

## ENVIRONMENTAL PRODUCT DECLARATION

### Power Cable 62285750 - ARE4H5EX 12/20kV 3X1X185

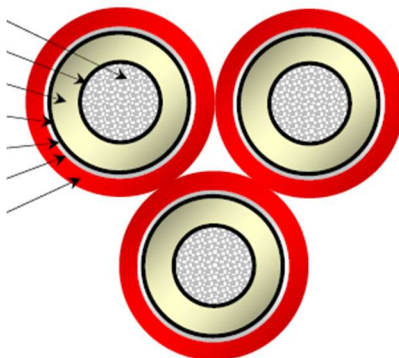
Arcozelo. Vila Nova de Gaia – Portugal

In accordance with ISO 14025 and EN 50693:2019

Program Operator	EPDIItaly
Publisher	EPDIItaly

Declaration Number	EPD 03
Registration Number	EPDITALY1098

Issue date	22/07/2025
Valid to	22/07/2030



Disclaimer: Image may not be identical to declared product but represents the product family

**GENERAL INFORMATION**

<b>EPD OWNER</b>	
<b>Name of the company</b>	Cabelte - Cabos Eléctricos. S.A
<b>Registered office</b>	Rua de Espírito Santo 4410-420 ARCOZELO VILA NOVA DE GAIA PORTUGAL
<b>Contacts for information on the EPD</b>	+351 227 537 500 <a href="mailto:inform@cabelte.pt">inform@cabelte.pt</a>
<b>PROGRAM OPERATOR</b>	
<b>EPDIItaly</b>	Via Gaetano De Castillia n° 10 - 20124 Milano. Italy
<b>INFORMATION ON THE EPD</b>	
<b>Product name (s)</b>	Power cable 62285750
<b>Site (s)</b>	The product was produced in the following Cabelte's sites: Arcozele unit: Rua de Espírito Santo 4410-420 ARCOZELO VILA NOVA DE GAIA PORTUGAL Ribeirão unit: Avenida da Indústria. 382 4760-715 RIBEIRÃO VILA NOVA DE FAMALICÃO PORTUGAL
<b>Short description and technical information of the product (s)</b>	Medium voltage cable with reduced insulation thickness Triplex formation (Three single core cable) Aluminium conductor XLPE insulation - triple extrusion Screen of laminated Al/copolymer tape bonded to the outer sheath ARE4H5EX 12/20kV 3x1x185 Rated voltage: 12 / 20 (24) kV
<b>Field of application of the product (s)</b>	Medium voltage networks
<b>CPC Code (number)</b> <a href="https://unstats.un.org/unsd/classifications/Econ">https://unstats.un.org/unsd/classifications/Econ</a>	46310 Insulated wire and cable; optical fibre cables
<b>VERIFICATION INFORMATION</b>	
<b>PCR (title. version. date of publication or update)</b>	PCR EPDIItaly007- Electronic and electrical products and systems - Rev. 3.1; 12/11/2024 PCR EPDIItaly016- Electronic and electrical products and systems - Cables and wires - Rev. 3; 03/10/2024
<b>EPDIItaly Regulation (version. date of publication or update)</b>	Regulations of the EPDIItaly Programme. revision 6.0. 30/10/2023
<b>Project Report LCA</b>	LCA Report 62285750
<b>Independent Verification Statement</b>	The PCR review was performed by the EPD review panel - <a href="mailto:info@epditaly.it">info@epditaly.it</a> . Independent verification of the declaration and data. carried out according to ISO 14025: 2010. <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External Third party verification carried out by: ICMQ S.p.A.. via Gaetano De Castillia n ° 10 - 20124 Milan. Italy. Accredited by Accredia.
<b>Comparability Statement</b>	Environmental statements published within the same product category. but from different programs. may not be comparable. In particular. EPDs of construction products may not be comparable if they do not comply with EN 15804:2012+A2:2019/AC:2021 and EN 50693:2019.
<b>Liability Statement</b>	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.

**Information about the EPD**

This is a product specific declaration.

Geographic locations: The product is produced in Portugal. The use and the end of life phase occur in Italy.

Time representativeness: Data was collected during 2023 and its valid until any change implies its revision.

LCI and LCIA were performed using the LCA software Umberto with the database Ecoinvent EN15804 add on.

**Scope of the study**

All the stages of the life cycle are included (cradle to grave).

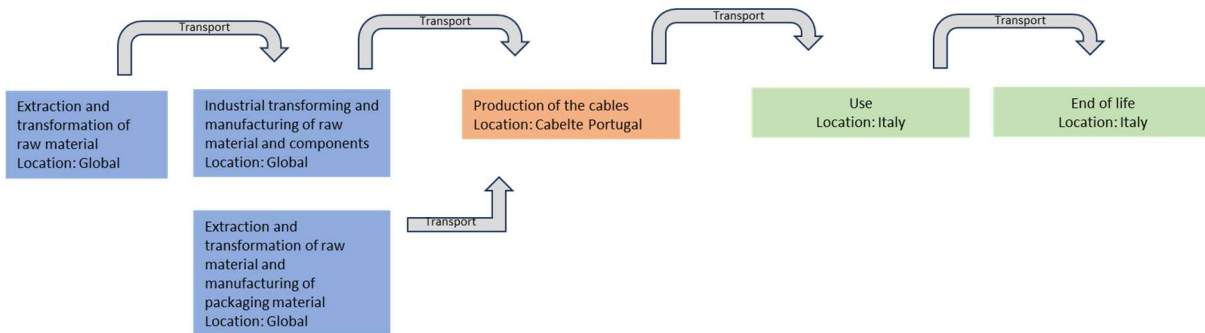


Figure 1 – Schematic representation of the life cycle of the product under study – geographic location

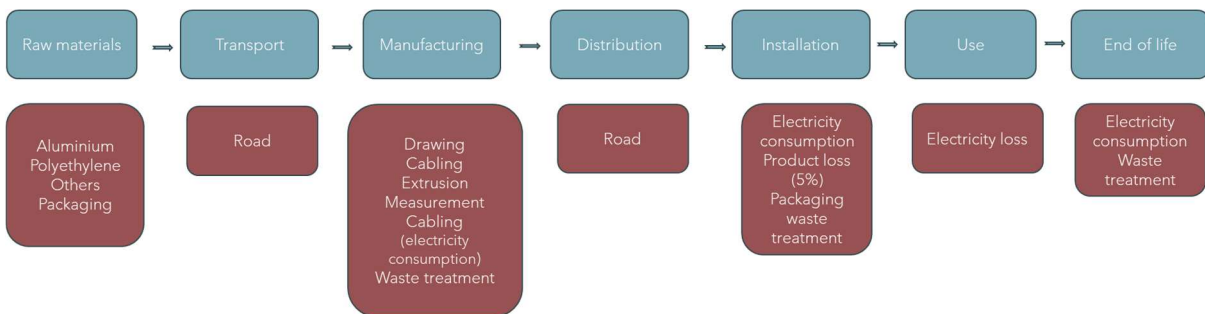


Figure 2 – Schematic representation of the life cycle of the product under study – main environmental factors

**Organization description**

Cabelte has been in business for over 80 years. which is a reflection of the trust we have earned with some of the world's most demanding utilities and demonstrates our commitment to quality. reliable products and competitive prices.

Integrated manufacturing that sources aluminium ingots directly from partner mines and uses its own smelting facilities. all to control the purity of the aluminium. Our integrated approach and long history with our suppliers has reduced our exposure to supply chain problems in these difficult times.

For the Energy sector. the Cabelte Group supplies Low (LV). Medium (MV) and High Voltage (HV) electrical cables to the main electrical utilities in the Iberian market. In recent years. the most important segments have been Renewable Energies and Energy Transmission Networks.

Cabelte is certified ISO 9001. ISO 14001 and ISO 45001.

The industrial units involved in the production of this cable are:

Arcozelo unit: Rua de Espírito Santo

4410-420 ARCOZELO VILA NOVA DE GAIA

PORTUGAL

Ribeirão unit: Avenida da Indústria. 382

4760-715 RIBEIRÃO VILA NOVA DE FAMILICÃO

PORTUGAL

## Product description

Medium voltage cable with reduced insulation thickness  
 Triplex formation (Three single core cable)  
 Aluminium conductor  
 XLPE insulation - triple extrusion  
 Screen of laminated Al/copolymer tape bonded to the outer sheath  
 ARE4H5EX 12/20kV 3x1x185  
 Rated voltage: 12 / 20 (24) kV

Product Composition				
Mass composition of the main materials	Material		Mass (kg)	% mass
	FIO MAQ.AL.9.50mm - Tipo H12	Aluminium	1566.40	40%
	SCI/SCE ADER.DRY CUR(XLC 09)	Catalyst Mixture 70% ethylene + 30% propylene	116.23	3%
	PE CP104	PE CP	929.16	24%
	SCE PEL.DRY CURING KI-XLC-09S	Catalyst Mixture 70% ethylene + 30% propylene	188.99	5%
	FITA AL/PE-300x60 105 mm	Al Strip	273.06	7%
	PE CAB 4805-UV	PE CAB	733.73	19%
	<b>Weight with exclusions</b>		<b>3807.57</b>	<b>98%</b>
<b>Weight without exclusions</b>		<b>3883.92</b>	<b>100%</b>	
<b>Weight of the cable (kg/km)</b>		<b>3625.72</b>		
Packaging (wood)		1499.56		

**Declared Unit:** One km of cable with a load of 1 A.

Weight of the declared unit: 3625.72 kg

The product is to be used in: Medium voltage networks

Reference Service Life (RSL): Forty years (based on the HD 605 S2:2008 standard. considering that a Medium Voltage cable (Power Cables) may be at an average operating temperature of 75°C. according to table 5.1.1 of this standard the estimated service life will be 40 years).

Presence of dangerous substances: No substances of concern or very high concern are present in the final product nor are expected to be released during use phase.

Calculation rules

Relevant aspect for the study	Description
<b>LCI and LCIA</b>	LCI and LCIA were performed using the LCA software Umberto with the database Ecoinvent EN15804 add on
<b>System model</b>	Allocation. cut-off. EN15804
<b>LCA assessment method</b>	EN15804 EF 3.1. EN15804
<b>Cut-off and exclusions</b>	Were followed the PCRs indications No relevant mass or energy flows were excluded. In the composition of the product the cut-off doesn't overcome the maximum of 5% mass.
<b>Allocation</b>	Physical allocation rules were used to determine the energy (natural gas and electricity) consumption and the waste production.
<b>Transportation and end of life scenarios</b>	Were followed the PCRs indications. described below
<b>Waste management</b>	Applied the polluters pays principle. adopting the end of waste state based on the definition of EN 15804 and EU's Waste Framework Directive (European Commission).

Technical and additional information

Processes/Stages	Description	Additional information
<p><b>Upstream</b></p> <p><b>Raw materials</b></p> <p><b>Production (extraction. treatment. transformation. etc.) of raw materials</b></p>	<p>This process takes place globally</p>	<p>The composition of each raw material and component of the product is primary data and derives from the ERP software.</p> <p>From there. given the difficulty to obtain information from the suppliers along the upstream chain. we resorted to the use of commercial database. taking into account the data availability at Ecoinvent data base.</p>
<p><b>Upstream</b></p> <p><b>Raw materials</b></p> <p><b>Production of finished product packaging. including packaging for distribution in the reference market segment</b></p>	<p>Similar to what was described in the previous point</p>	<p>Similar to what was described in the previous point</p>
<p><b>Upstream</b></p> <p><b>Transportation</b></p> <p><b>Transport of raw materials and semi-finished products along the entire supply chain</b></p>	<p>The environmental impact indicators associated with the transport of raw materials for the manufacture of components and integral parts to direct suppliers (tier 1) are included in their manufacturing process.</p>	<p>The transport distance was determined and included in the calculation</p>

Processes/Stages	Description	Additional information
<p><b>Core</b></p> <p><b>Production of the cables</b></p>	<p>This activity takes place at Cabelte Portugal</p>	<p>Primary data was used.</p> <p>The production of the cables includes the activities of production of aluminium machine wire from aluminium ingot and the operations of drawing, cabling and extrusion.</p> <p>To produce the cables, was considered the electricity consumption (through equipment's technical data was determined the electricity consumption and through the velocity of the machines was determined the time required). To determine the waste generated by the cable's production a physical allocation rule was used.</p> <p>Electricity production, photovoltaic. 570 kWp open ground installation, multi-SI PT (Cabelte has warranties of origin, all the energy comes from renewable resources and the photovoltaic energy has the highest contribution)</p> <p>The GWP (global warming potential) value is 0.017 kg CO2e/kWh</p>
<p><b>Downstream</b></p> <p><b>Distribution</b></p>	<p>The distance between Cabelte Portugal and the installation site was calculated and the type of transport carried out (maritime and land) was determined</p>	<p>Road transportation</p> <p>The distance was determined</p>
<p><b>Downstream</b></p> <p><b>Installation</b></p>	<p>This stage takes place in Italy</p>	<p>In this process are used mainly manual and electrical tools.</p> <p>The impacts of installation are related to the waste resulting from the packaging of the product, the electricity consumption (estimated) by the tools and a product loss of 5%.</p> <p>Electricity, low voltage, residual mix. Italy was used to model the electricity consumption.</p> <p>The GWP is 0.163 kgCO2e/kWh.</p>
<p><b>Downstream</b></p> <p><b>Use and maintenance</b></p>	<p>This stage takes place in Italy</p>	<p>PCR indications were used</p> <p>The energy consumption during the use phase was determined, taking into account that cable dissipates energy due to the Joule effect according to the formula:</p> $E_{use} \left[ \frac{J}{km} \right] = R_{linear} * I^2 * RSL$ <p>Euse (losses)                      64077283    J/km</p> <p>Euse (losses)                      17.8           kWh/km</p> <p>Electricity, medium voltage, residual mix. IT. was used to model electricity consumption.</p> <p>The GWP value is 0.169 kgCO2e/kWh.</p>
<p><b>Downstream</b></p> <p><b>De-Installation</b></p>	<p>This stage takes place in Italy</p>	<p>In this process are used mainly manual and electrical tools.</p> <p>Electricity, low voltage, residual mix. Italy was used to model the electricity consumption.</p> <p>The GWP is 0.163 kgCO2e/kWh.</p>

Processes/Stages	Description	Additional information
<p><b>Downstream</b> <b>End of life (EoL)</b></p>	<p>This stage takes place in Italy</p>	<p>The EoL stage was modelled taking into account the composition of the cable. the percentages of EN50693_2019. table G.4 of material recovery. energy recovery and disposal per material. the shredding and grinding with separation of materials of the cable. the preparation for recycling of the materials taking into account "the end of waste state" and the final disposal of the materials. as well as the transportation to the waste managers.</p>

## LCA (life cycle assessment) Results

### ENVIRONMENTAL IMPACT DESCRIPTIVE PARAMETERS

Environmental impact indicators	Units	Manufacturing	Distribution	Installation	Use	EoL	Total
Climate change total	kg CO2-Eq	6.35E+03	3.39E+02	3.41E+02	2.94E+00	1.53E+03	8.56E+03
Climate change - biogenic	kg CO2-Eq	-5.52E+02	1.71E-01	2.76E+02	3.67E-02	2.76E+02	0.00E+00
Climate change - land use and land use change	kg CO2-Eq	7.41E+01	1.17E-01	1.77E-02	3.24E-04	3.39E-01	7.46E+01
Climate change - fossil	kg CO2-Eq	6.83E+03	3.39E+02	6.49E+01	2.91E+00	1.25E+03	8.49E+03
Ozone depletion (ODP)	kg CFC-11-Eq	1.09E-04	6.85E-06	5.81E-07	6.37E-08	7.72E-06	1.24E-04
Photochemical ozone formation (POCP)	kg NMVOC-Eq	2.78E+01	2.13E+00	1.92E-01	7.54E-03	1.77E+00	3.19E+01
Eutrophication potential - freshwater (EP-freshwater)	kg P-Eq	2.30E+00	2.32E-02	8.62E-03	4.78E-04	1.55E-01	2.49E+00
Eutrophication potential - marine (EP-marine)	kg N-Eq	6.34E+00	5.05E-01	1.28E-01	1.58E-03	9.31E-01	7.90E+00
Eutrophication potential - terrestrial (EP-terrestrial)	mol N-Eq	6.44E+01	5.51E+00	5.62E-01	1.70E-02	5.09E+00	7.56E+01
Acidification potential. accumulated Exceedance (AP)	mol H+-Eq	4.06E+01	1.35E+00	1.60E-01	8.92E-03	1.90E+00	4.40E+01
Depletion of abiotic resources - fossil resources (ADPF)	MJ	1.05E+05	4.93E+03	4.35E+02	4.27E+01	5.45E+03	1.15E+05
Depletion of abiotic resources – minerals and metals (ADPE)	kg Sb-Eq	2.53E-02	9.40E-04	1.21E-04	2.03E-05	3.27E-03	2.97E-02
Water (user) deprivation potential (WDP)	m3 world-Eq deprived	5.21E+03	2.48E+01	3.64E+01	2.79E-01	6.14E+02	5.89E+03

### PARAMETERS DESCRIBING RESOURCE USE

Environmental impact indicators	Units	Manufacturing	Distribution	Installation	Use	EoL	Total
Use of secondary materials (SM)	kg	5.94E+01	2.13E+00	1.79E-01	7.52E-03	1.81E+00	6.36E+01
Use of renewable secondary fuels (RSF)	MJ	1.90E+02	2.69E-02	5.07E-03	4.68E-05	9.84E-02	1.90E+02
Use of non-renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (FW)	m3	1.18E+02	7.18E-01	-1.83E-02	2.27E-02	1.32E+01	1.32E+02
Total use of non renewable primary energy (PENRT)	MJ	1.05E+05	4.93E+03	4.35E+02	4.27E+01	5.45E+03	1.15E+05
Use of non renewable primary energy as energy carrier (PENRE)	MJ	1.05E+05	4.93E+03	4.35E+02	4.27E+01	5.45E+03	1.15E+05
Use of non renewable primary energy resources used as raw materials (PENRM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy (PERT)	MJ	2.93E+04	7.83E+01	2.30E+01	2.63E+00	4.13E+02	2.98E+04

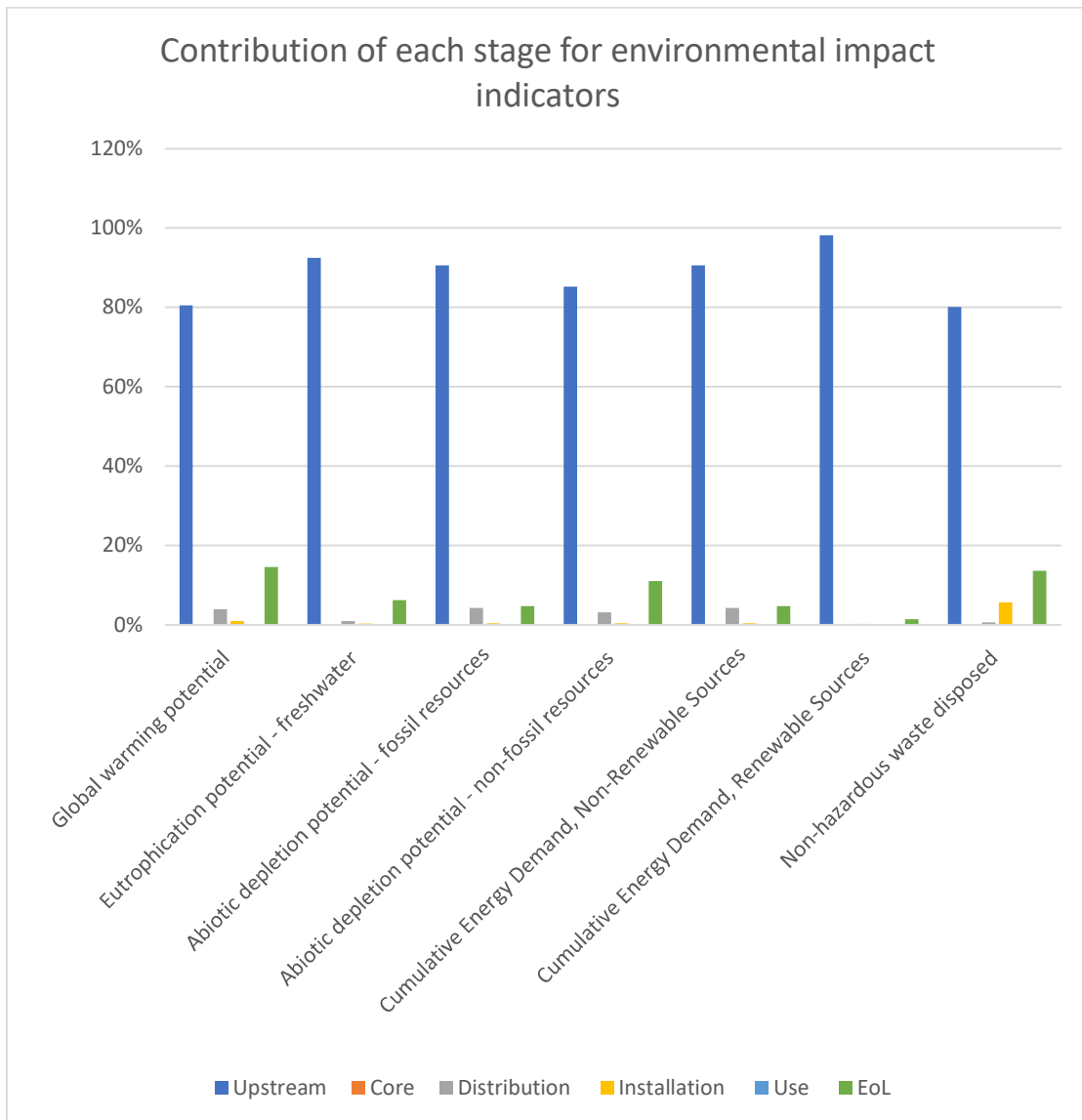
Environmental impact indicators	Units	Manufacturing	Distribution	Installation	Use	EoL	Total
Use of renewable primary energy as energy carrier (PERE)	MJ	2.93E+04	7.83E+01	2.30E+01	2.63E+00	4.13E+02	2.98E+04
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

## WASTE PRODUCTION DESCRIPTIVE PARAMETERS

Environmental impact indicators	Units	Manufacturing	Distribution	Installation	Use	EoL	Total
Non-hazardous waste disposed (NHWD)	kg	1.86E+04	1.44E+02	1.32E+03	2.46E+00	3.16E+03	2.33E+04
Hazardous waste disposed (HWD)	kg	1.28E+03	7.18E+00	8.90E+00	1.21E-01	1.85E+02	1.48E+03
Radioactive waste disposed (RWD)	kg	1.60E-01	1.48E-03	3.73E-04	2.80E-05	7.72E-03	1.69E-01
Materials for recycling (MFR)	kg	5.90E+00	3.74E-02	2.48E-02	3.45E-03	2.76E+02	2.82E+02
Materials for energy recovery (MER)	kg	3.98E-03	2.16E-04	2.34E-05	7.76E-07	3.24E-04	4.54E-03
Components for reuse (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy. electric (EEE)	MJ	1.90E+01	7.41E-01	1.28E+00	4.80E-01	1.49E+01	3.64E+01
Exported energy. thermal (EET)	MJ	1.37E+01	9.08E-01	1.01E-01	1.01E-02	4.82E+00	1.95E+01

(1) The values of the indicator use of secondary materials are default values from the database associated to the selected data sets.

Interpretation



For different impact categories, the manufacturing stage is the most relevant stage because of the production of the materials, especially the metal ores-based materials.

**REFERENCES**

LCA Report 62285750. 15/05/2025

ISO 14067:2018 - Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification.

ISO 14025:2006 Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14026:2017 Environmental labels and declarations — Principles, requirements and guidelines for communication of footprint information

ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework

ISO 14040:2006/Amd 1:2020 Environmental management — Life cycle assessment — Principles and framework — Amendment 1

ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines

ISO 14044:2006/Amd 1:2017 Environmental management — Life cycle assessment — Requirements and guidelines — Amendment 1

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PCR EPDIItaly007- Electronic and electrical products and systems – Rev. 3.1; 12/11/2024

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EN 50693:2019 - Product category rules for life cycle assessments of electronic and electrical products and systems

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IEC TR 62635:2012 - Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment