3
ADP-elements	kg Sbe	9,09E-5	2,53E-6	2,61E-6	9,6E-5	6,34E-6	1,19E-6	MND	MND	MND	MND	MND	MND	MND	0E0	1,09E-7	3,76E-6	7,44E-9	-2,71E-5
ADP-fossil	MJ	1,26E2	2,31E0	2,62E0	1,31E2	5,78E0	1,49E0	MND	MND	MND	MND	MND	MND	MND	0E0	9,89E-2	1,4E0	1,84E-2	-1,12E2

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.

HaiHa Nguyen, as an authorized verifier acting for EPD Hub Limited
22.04.2023

VERIFIED ISO 14025