

# Environmental Product Declaration



In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

## Copper Profile

From **Elcowire AB**

**elcowire**

Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
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*An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com)*



## General Information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
<b>E-mail:</b>	<a href="mailto:info@environdec.com">info@environdec.com</a>

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction products, version 1.11, date 2021-02-16. Un CPC code: 415
PCR review was conducted by: The Technical Committee of the International EPD® System. A full list of members available <a href="http://www.environdec.com">www.environdec.com</a> . The review panel may be contacted via <a href="mailto:info@environdec.com">info@environdec.com</a> .
Independent third-party verification of the declaration and data, according to ISO 14025:2006:  <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: Håkan Stripplé, IVL Swedish Environmental Research Institute ( <a href="mailto:Hakan.Stripple@IVL.se">Hakan.Stripple@IVL.se</a> )
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

## Company Information

**Owner of the EPD:** Elcowire AB,  
Elektrogatan 20  
SE-251 09 Helsingborg, Sweden  
The EPD owner has the sole ownership

**Contact:** Jonas Ciardi  
+46 707 614 726  
jonas.ciardi@elcowire.com

**Description of the organisation:** With an annual production of 300 000 metric tonnes Elcowire is one of the largest manufacturers in Europe of copper profile, wires, stranded conductors, profiles and overhead catenary systems made from copper, copper alloys and aluminum.

Elcowire also manufacture aluminum conductors, rectangular wire and profiles for electrical purposes. The production plants are located in Helsingborg, Sweden and in Hettstedt, Germany.

Elcowire is driven by the power of continuous improvement – and always with the customer in focus. The result is high quality products, reliability, attention to details and a strong technical partnership. Our business is divided in five units: Rod, Rail, High Voltage, Specials and Wire & Strands.

**Product-related or management system-related certifications:** ISO 14001 and ISO 9001

**Name and location of production site(s):** The production plants are located in Helsingborg, Sweden and in Hettstedt, Germany. This EPD only concerns the production plant in Helsingborg.

## Product information

**Product name:** Copper profile

**Product description:** The copper profile is produced from copper wire rod at Elcowires production site in Helsingborg, Sweden. Copper wire rod is produced from grade A copper cathodes and the product is continuously casted and rolled according to EN-1977 and ASTM B 49 standards.

In Table 1, the minimum and maximum dimensions for the copper profile is presented and in Figure 1, a picture is shown.

	Minimum	Maximum
<b>Width (mm)</b>	3	40
<b>Thickness (mm)</b>	1	18
<b>Area (mm<sup>2</sup>)</b>	3	400

Table 1. Copper profile dimensions

Specifications:	Copper Cu-ETP, R200	
	Density:	8.93 g/cm <sup>3</sup>
	Oxygen:	max 600 ppm
	Resistivity:	max. 17.24 nWm
	Tensile Strength:	R <sub>m</sub> 220-260 N/mm <sup>2</sup>

### Product identification:

- EN 13601 Copper and copper alloys - Copper rod, bar and wire for general electrical purposes

**UN CPC code:** 415

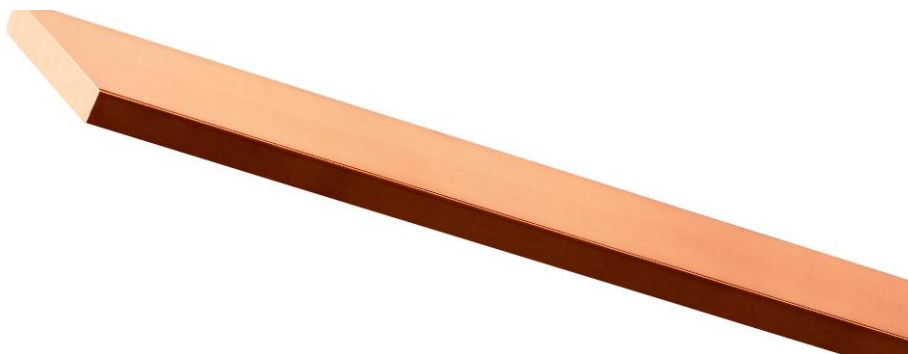


Figure 1. Representative picture of copper profile.

## LCA Information

**Declared unit:** 1 kg of copper profile.

The EPD includes copper profile with a minimum width of 3 mm and a maximum width of 40 mm, and with a minimum thickness of 1 mm and a maximum thickness of 18 mm, and with a minimum area of 3 mm<sup>2</sup> and a maximum area of 400 mm<sup>2</sup>.

**Time representativeness:** Data are representative for production year 2021. For materials, energy and transports, generic industry data from Ecoinvent have been used.

**Databases and LCA software used:** Ecoinvent 3.8 and SimaPro 9.1.1.1.

**Description of system boundaries:** Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). See Figure 2 and Table 2 for a representation of the system boundaries and modules declared.

**Estimates and assumptions:** Heat, electricity and other energy use as well as waste in the production are calculated as a weighted average per produced tonne of all products using yearly production data for 2021. No assumptions made.

**Cut off criteria:** All major materials, production energy use and waste are included. Materials less than 1 % weight in the product are not taken into account.

**Data quality:** The data quality can be described as fair for waste estimations and transports and good for other data. The primary data collection has been done thoroughly and all relevant flows are considered.

**System boundaries:**

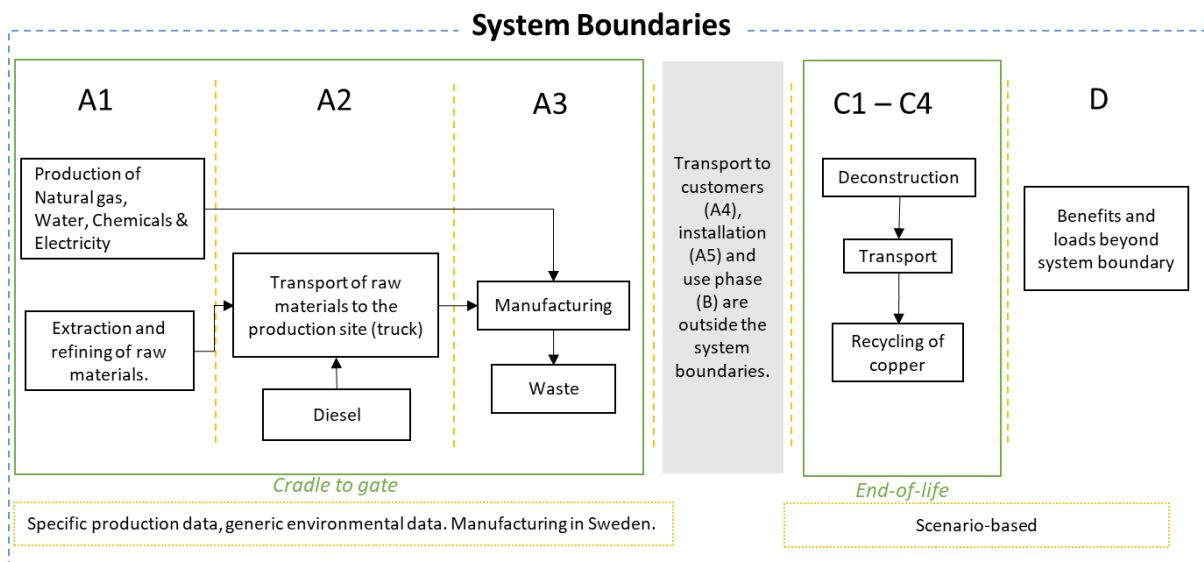


Figure 2. System boundaries.

	Product stage			Construction process stage		Use stage							End-of-life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	SE	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	About 80 %					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Only one product.					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Only one production site.					-	-	-	-	-	-	-	-	-	-	-	-

Table 2. Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation.

## Scenario Based Calculation

Module C and D are calculated based on a scenario.

**Module C** – Only the copper is taken into consideration in module C, therefore there is no impact in C1.

The copper is assumed to be transported 100 kilometers by a Euro 5 truck from the site to a recycling centre (C2). This is a conservative approach. As only the copper is being considered, no processing before recycling is necessary.

In C3, the packaging of the product is assumed to be incinerated.

No disposal occurs for the products, thus there is no impact in C4.

**Module D** – All copper goes to recycling and the packaging is incinerated. The recycled copper replace copper made of virgin material and the incinerated packaging assumes to contribute with electricity to the European electricity grid. Therefore, both materials contribute positively beyond the system boundary.

## Content information

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Copper	1		
TOTAL	1		
Packaging materials	Weight, kg	Weight-% (versus the product)	
Plastic	0.00023	0.023 %	
TOTAL	0.00023		

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
TOTAL*			

\*No dangerous substances from the candidate list of SVHC for Authorisation.

## Environmental Information

### Potential environmental impact – mandatory indicators according to EN 15804

Results per kg copper profile										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	4.13E+00	3.21E-02	1.94E-01	4.36E+00	0.00E+00	1.74E-02	1.20E-04	0.00E+00	-6.80E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	1.15E-02	1.82E-04	3.73E-03	1.54E-02	0.00E+00	9.21E-06	1.73E-04	0.00E+00	-1.74E-02
GWP-luluc	kg CO <sub>2</sub> eq.	1.59E-02	3.20E-05	3.01E-04	1.63E-02	0.00E+00	7.08E-06	2.58E-09	0.00E+00	-1.02E-02
GWP-total	kg CO <sub>2</sub> eq.	4.16E+00	3.23E-02	1.98E-01	4.39E+00	0.00E+00	1.74E-02	2.93E-04	0.00E+00	1.77E-02
ODP	kg CFC 11 eq.	3.20E-07	5.01E-09	2.90E-08	3.54E-07	0.00E+00	3.83E-09	9.48E-13	0.00E+00	-4.38E-07
AP	mol H <sup>+</sup> eq.	1.43E-01	1.92E-04	5.58E-03	1.48E-01	0.00E+00	7.19E-05	6.98E-08	0.00E+00	-1.70E-01
EP-freshwater	kg P eq.	1.15E-01	6.28E-06	2.66E-04	1.16E-01	0.00E+00	1.31E-06	8.79E-09	0.00E+00	-1.19E-01
EP-marine	kg N eq.	4.16E-02	6.16E-05	2.81E-04	4.19E-02	0.00E+00	2.12E-05	3.68E-08	0.00E+00	-4.88E-02
EP-terrestrial	mol N eq.	6.09E-01	6.67E-04	3.20E-03	6.13E-01	0.00E+00	2.31E-04	3.14E-07	0.00E+00	-7.09E-01
POCP	kg NMVOC eq.	1.16E-01	1.97E-04	1.01E-03	1.17E-01	0.00E+00	7.04E-05	7.80E-08	0.00E+00	-1.37E-01
ADP-minerals&metals*	kg Sb eq.	2.42E-03	2.87E-07	1.47E-04	2.57E-03	0.00E+00	5.92E-08	2.14E-11	0.00E+00	-2.39E-03
ADP-fossil*	MJ	6.33E+01	5.77E-01	3.08E+00	6.69E+01	0.00E+00	2.56E-01	7.67E-05	0.00E+00	-7.71E+01
WDP	m <sup>3</sup>	2.57E+00	5.74E-03	8.57E-01	3.43E+00	0.00E+00	8.86E-04	1.52E-05	0.00E+00	-2.80E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential. Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.



## Potential environmental impact – additional mandatory and voluntary indicators

Results per kg copper profile										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	4.15E+00	3.21E-02	1.94E-01	4.37E+00	0.00E+00	1.74E-02	1.20E-04	0.00E+00	-6.81E+00

## Use of resources

Results per kg copper profile										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
PERE	MJ	5.43E+01	3.93E-01	1.23E+00	5.59E+01	0.00E+00	2.95E-03	2.48E-06	0.00E+00	-3.15E+01
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	5.43E+01	3.93E-01	1.23E+00	5.59E+01	0.00E+00	2.95E-03	2.48E-06	0.00E+00	-3.15E+01
PENRE	MJ	6.63E+01	6.02E-01	3.34E+00	7.02E+01	0.00E+00	2.72E-01	8.29E-05	0.00E+00	-8.22E+01
PENRM	MJ.	9.78E-03	0.00E+00	0.00E+00	9.78E-03	0.00E+00	0.00E+00	-9.78E-03	0.00E+00	0.00E+00
PENRT	MJ	6.63E+01	6.02E-01	3.34E+00	7.02E+01	0.00E+00	2.72E-01	-9.69E-03	0.00E+00	-8.22E+01
SM	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m <sup>3</sup>	2.53E+00	5.25E-03	8.59E-01	3.40E+00	0.00E+00	8.94E-04	1.55E-05	0.00E+00	-2.77E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

<sup>1</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Waste production and output flows

### Waste production

Results per kg copper profile										
Indicator <sup>2</sup>	Unit	A1	A2	A3	Tot.A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0.00E+00	0.00E+00	4.94E-04	4.94E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

### Output flows

Results per kg copper profile										
Indicator	Unit	A1	A2	A3	Tot.A1-A3	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	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	4.96E-03	4.96E-03	0.00E+00	0.00E+00	1.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	1.89E-03	1.89E-03	0.00E+00	0.00E+00	2.27E-04	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	0.00E+00	0.00E+00	0.00E+00	-2.44E-03
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

### Information on biogenic carbon content

Results per kg copper profile		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	0

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.

<sup>2</sup> All waste flows are managed within the system limits in Ecoinvent processes, which is why there is 0 kg of waste under these modules.




## Revision update

Version 2: Update of the result tables to represent the production mix of copper profile at Elcowire.

## References

- General Programme Instructions of the International EPD® System. Version 3.01.
- PCR 2019:14 Construction products, version 1.11, date 2021-02-16.
- Rasmusson, L. and Isbring E. (2023) LCA REPORT OF ELCOWIRE.

## Contact information

<p>EPD owner:</p>	 <p>Elcowire AB, Elektrogatan 20, SE-251 09 Helsingborg, Sweden,  <a href="http://www.elcowire.com">www.elcowire.com</a></p> <p>Jonas Ciardi, <a href="mailto:jonas.ciardi@elcowire.com">jonas.ciardi@elcowire.com</a>  +46 707 614 726</p>
<p>LCA author:</p>	 <p>WSP Sverige AB, <a href="http://www.wsp.com">www.wsp.com</a>  Lisa Rasmusson, <a href="mailto:lisa.rasmusson@wsp.com">lisa.rasmusson@wsp.com</a>  +46 107 210 818</p>
<p>Programme operator:</p>	 <p>EPD International AB  <a href="mailto:info@environdec.com">info@environdec.com</a></p>

