

# ENVIRONMENTAL PRODUCT DECLARATION

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

AXQJ / AXCMK-HF / IFSI-AI 4x240/72 0,6/1 (1,2) kV

Reka Cables Ltd.



**EPD HUB, EPDHUB-0106**

Publishing date 19 August 2022, last updated date 19 August 2022, valid until 19 August 2027

## GENERAL INFORMATION

### MANUFACTURER

Manufacturer	Reka Cables Ltd.
Address	Kaapelikatu 2, 05800 Hyvinkää, Finland
Contact details	myyntipalvelu@reka.fi
Website	www.reka.fi

### 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, and modules C1-C4, D
EPD author	Kari Ingalsuo, Reka Cables Ltd.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
EPD verifier	H.U as an authorized verifier acting for EPD Hub

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	AXQJ / AXCMK-HF / IFSI-AI 4x240/72 0,6/1 (1,2) kV
Product reference	1256531
Place of production	Hyvinkää, Finland
Period for data	Calendar year 2021
Averaging in EPD	No averaging

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m
Declared unit mass	4.46 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	2,71E1
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	2,82E1
Secondary material, inputs (%)	2,96E0
Secondary material, outputs (%)	7,11E1
Total energy use, A1-A3 (kWh)	1,43E2
Total water use, A1-A3 (m <sup>3</sup> e)	2,18E-1

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

Reka Cables Ltd is the largest Finnish-owned cable manufacturer, which has been at the forefront of the cable industry for more than 60 years. We provide durable, high-standard cable solutions for renewable energy production, network construction, industry as well residential and office construction. All of our three production facilities are located in Finland: in Hyvinkää, Keuruu and Riihimäki.

### PRODUCT DESCRIPTION

Aluminium power cable for fixed installations indoors and outdoors. May be buried directly in soil. Installations must be in accordance with national regulations and rules of installations. The cable is halogen-free and flame-retardant according to CPR-class Dca-s2,d2,a2.

For more information, please visit <https://www.rekacables.com/product-category/axcmk-hf-axqj-ifsai-al/>

Further information can be found at [www.reka.fi](http://www.reka.fi).

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	71,4	Europe, Russia
Minerals	-	-
Fossil materials	28,6	Europe, Asia
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	0.081

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m
Mass per declared unit	4.46 kg

### 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	MND	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./dem	Transport	Waste	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.

The cable is made of metals and plastic materials. The materials are transported to Reka Cables production facility, where aluminium wires are drawn to the required dimension, the cores are stranded, insulation material (PE) is extruded before the tape is applied along with the extruded outer sheath. The manufacturing processes require electricity and fuels for the different equipment as well as heating. Certain ancillary materials are also included. The study considers the losses of main raw materials

occurring during the manufacturing process. The finished product is packaged on a recyclable wooden drum.

### 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.

As the product is sold in Finland and abroad average distance of transportation from production plant to building site is assumed as 401 km by lorry and 223 km by ferry. Vehicle capacity utilization volume factor is assumed to be 100 % which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. 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 other clients. Transportation does not cause losses as product are packaged properly. Transportation impacts that occur from delivery of the product cover direct exhaust emissions of fuel, environmental impacts of fuel production, as well as related infrastructure emissions.

This EPD does not cover the installation phase (A5).

### 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 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 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 metals (Aluminium and Copper) are assumed to be recycled while 90% of plastics (XLPE and PET) 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 and 10% of plastics - are assumed to be sent to sanitary landfill to account for a conservative scenario.

The wooden drum is recycled several times after which it is incinerated, where the energy recovered from incineration displaces electricity and heat production. The benefits and loads of incineration and recycling are included in Module D for packaging materials as well.

## 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 applicable

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. 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 <sup>1)</sup>	kg CO <sub>2</sub> e	2,72E1	2,39E-1	7,84E-1	2,82E1	2,72E-1	MND	MND	MND	MND	MND	MND	MND	MND	0E0	4,09E-2	3,24E0	1,56E-2	-1,9E1
GWP – fossil	kg CO <sub>2</sub> e	2,62E1	2,39E-1	6,65E-1	2,71E1	2,74E-1	MND	MND	MND	MND	MND	MND	MND	MND	0E0	4,09E-2	3,25E0	1,56E-2	-1,85E1
GWP – biogenic	kg CO <sub>2</sub> e	5,03E-1	1,73E-4	1,19E-1	6,22E-1	9,43E-5	MND	MND	MND	MND	MND	MND	MND	MND	0E0	2,97E-5	-6,08E-3	1,14E-5	-1,09E-1
GWP – LULUC	kg CO <sub>2</sub> e	4,62E-1	7,18E-5	1,1E-4	4,62E-1	1,17E-4	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,23E-5	5,45E-4	1,08E-6	-4,02E-1
Ozone depletion pot.	kg CFC <sub>11</sub> e	2,62E-6	5,61E-8	3,42E-8	2,71E-6	6,08E-8	MND	MND	MND	MND	MND	MND	MND	MND	0E0	9,61E-9	2,41E-8	7,62E-10	-2,33E-6
Acidification potential	mol H <sup>+</sup> e	2,24E-1	1E-3	1,56E-3	2,26E-1	4,3E-3	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,72E-4	2,64E-3	2,02E-5	-1,52E-1
EP-freshwater <sup>2)</sup>	kg Pe	1,73E-3	1,94E-6	5,61E-6	1,74E-3	1,8E-6	MND	MND	MND	MND	MND	MND	MND	MND	0E0	3,33E-7	1,92E-5	3,8E-8	-1,22E-3
EP-marine	kg Ne	2,52E-2	3,02E-4	2,82E-4	2,58E-2	1,11E-3	MND	MND	MND	MND	MND	MND	MND	MND	0E0	5,18E-5	5,99E-4	2,19E-5	-1,58E-2
EP-terrestrial	mol Ne	2,97E-1	3,34E-3	5,77E-3	3,06E-1	1,23E-2	MND	MND	MND	MND	MND	MND	MND	MND	0E0	5,72E-4	6,89E-3	7,44E-5	-1,93E-1
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	9,68E-2	1,07E-3	8,78E-4	9,87E-2	3,32E-3	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,84E-4	1,77E-3	2,45E-5	-6,27E-2
ADP-minerals & metals <sup>4)</sup>	kg Sbe	1,18E-3	4,07E-6	2,7E-6	1,18E-3	3,54E-6	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,98E-7	1,18E-5	2,22E-8	-8,21E-4
ADP-fossil resources	MJ	4,22E2	3,71E0	3,75E0	4,3E2	3,96E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,36E-1	4,31E0	5,58E-2	-2,85E2
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	8,52E0	1,38E-2	-4,12E-1	8,12E0	1,22E-2	MND	MND	MND	MND	MND	MND	MND	MND	0E0	2,37E-3	7,16E-2	2,5E-3	-3,04E0

### 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 <sup>8)</sup>	MJ	1,41E2	4,67E-2	9,84E0	1,51E2	4,1E-2	MND	MND	MND	MND	MND	MND	MND	MND	0E0	8,01E-3	5,43E-1	8,29E-4	-1,1E2
Renew. PER as material	MJ	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,41E2	4,67E-2	9,84E0	1,51E2	4,1E-2	MND	MND	MND	MND	MND	MND	MND	MND	0E0	8,01E-3	5,43E-1	8,29E-4	-1,1E2
Non-re. PER as energy	MJ	3,56E2	3,71E0	3,75E0	3,64E2	3,96E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,36E-1	4,31E0	5,58E-2	-2,85E2
Non-re. PER as material	MJ	6,6E1	0E0	0E0	6,6E1	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	-5,37E1	0E0	0E0
Total use of non-re. PER	MJ	4,22E2	3,71E0	3,75E0	4,3E2	3,96E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,36E-1	-4,94E1	5,58E-2	-2,85E2
Secondary materials	kg	1,33E-1	0E0	2,01E-4	1,33E-1	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	2,63E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0



Use of net fresh water	m³	2,16E-1	7,73E-4	2E-3	2,18E-1	6,59E-4	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,32E-4	2,23E-3	6,14E-5	-1,31E-1
------------------------	----	---------	---------	------	---------	---------	-----	-----	-----	-----	-----	-----	-----	-----	-----	---------	---------	---------	----------

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	6,8E0	3,61E-3	1,48E-2	6,81E0	4,01E-3	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,18E-4	0E0	8,39E-5	-4,74E0
Non-hazardous waste	kg	9,35E1	3,99E-1	3,4E-1	9,42E1	2,93E-1	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,84E-2	0E0	2,86E-1	-6,92E1
Radioactive waste	kg	1,81E-3	2,55E-5	9,53E-6	1,84E-3	2,74E-5	MND	MND	MND	MND	MND	MND	MND	MND	0E0	4,37E-6	0E0	3,46E-7	-1,57E-3

## 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	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	3,2E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	4,64E0	4,64E0	0E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	3,5E1	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 <sub>2</sub> e	2,59E1	2,37E-1	6,73E-1	2,68E1	2,72E-1	MND	MND	MND	MND	MND	MND	MND	MND	0E0	4,05E-2	3,24E0	1,13E-2	-1,85E1
Ozone depletion Pot.	kg CFC <sub>11</sub> e	2,61E-6	4,46E-8	2,77E-8	2,68E-6	4,82E-8	MND	MND	MND	MND	MND	MND	MND	MND	0E0	7,64E-9	2,18E-8	6,06E-10	-2,29E-6
Acidification	kg SO <sub>2</sub> e	1,88E-1	4,86E-4	1,04E-3	1,89E-1	3,22E-3	MND	MND	MND	MND	MND	MND	MND	MND	0E0	8,32E-5	1,96E-3	3,39E-5	-1,27E-1
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	7,53E-2	9,81E-5	3,43E-4	7,57E-2	3,92E-4	MND	MND	MND	MND	MND	MND	MND	MND	0E0	1,68E-5	9,45E-4	6,02E-4	-5,38E-2
POCP ("smog")	kg C <sub>2</sub> H <sub>4</sub> e	1,45E-2	3,08E-5	5,62E-5	1,46E-2	9,52E-5	MND	MND	MND	MND	MND	MND	MND	MND	0E0	5,27E-6	7,55E-5	2,45E-6	-1,07E-2
ADP-elements	kg Sbe	1,18E-3	4,07E-6	2,7E-6	1,18E-3	3,54E-6	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,98E-7	1,18E-5	2,22E-8	-8,21E-4
ADP-fossil	MJ	4,22E2	3,71E0	3,75E0	4,3E2	3,96E0	MND	MND	MND	MND	MND	MND	MND	MND	0E0	6,36E-1	4,31E0	5,58E-2	-2,85E2

## 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.

Hetal Parekh Udas as an authorized verifier acting for EPD Hub Limited  
19.08.2022

