



# ENVIRONMENTAL PRODUCT DECLARATION



## ACSR CONDUCTORS

**BASED ON:**

PCR EPDItaly 016  
EN:50693:2019  
ISO 14025:2010

**CPC:**

463

**DECLARATION N°:**

ACSRCONDUCTORS01

**CERTIFICATION N°:**

EPDITALY0297

**PROGRAM OPERATOR:**

EPDItaly

**PUBLISHER:**

EPDItaly

**DATE OF ISSUE:**

12/07/2022

**VALID UNTIL:**

12/07/2027

**PRODUCTION**

**SITE:**

Str. Drumul Cetatii 19,  
BISTRITA  
Romania



# PROGRAMME INFORMATION

## EPD REFERENCES

**EPD Owner:** IPROEB S.A. - STR. DRUMUL CETATII NR.19, BISTRITA, JUD. BISTRITA-NASAUD, ROMANIA, CP 420063

**Program Operator:** EPDIItaly

## INDEPENDENT VERIFICATION

This declaration has been developed referring to the EPDIItaly, following the "Regolamento di EPDIItaly" version 5.2; further information and the document itself are available at: [www.epditaly.it](http://www.epditaly.it). EPD document valid worldwide.

Reference PCR: EPDIItaly007 REV. 2 – 2020/10/21 "Electronic and electrical products and systems"; EPDIItaly016 REV. 2 - 2020/09/25 "Cables and wires"

Independent verification of the declaration and data, according to EN ISO 14025 : 2010

EPD process certification (Internal)

EPD verification (External)

**Third party verifier:** ICMQ SpA, via De Castilla, 10 20124 Milano ([www.icmq.it](http://www.icmq.it))

**Accredited by:** Accredia

Environmental declarations published within the same product category, though originating from different programs, may not be comparable. The EPD Owner releases EPDIItaly from any non-compliance with environmental legislation. The holder of the declaration will be responsible for the information and supporting evidence. EPDIItaly disclaims any responsibility for the information, data and results provided by the EPD Owner for life cycle assessment.

## CONTACTS

To get more information about this environmental declaration or about Iproeb activities please contact:

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Technical support to Iproeb was provided by:  
Life Cycle Engineering, Italy  
([www.lcengineering.eu](http://www.lcengineering.eu)).



# THE COMPANY

**I PROEB SA**, company with tradition in the electrotechnical field, was established in **1982** becoming one of the important players in the cable and conductors' production market. Its products are used in modernizing and expanding the national energy system, the national railway network or contribute to achieve important industrial objectives.

The **field of activity** of I PROEB includes the production and marketing of:

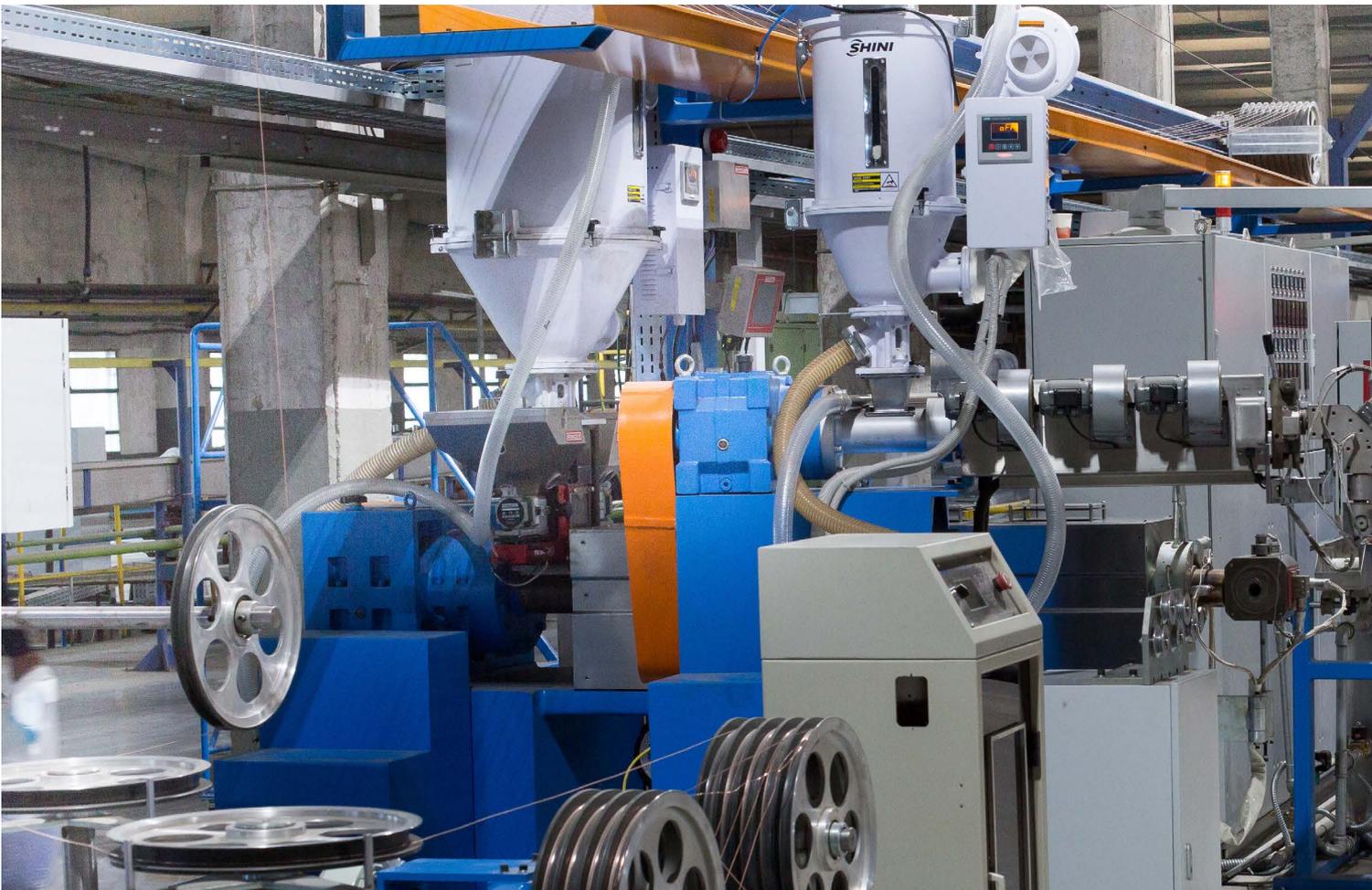
- low and medium voltage cables with copper and aluminum conductors, respectively insulated in PVC, rubber and polyethylene;
- aluminum and aluminum alloy bare conductors;
- aluminum conductors steel reinforced;
- galvanized steel wire conductors;
- steel wire ropes;

- composite insulators;
- equipments for automatic facilities.

I PROEB SA operates on the **Romanian market** for: power suppliers electricity companies, companies operating in the construction and assembly sector of high voltage power lines and electrical substations and companies operating in the construction sector using low and medium voltage cables and conductors for electrical installations.

I PROEB SA also operates on foreign markets for companies in Europe, directly or through zonal distributors.

Regarding the investment activity, I PROEB focused at the acquisition of **new equipment**: intermediate wire drawing machine for copper wires, stranding machines, extrusion





lines and modernization of existing processes, in order to diversify manufacturing and improve products quality.

I PROEB prioritizes the health and safety of its personnel, collaborators and visitors, the satisfaction of its customers, the protection of the environment and the development of the communities with which it interacts as an absolute and integrated priority; the entire organization is oriented toward achieving these goals openly and transparently.

I PROEB is committed to developing long term sustainable business, preventing pollution and minimizing the environmental impact of its operations, making the most efficient use of natural resources and energy.

I PROEB believes that its responsibility to reduce the environmental impact of its activities is also an opportunity

to embrace innovation and technological change, engaging its partners in the value chain to add their efforts to achieve a cleaner future.

I PROEB SA has implemented the Quality Management System in accordance with ISO 9001: 2015, certified by TUV SUD Germany, The Environmental Management System in accordance with ISO 14001: 2015 and the Occupational Health and Safety Management System ISO 45001: 2018.

The products are tested and verified in our own testing laboratory, accredited by the national accreditation body RENAR Romania, in accordance with ISO 17025: 2015.

I PROEB products are certified and approved by certification bodies, recognized at national and international level such as: OICPE, AFER, INSEMEX.



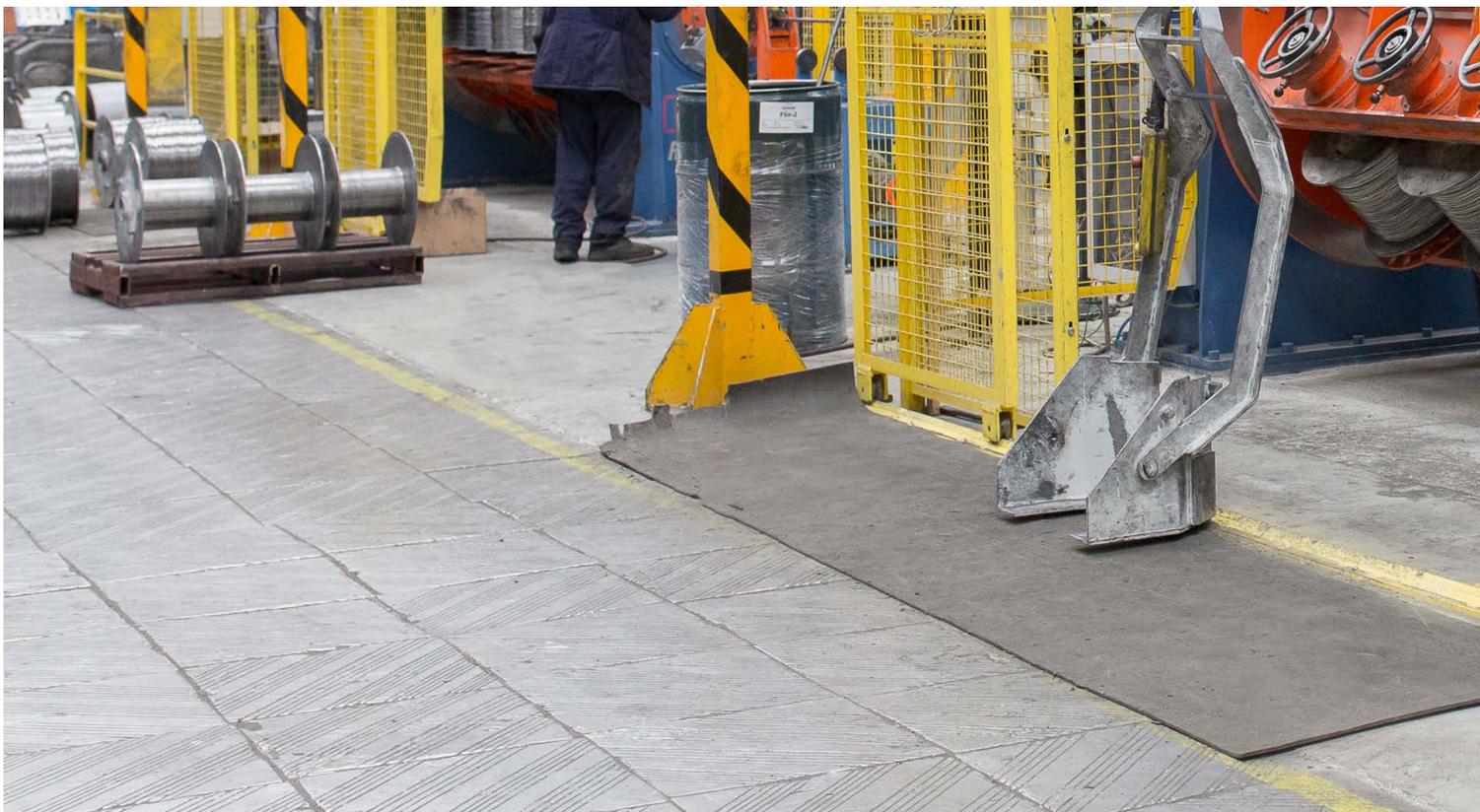
# THE PRODUCT

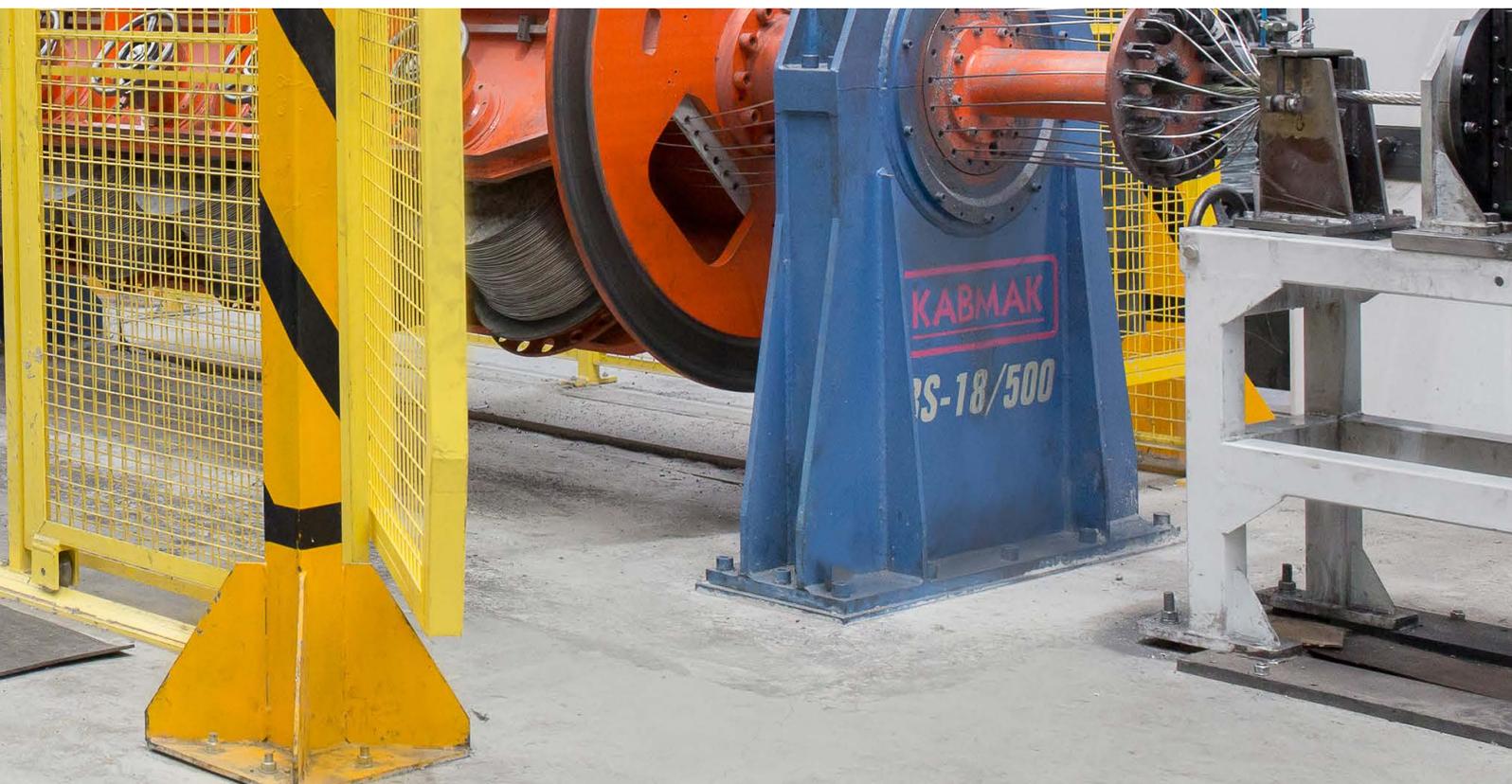
## ACSR CONDUCTOR

The steel reinforced aluminum conductors composed of a central core surrounded by one or more adjacent layers of wires being laid helically in opposite directions.

The conductors are used to transport energy on overhead power lines, in medium voltage networks being supported on metal poles by insulating elements.

The conductors are in accordance with the Global Standard GSC003 rev.2 /29/04/2016: Concentric lay stranded bare conductors.





# SCOPE AND TYPE OF EPD

The approach used in this EPD is “Cradle to grave”, according to reference PCR

## TABLE OF MODULES

MANUFACTURING STAGE		DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE DE-INSTALLATION
UPSTREAM MODULE	CORE MODULE	DOWNSTREAM MODULE			

**SOFTWARE:** SimaPro ver. 9.2.0.1 ([www.pre.nl](http://www.pre.nl))

**MAIN DATABASE:** Ecoinvent 3.6

**REPORT LCA:** LIFE CYCLE ASSESSMENT APPLIED TO CABLES FOR EPD PURPOSES

**GEOGRAPHICAL SCOPE OF THE EPD:** Worldwide

**TYPE OF EPD:** Product specific EPD

**REFERENCE YEAR:** 2020

Environmental declarations published within the same product category, though originating from different programs, may not be comparable.



# DETAILED PRODUCT DESCRIPTION

Aluminium conductor steel-reinforced (ACSR) is a stranded conductor used in overhead power lines. The outer strands are aluminium, chosen for its good resistance to corrosion and mechanical resistance. The centre strand is steel for additional strength to help support the weight of the conductor. Steel is of higher strength than aluminium which allows for increased mechanical tension to be applied on the conductor. Steel has lower elastic deformation due to mechanical loading (wind and ice). Steel has a lower coefficient of thermal expansion.

INFORMATION	CABLE				
<b>PRODUCT IDENTIFICATION</b>	<b>ACSR</b> Aluminium conductor steel-reinforced				
<b>PRODUCT FEATURES</b>	ACSR 48-AL1/8-ST1A to 485-AL1/63-ST1A				
	<b>General Data</b>	<b>48-AL1/8-ST1A</b>	<b>70-AL1/11-ST1A</b>	<b>94-AL1/15-ST1A</b>	<b>122-AL1/20-ST1A</b>
	Total cross section	56.3 mm <sup>2</sup>	81.3 mm <sup>2</sup>	109.7 mm <sup>2</sup>	141.4 mm <sup>2</sup>
	Electrical resistance at 20 °C	0.5939 Ω/km	0.4132 Ω/km	0.3060 Ω/km	0.2376 Ω/km
	Total weight - ungreased	194.7 kg/km	282.0 kg/km	380.3 kg/km	490.6 kg/km
<b>PRODUCT PROPERTIES</b>	ACSR conductors are in accordance with the Global Standard GSC003 rev.3 /15/12/2020 and European Standard EN 50182.				
<b>MANUFACTURING PLANT</b>	IPROEB SA, Bistrita				

## CONTENT DECLARATION - EXCLUDING PACKAGING\*

MATERIAL	MASS SHARE
ALUMINIUM	70 %
ZINC COATED STEEL	30 %

\*Cable packaging is composed by wooden drums which are recovered and reused after product delivery to the customer. For this reason packaging has been excluded from content declaration.

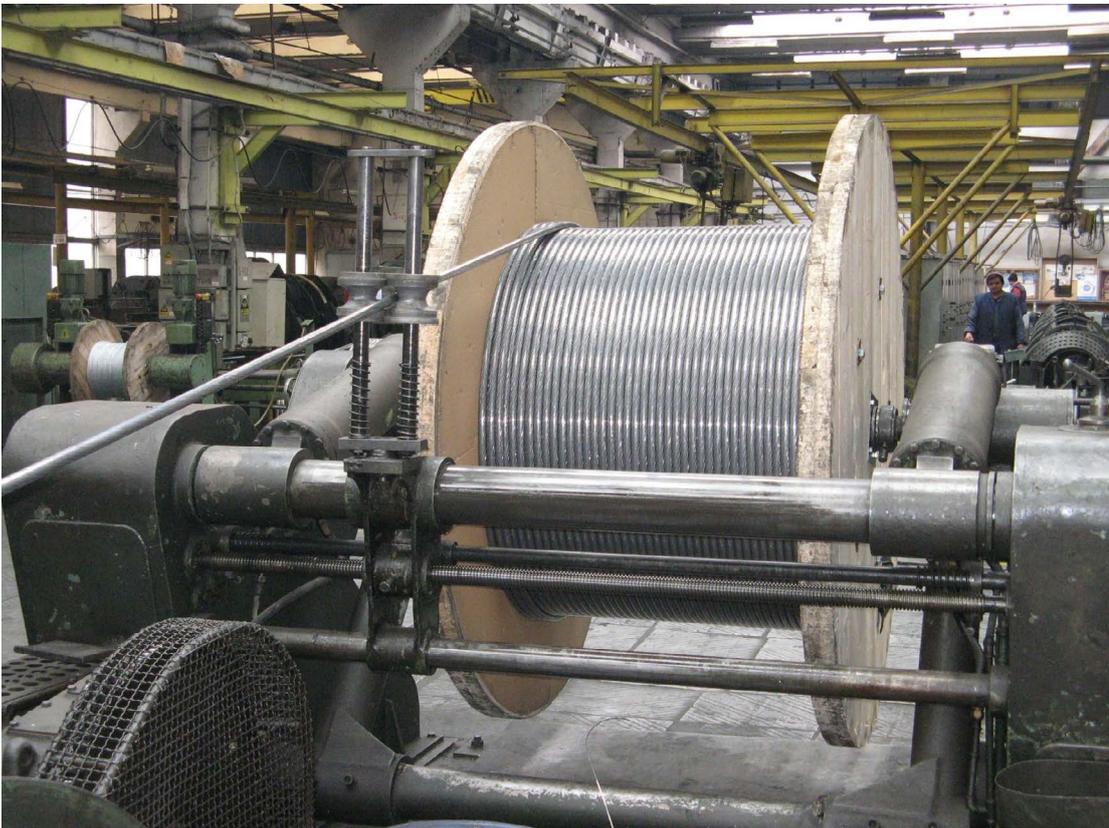
# GENERAL MANUFACTURING SPECIFICATION

The aluminum wires are produced by drawing of aluminum rod of 9.5 mm.

After rewinding the galvanized steel wires are stranded in one or more layers.

The last stage of manufacturing is final control.





# ENVIRONMENTAL PERFORMANCE

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generation) is presented for the three phases Upstream, Core and Downstream and related sub-phases.

**DECLARED UNIT (D.U.)** The declared unit is 1 km of cable manufactured in Iproeb headquarter in Bistrita

## ACSR CONDUCTORS - 48/AL1

### ENVIRONMENTAL IMPACTS - 48/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>GWP</b>	kg CO <sub>2</sub> eq	1,42E+03	6,45E+00	0,00E+00	8,49E+01	5,45E+01	<b>1,56E+03</b>
<b>GWP,f</b>	kg CO <sub>2</sub> eq	1,39E+03	6,45E+00	0,00E+00	8,48E+01	5,44E+01	<b>1,54E+03</b>
<b>GWP,b</b>	kg CO <sub>2</sub> eq	5,11E+00	3,77E-04	0,00E+00	1,25E-02	9,74E-02	<b>5,22E+00</b>
<b>GWP,luluc</b>	kg CO <sub>2</sub> eq	2,21E+01	5,21E-05	0,00E+00	5,42E-03	5,30E-02	<b>2,21E+01</b>
<b>GWP,ghg</b>	kg CO <sub>2</sub> eq	1,37E+03	6,40E+00	0,00E+00	8,30E+01	5,37E+01	<b>1,51E+03</b>
<b>ODP</b>	kg CFC11 eq	1,26E-04	1,53E-06	0,00E+00	3,68E-06	2,27E-06	<b>1,34E-04</b>
<b>AP</b>	mol H+ eq	7,37E+00	2,24E-02	0,00E+00	4,06E-01	1,59E-01	<b>7,96E+00</b>
<b>EP,f</b>	kg P eq	5,93E-02	3,30E-06	0,00E+00	4,14E-03	1,51E-03	<b>6,49E-02</b>
<b>EP,m</b>	kg N eq	9,77E-01	7,17E-03	0,00E+00	9,10E-02	3,03E-02	<b>1,11E+00</b>
<b>EP,t</b>	mol N eq	1,08E+01	7,88E-02	0,00E+00	1,01E+00	3,35E-01	<b>1,22E+01</b>
<b>POCP</b>	kg NMVOC eq	3,66E+00	2,15E-02	0,00E+00	2,58E-01	9,04E-02	<b>4,03E+00</b>
<b>ADPE</b>	kg Sb eq	1,24E-04	2,80E-07	0,00E+00	2,17E-06	5,75E-06	<b>1,32E-04</b>
<b>ADPF</b>	MJ	2,21E+04	9,13E+01	0,00E+00	1,73E+03	4,42E+02	<b>2,44E+04</b>
<b>WDP</b>	m <sup>3</sup>	1,58E+02	-1,53E-02	0,00E+00	1,33E+01	2,35E+01	<b>1,94E+02</b>

**GWP** Global warming potential, total  
**GWP,f** Global warming potential, fossil  
**GWP,b** Global warming potential, biogenic  
**GWP,luluc** Global warming potential, land use & land use change  
**GWP,ghg** Global warming potential, excluding biogenic biogenic uptake, emission and storage  
**ODP** Ozone depletion potential

**AP** Acidification Potential  
**EP,f** Eutrophication potential, freshwater  
**EP,m** Eutrophication potential, marine  
**EP,t** Eutrophication potential, terrestrial  
**POCP** Photochemical ozone creation potential  
**ADPE** Abiotic depletion potential minerals & metals\*  
**ADPF** Abiotic depletion potential fossil fuels\*  
**WDP** Water use deprivation potential\*

Additional environmental impact indicators are computed in the LCA report but not reported in the EPD.

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

## RESOURCE USE PER DECLARED UNIT - 48/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>PERE</b>	MJ	6,88E+03	1,40E-01	0,00E+00	4,34E+02	4,23E+01	<b>7,35E+03</b>
<b>PERM</b>	MJ	3,45E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>3,45E+02</b>
<b>PERT</b>	MJ	7,22E+03	1,40E-01	0,00E+00	4,34E+02	4,23E+01	<b>7,70E+03</b>
<b>PENRE</b>	MJ	2,53E+04	8,91E+01	0,00E+00	2,11E+03	5,56E+02	<b>2,81E+04</b>
<b>PENRM</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>PENRT</b>	MJ	2,53E+04	8,91E+01	0,00E+00	2,11E+03	5,56E+02	<b>2,81E+04</b>
<b>SM</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>RSF</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>NRSF</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>FW</b>	m <sup>3</sup>	4,25E+01	2,51E-04	0,00E+00	2,99E-01	7,89E-01	<b>4,36E+01</b>

**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 resources  
**SM** Use of secondary raw materials  
**RSF** Use of renewable secondary fuels  
**NRSF** Use of non-renewable secondary fuels  
**FW** Use of net fresh water

## OUTPUT FLOWS AND WASTE CATEGORIES PER DECLARED UNIT - 48/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>HWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>NHWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>RWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>CRU</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>MFR</b>	kg	2,08E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>2,08E+01</b>
<b>MER</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>EE</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>

**HWD** Hazardous waste disposed  
**NHWD** Non-hazardous waste disposed  
**RWD** Radioactive waste disposed  
**CRU** Components for re-use

**MFR** Materials for recycling  
**MER** Materials for energy recovery  
**EE** Exported energy

# ENVIRONMENTAL PERFORMANCE

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generation) is presented for the three phases Upstream, Core and Downstream and related sub-phases.

**DECLARED UNIT (D.U.)** The declared unit is 1 km of cable manufactured in Iproeb headquarter in Bistrita

## ACSR CONDUCTORS - 70/AL1

### ENVIRONMENTAL IMPACTS - 70/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>GWP</b>	kg CO <sub>2</sub> eq	1,91E+03	9,31E+00	0,00E+00	5,92E+01	7,89E+01	<b>2,06E+03</b>
<b>GWP,f</b>	kg CO <sub>2</sub> eq	1,87E+03	9,31E+00	0,00E+00	5,91E+01	7,86E+01	<b>2,02E+03</b>
<b>GWP,b</b>	kg CO <sub>2</sub> eq	7,44E+00	5,44E-04	0,00E+00	8,74E-03	1,41E-01	<b>7,59E+00</b>
<b>GWP,luluc</b>	kg CO <sub>2</sub> eq	3,22E+01	7,52E-05	0,00E+00	3,78E-03	7,66E-02	<b>3,23E+01</b>
<b>GWP,ghg</b>	kg CO <sub>2</sub> eq	1,85E+03	9,24E+00	0,00E+00	5,79E+01	7,77E+01	<b>1,99E+03</b>
<b>ODP</b>	kg CFC11 eq	1,71E-04	2,21E-06	0,00E+00	2,57E-06	3,29E-06	<b>1,79E-04</b>
<b>AP</b>	mol H+ eq	1,02E+01	3,23E-02	0,00E+00	2,83E-01	2,31E-01	<b>1,08E+01</b>
<b>EP,f</b>	kg P eq	8,18E-02	4,76E-06	0,00E+00	2,88E-03	2,18E-03	<b>8,69E-02</b>
<b>EP,m</b>	kg N eq	1,30E+00	1,03E-02	0,00E+00	6,34E-02	4,38E-02	<b>1,42E+00</b>
<b>EP,t</b>	mol N eq	1,44E+01	1,14E-01	0,00E+00	7,04E-01	4,84E-01	<b>1,57E+01</b>
<b>POCP</b>	kg NMVOC eq	4,96E+00	3,10E-02	0,00E+00	1,80E-01	1,31E-01	<b>5,31E+00</b>
<b>ADPE</b>	kg Sb eq	1,78E-04	4,04E-07	0,00E+00	1,52E-06	8,31E-06	<b>1,88E-04</b>
<b>ADPF</b>	MJ	2,93E+04	1,32E+02	0,00E+00	1,21E+03	6,39E+02	<b>3,13E+04</b>
<b>WDP</b>	m <sup>3</sup>	2,02E+02	-2,21E-02	0,00E+00	9,28E+00	3,40E+01	<b>2,45E+02</b>

**GWP** Global warming potential, total  
**GWP,f** Global warming potential, fossil  
**GWP,b** Global warming potential, biogenic  
**GWP,luluc** Global warming potential, land use & land use change  
**GWP,ghg** Global warming potential, excluding biogenic biogenic uptake, emission and storage  
**ODP** Ozone depletion potential

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**POCP** Photochemical ozone creation potential  
**ADPE** Abiotic depletion potential minerals & metals\*  
**ADPF** Abiotic depletion potential fossil fuels\*  
**WDP** Water use deprivation potential\*

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## RESOURCE USE PER DECLARED UNIT - 70/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>PERE</b>	MJ	9,54E+03	2,02E-01	0,00E+00	3,03E+02	6,12E+01	<b>9,91E+03</b>
<b>PERM</b>	MJ	4,80E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>4,80E+02</b>
<b>PERT</b>	MJ	1,00E+04	2,02E-01	0,00E+00	3,03E+02	6,12E+01	<b>1,04E+04</b>
<b>PENRE</b>	MJ	3,35E+04	1,29E+02	0,00E+00	1,47E+03	8,05E+02	<b>3,59E+04</b>
<b>PENRM</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>PENRT</b>	MJ	3,35E+04	1,29E+02	0,00E+00	1,47E+03	8,05E+02	<b>3,59E+04</b>
<b>SM</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>RSF</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>NRSF</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>FW</b>	m <sup>3</sup>	6,14E+01	3,62E-04	0,00E+00	2,09E-01	1,14E+00	<b>6,28E+01</b>

**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 resources

**SM** Use of secondary raw materials

**RSF** Use of renewable secondary fuels

**NRSF** Use of non-renewable secondary fuels

**FW** Use of net fresh water

## OUTPUT FLOWS AND WASTE CATEGORIES PER DECLARED UNIT - 70/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>HWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>NHWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>RWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>CRU</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>MFR</b>	kg	2,08E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>2,08E+01</b>
<b>MER</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>EE</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>

**HWD** Hazardous waste disposed

**NHWD** Non-hazardous waste disposed

**RWD** Radioactive waste disposed

**CRU** Components for re-use

**MFR** Materials for recycling

**MER** Materials for energy recovery

**EE** Exported energy

# ENVIRONMENTAL PERFORMANCE

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generation) is presented for the three phases Upstream, Core and Downstream and related sub-phases.

**DECLARED UNIT (D.U.)** The declared unit is 1 km of cable manufactured in Iproeb headquarter in Bistrita

## ACSR CONDUCTORS - 94/AL1

### ENVIRONMENTAL IMPACTS - 94/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>GWP</b>	kg CO <sub>2</sub> eq	2,46E+03	1,26E+01	0,00E+00	4,37E+01	1,06E+02	<b>2,62E+03</b>
<b>GWP,f</b>	kg CO <sub>2</sub> eq	2,40E+03	1,26E+01	0,00E+00	4,36E+01	1,06E+02	<b>2,56E+03</b>
<b>GWP,b</b>	kg CO <sub>2</sub> eq	9,95E+00	7,34E-04	0,00E+00	6,45E-03	1,90E-01	<b>1,01E+01</b>
<b>GWP,luluc</b>	kg CO <sub>2</sub> eq	4,31E+01	1,02E-04	0,00E+00	2,79E-03	1,03E-01	<b>4,32E+01</b>
<b>GWP,ghg</b>	kg CO <sub>2</sub> eq	2,37E+03	1,25E+01	0,00E+00	4,27E+01	1,05E+02	<b>2,53E+03</b>
<b>ODP</b>	kg CFC11 eq	2,20E-04	2,98E-06	0,00E+00	1,89E-06	4,43E-06	<b>2,30E-04</b>
<b>AP</b>	mol H+ eq	1,33E+01	4,36E-02	0,00E+00	2,09E-01	3,11E-01	<b>1,39E+01</b>
<b>EP,f</b>	kg P eq	1,06E-01	6,43E-06	0,00E+00	2,13E-03	2,94E-03	<b>1,11E-01</b>
<b>EP,m</b>	kg N eq	1,66E+00	1,40E-02	0,00E+00	4,68E-02	5,90E-02	<b>1,77E+00</b>
<b>EP,t</b>	mol N eq	1,83E+01	1,54E-01	0,00E+00	5,20E-01	6,52E-01	<b>1,96E+01</b>
<b>POCP</b>	kg NMVOC eq	6,39E+00	4,19E-02	0,00E+00	1,33E-01	1,76E-01	<b>6,75E+00</b>
<b>ADPE</b>	kg Sb eq	2,36E-04	5,45E-07	0,00E+00	1,12E-06	1,12E-05	<b>2,49E-04</b>
<b>ADPF</b>	MJ	3,72E+04	1,78E+02	0,00E+00	8,90E+02	8,61E+02	<b>3,91E+04</b>
<b>WDP</b>	m <sup>3</sup>	2,52E+02	-2,98E-02	0,00E+00	6,85E+00	4,59E+01	<b>3,05E+02</b>

**GWP** Global warming potential, total  
**GWP,f** Global warming potential, fossil  
**GWP,b** Global warming potential, biogenic  
**GWP,luluc** Global warming potential, land use & land use change  
**GWP,ghg** Global warming potential, excluding biogenic biogenic uptake, emission and storage  
**ODP** Ozone depletion potential

**AP** Acidification Potential  
**EP,f** Eutrophication potential, freshwater  
**EP,m** Eutrophication potential, marine  
**EP,t** Eutrophication potential, terrestrial  
**POCP** Photochemical ozone creation potential  
**ADPE** Abiotic depletion potential minerals & metals\*  
**ADPF** Abiotic depletion potential fossil fuels\*  
**WDP** Water use deprivation potential\*

Additional environmental impact indicators are computed in the LCA report but not reported in the EPD.

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

## RESOURCE USE PER DECLARED UNIT - 94/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>PERE</b>	MJ	1,24E+04	2,73E-01	0,00E+00	2,23E+02	8,25E+01	<b>1,27E+04</b>
<b>PERM</b>	MJ	6,65E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>6,65E+02</b>
<b>PERT</b>	MJ	1,31E+04	2,73E-01	0,00E+00	2,23E+02	8,25E+01	<b>1,34E+04</b>
<b>PENRE</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>PENRM</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>PENRT</b>	MJ	4,23E+04	1,74E+02	0,00E+00	1,09E+03	1,08E+03	<b>4,47E+04</b>
<b>SM</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>RSF</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>NRSF</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>FW</b>	m <sup>3</sup>	8,19E+01	4,88E-04	0,00E+00	1,54E-01	1,54E+00	<b>8,35E+01</b>

**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 resources

**SM** Use of secondary raw materials

**RSF** Use of renewable secondary fuels

**NRSF** Use of non-renewable secondary fuels

**FW** Use of net fresh water

## OUTPUT FLOWS AND WASTE CATEGORIES PER DECLARED UNIT - 94/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>HWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>NHWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>RWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>CRU</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>MFR</b>	kg	2,08E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>2,08E+01</b>
<b>MER</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>EE</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>

**HWD** Hazardous waste disposed

**NHWD** Non-hazardous waste disposed

**RWD** Radioactive waste disposed

**CRU** Components for re-use

**MFR** Materials for recycling

**MER** Materials for energy recovery

**EE** Exported energy

# ENVIRONMENTAL PERFORMANCE

The detailed environmental performance (in terms of potential environmental impacts, use of resources and waste generation) is presented for the three phases Upstream, Core and Downstream and related sub-phases.

**DECLARED UNIT (D.U.)** The declared unit is 1 km of cable manufactured in Iproeb headquarter in Bistrita

## ACSR CONDUCTORS - 122/AL1

### ENVIRONMENTAL IMPACTS - 122/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>GWP</b>	kg CO <sub>2</sub> eq	3,08E+03	1,63E+01	0,00E+00	3,39E+01	1,37E+02	<b>3,27E+03</b>
<b>GWP,f</b>	kg CO <sub>2</sub> eq	3,02E+03	1,63E+01	0,00E+00	3,39E+01	1,37E+02	<b>3,20E+03</b>
<b>GWP,b</b>	kg CO <sub>2</sub> eq	1,29E+01	9,51E-04	0,00E+00	5,00E-03	2,45E-01	<b>1,32E+01</b>
<b>GWP,luluc</b>	kg CO <sub>2</sub> eq	5,60E+01	1,31E-04	0,00E+00	2,16E-03	1,33E-01	<b>5,62E+01</b>
<b>GWP,ghg</b>	kg CO <sub>2</sub> eq	2,98E+03	1,62E+01	0,00E+00	3,31E+01	1,35E+02	<b>3,16E+03</b>
<b>ODP</b>	kg CFC11 eq	2,78E-04	3,86E-06	0,00E+00	1,47E-06	5,72E-06	<b>2,89E-04</b>
<b>AP</b>	mol H+ eq	1,70E+01	5,65E-02	0,00E+00	1,62E-01	4,02E-01	<b>1,76E+01</b>
<b>EP,f</b>	kg P eq	1,35E-01	8,32E-06	0,00E+00	1,65E-03	3,80E-03	<b>1,40E-01</b>
<b>EP,m</b>	kg N eq	2,07E+00	1,81E-02	0,00E+00	3,63E-02	7,62E-02	<b>2,20E+00</b>
<b>EP,t</b>	mol N eq	2,28E+01	1,99E-01	0,00E+00	4,03E-01	8,42E-01	<b>2,43E+01</b>
<b>POCP</b>	kg NMVOC eq	8,07E+00	5,42E-02	0,00E+00	1,03E-01	2,28E-01	<b>8,45E+00</b>
<b>ADPE</b>	kg Sb eq	3,06E-04	7,06E-07	0,00E+00	8,67E-07	1,45E-05	<b>3,22E-04</b>
<b>ADPF</b>	MJ	4,63E+04	2,30E+02	0,00E+00	6,90E+02	1,11E+03	<b>4,84E+04</b>
<b>WDP</b>	m <sup>3</sup>	3,08E+02	-3,85E-02	0,00E+00	5,31E+00	5,93E+01	<b>3,73E+02</b>

**GWP** Global warming potential, total  
**GWP,f** Global warming potential, fossil  
**GWP,b** Global warming potential, biogenic  
**GWP,luluc** Global warming potential, land use & land use change  
**GWP,ghg** Global warming potential, excluding biogenic biogenic uptake, emission and storage  
**ODP** Ozone depletion potential

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**EP,f** Eutrophication potential, freshwater  
**EP,m** Eutrophication potential, marine  
**EP,t** Eutrophication potential, terrestrial  
**POCP** Photochemical ozone creation potential  
**ADPE** Abiotic depletion potential minerals & metals\*  
**ADPF** Abiotic depletion potential fossil fuels\*  
**WDP** Water use deprivation potential\*

Additional environmental impact indicators are computed in the LCA report but not reported in the EPD.

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

## RESOURCE USE PER DECLARED UNIT - 122/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>PERE</b>	MJ	1,58E+04	3,53E-01	0,00E+00	1,73E+02	1,07E+02	<b>1,61E+04</b>
<b>PERM</b>	MJ	8,86E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>8,86E+02</b>
<b>PERT</b>	MJ	1,67E+04	3,53E-01	0,00E+00	1,73E+02	1,07E+02	<b>1,70E+04</b>
<b>PENRE</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>PENRM</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>PENRT</b>	MJ	5,27E+04	2,25E+02	0,00E+00	8,44E+02	1,40E+03	<b>5,52E+04</b>
<b>SM</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>RSF</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>NRSF</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>FW</b>	m <sup>3</sup>	1,06E+02	6,32E-04	0,00E+00	1,19E-01	1,99E+00	<b>1,08E+02</b>

**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 resources

**SM** Use of secondary raw materials

**RSF** Use of renewable secondary fuels

**NRSF** Use of non-renewable secondary fuels

**FW** Use of net fresh water

## OUTPUT FLOWS AND WASTE CATEGORIES PER DECLARED UNIT - 122/AL1

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM + CORE PROCESS	DOWNSTREAM PROCESS				TOTAL
		MANUFACTURING STAGE	DISTRIBUTION STAGE	INSTALLATION STAGE	USE AND MAINTENANCE STAGE	END-OF-LIFE STAGE	
<b>HWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>NHWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>RWD</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>CRU</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>MFR</b>	kg	2,08E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>2,08E+01</b>
<b>MER</b>	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>
<b>EE</b>	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	<b>0,00E+00</b>

**HWD** Hazardous waste disposed

**NHWD** Non-hazardous waste disposed

**RWD** Radioactive waste disposed

**CRU** Components for re-use

**MFR** Materials for recycling

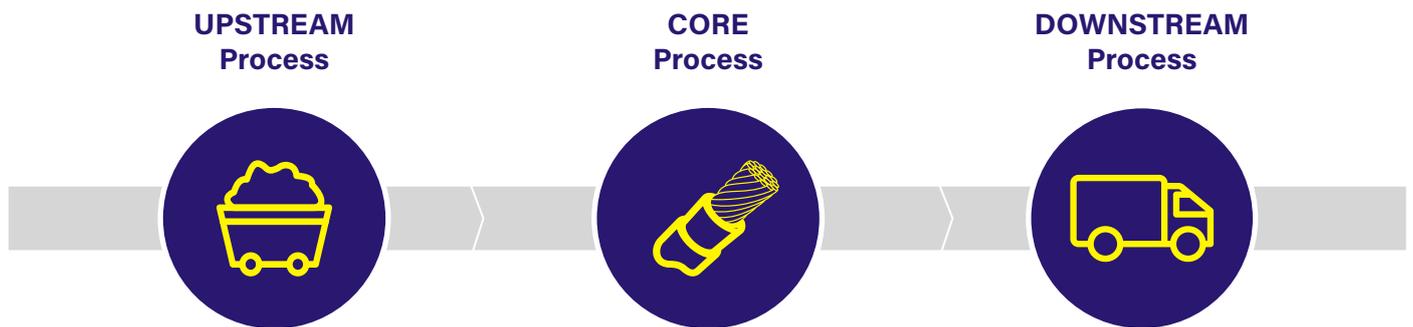
**MER** Materials for energy recovery

**EE** Exported energy

# CALCULATION RULES

According to reference PCR the main activities are listed and divided in three subsystems. Results are reported accordingly

- **UPSTREAM Process**
- **CORE Process**
- **DOWNSTREAM Process**



## LCA METHODOLOGY

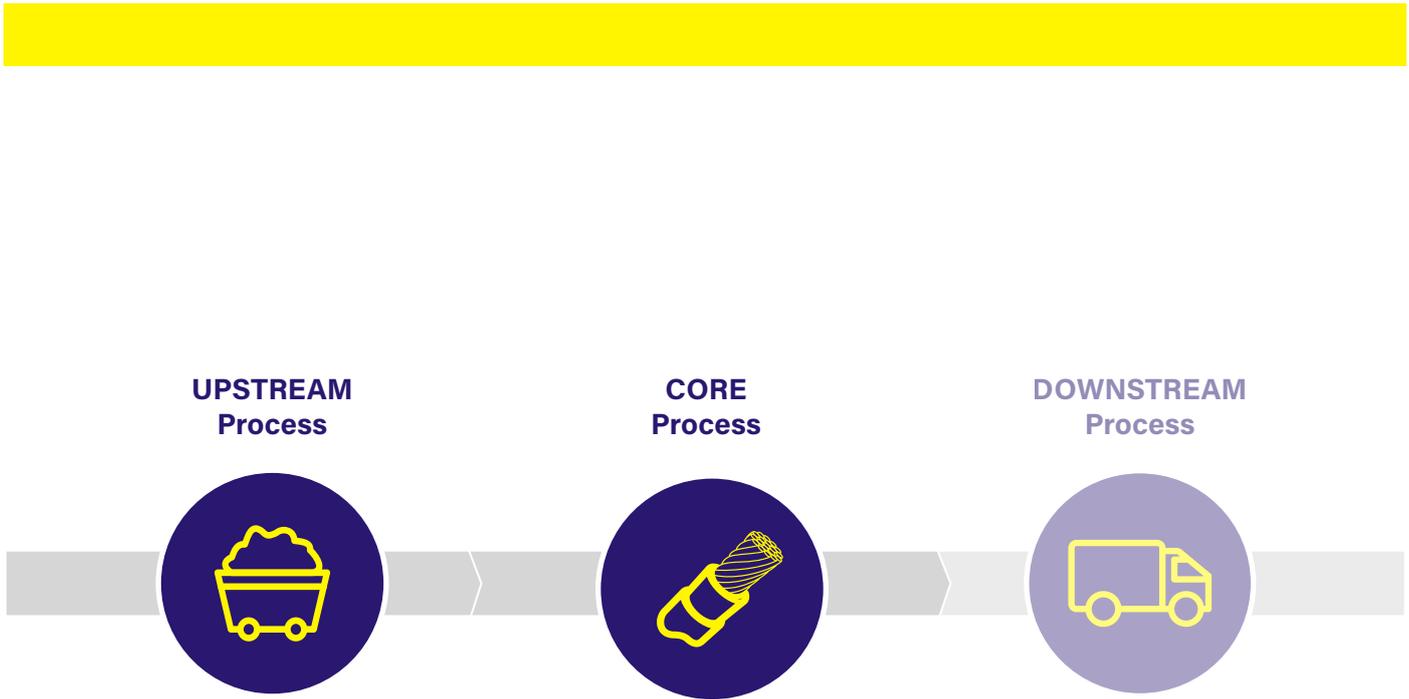
The environmental burden of the product has been processed according to the general rules of the EPDItaly and reference PCR.

This declaration is based on the application of Life Cycle Assessment (LCA) methodology to the whole life-cycle system, using Iproeb primary data related to 2020.

Customized LCA questionnaires were used to gather in-depth information about all aspects of the production system (for example, raw materials specifications, pre-treatments, process efficiencies, air emissions, waste management), ultimately providing a complete picture of the environmental burden of the system.

Environmental impacts of the use phase are calculated considering 1 A of electric load. Real energy losses can be computed by multiplying the impact by the actual current intensity of the cable.

# UPSTREAM + CORE PROCESS



TREATMENT OF PROCESS WASTE



CONDUCTOR MANUFACTURING PROCESS



EXTRACTION AND PROCESSING OF RAW MATERIALS



GENERATION OF ELECTRICITY FROM NATIONAL GRID



TRANSPORT OF RAW MATERIALS ALONG THE SUPPLY CHAIN UP TO MANUFACTURING PLANT



# DOWNSTREAM PROCESS



UPSTREAM  
Process



CORE  
Process



DOWNSTREAM  
Process



PRODUCT DELIVERY  
TO THE CUSTOMER



ENERGY DISSIPATION  
DURING USE PHASE



DECOMMISSIONING  
AND END OF LIFE

# ADDITIONAL ENVIRONMENTAL INFORMATION

From 2006, IPROEB has implemented the Environmental Management System according to the ISO 14001: 2015, having identified the criteria and methods necessary to identify, eliminate and / or minimize aspects with negative impact on the environment, both on the company's staff and third parties.

For the reduction of greenhouse gases, Iproeb SA has subscribed, adopted and implemented the principles of ISO 14067: 2018 and based on the CFP study report issued on 19.03.2021 it has obtained the certificate no. A022/29.03.2021, issued by IMQ Italia for the CCBYY cable.

All equipment is equipped with exhaustive systems and dust collecting systems, mounted on the floor that are guided by a centrifugal fan to cyclones provided with ventilation systems.

Water is used for technological purposes as cooling water, in a closed circuit during extrusion operations. The water is cooled in the cooling tower, in a closed circuit, with evaporator system type BAC VXI 50 - 4 with the help of a set of coils and recirculation pumps.

The activity does not result in toxic compounds that have negative effects on the environment, terrestrial ecosystems not being influenced.

The IPROEB company in collaboration with Life Cycle Engineering has started the life cycle assessment for some of the manufactured products, according to the main normative guidelines provided in the ISO 14040: 2021 and ISO 14044: 2021 standards.

The impact on the environment has been assessed in accordance with standard EN 15804 + A2: 2019.

The study evaluated the specific environmental emission factors / impact indicators, which are updated periodically.

## ISSUED

Quality Manager

Alina TIMAR

Chief of Technical department

Silvia MEZOFI

## REFERENCES

- BSI (2019) EN 50693:2019 – Product category rules for LCA of electronic and electrical products and systems. Final version, August 2019. British Standard.
- BSI (2019) EN 15804+A2:2019 – Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. British Standard.
- EPDIItaly, 2020. Regulations of the EPDIItaly Programme. Revision 5.2. Issue date 2022/02/16.
- EPDIItaly007, 2020. Electronic and Electrical Products and Systems. Issue date 2020/01/20 Rev 2. core-PCR.
- EPDIItaly016, 2020. Electronic and Electrical Products and Systems – Cables and wires. Issue date 2020/09/25 revision v. 2. sub-PCR.



[www.iproeb.ro](http://www.iproeb.ro)