

GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION



Declaration
Environmental
Product

UNE-EN ISO 14025:2010

UNE-EN 15804:2012+A2:2020

AENOR

Aluminium contact wire EN AW-1370 Standard A

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The holder of this Declaration is responsible for its content, as well as for keeping the supporting documentation that justifies the data and statements included during the period of validity



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The UNE-EN 15804:2012+A2:2020 Standard serves as a CPR
Independent verification of the declaration and data in accordance with EN ISO 14025:2010 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
Verification body <h1 style="margin: 0;">AENOR</h1> <p>Product certification body accredited by ENAC with accreditation No. 1/C-PR468</p>

1. General information

1.1. The organisation

Grupo Cunext is a leader in the transformation of copper and aluminium of the highest quality, with sustainability, continuous innovation and the development of products that bring greater value to the market at the core of its operations.

Its facilities are located in Spain, in the provinces of Córdoba, Madrid, Barcelona, Zaragoza and Vitoria. It also has an international presence in Italy and the United States.

The copper and aluminium products manufactured by the Cunext Group are always in the top-quality range, positioning themselves as a leading supplier in its sector in Southern Europe and North Africa; being a leading supplier of contact wire, wire and drawn products, ropes and extruded products.

The Cunext Group's facilities have various certifications that endorse the commitment to sustainability adopted in the management of all its processes:

- UNE-EN-ISO 9001:2015. Registration No. ER-0128/1994
- UNE-EN-ISO 14001:2015. Registration No. CA-1998/0084
- European Regulation 1221/2009 (EMAS), Registration No. E-AN-0000006
- UNE-EN-ISO 45001:2018. Registration No. SST-0129/2006
- UNE-EN-ISO 50001:2018. Registration No. GE-2022/0064



1.2. Scope of the Declaration

This environmental product declaration describes environmental information relating to the life cycle of Standard A aluminium contact wire produced at ECN's Vitoria plant in the Spanish geographical and technological environment during the year 2021.

Aluminium contact wire is an intermediate product that is transformed during downstream production processes, mainly into cables and electrical products.

The range of the EPD is from cradle to gate with options, with modules A1-A3, C1 to C4 and D.

1.3. Life cycle and compliance.

This EPD has been developed and verified in accordance with UNE-EN ISO 14025:2010 and UNE-EN 15804:2012+A2:2020, and includes the following life cycle stages:

Product stage	A1	Supply of raw materials	X
	A2	Transport to the factory	X
	A3	Manufacture	X
Construction	A4	Transport to construction site	MNE
	A5	Installation / construction	MNE
Stage of use	B1	Application	MNE
	B2	Maintenance	MNE
	B3	Repair	MNE
	B4	Replacement	MNE
	B5	Reinstatement	MNE
	B6	In-service energy use	MNE
	B7	In-service water use	MNE
End of life	C1	Deconstruction / demolition	X
	C2	Transport	X
	C3	Waste treatment	X
	C4	Removal	X
	D	Potential for reuse, recovery and/or recycling	X
X = Module included in the LCA; NR = Module not relevant; MNE = Module not evaluated			

Table 1. Information modules considered

This EPD may not be comparable with those developed in other Programmes or according to different reference documents, in particular it may not be comparable with EPDs not developed according to UNE-EN 15804+A2. Similarly, these EPDs may not be comparable if the origin of the data is different (e.g. databases), or not all relevant information modules are included, or they are not based on the same scenarios.

The comparison of construction products must be made on the same function, applying the same functional unit and at the level of the building (or architectural or engineering work), i.e. including the behaviour of the product throughout its life cycle, as well as the specifications of section 6.7.2 of UNE-EN ISO 14025.

1.4. Differences from previous versions of this EPD

This EPD has been modified to include ENAC accreditation

2. The product

2.1. Identification of the product

Standard A contact wire is produced from primary aluminium ingots of European origin, together with 18% recycled aluminium from recyclable materials. It is manufactured by the casting and rolling process.

It is present in all sectors related to the transmission of energy, data or signals, industrial and electric motors, the automotive and railway industry, renewable energies such as photovoltaic parks or wind farms, telecommunications, household appliances or construction.

The composition and typical characteristics of the contact wire are in accordance with EN AW-1370.

UN CPC code: 4153.

2.2. Features of the product

The manufacturer declares the following information on the technical specifications of the product:

Characteristic	Value	Unit
Diameter	9.5	mm
Conductivity	61.5 – 63.3	% IACS
Typical Elongation	14 – 40	%
Max. Resistivity	2.725 – 2.801	$\mu\Omega$ cm

Table 2. Product characteristics

2.3. Product composition

The composition declared by the manufacturer is as follows:

Substance	Contents	Unit
Aluminium	99.7	%
Alloyed elements and others	<0.3	%

Table 3. Product composition

The product is presented in rolls of up to 2,500 kg, strapped on wooden pallets and protected by plastic film. The strapping is made of 100% post-consumer recycled polyethylene terephthalate (PET). The film is composed of low density polyethylene (LDPE) with an 80% post-consumer recycled content.

Packaging Material	Contents	Unit
PET Strap	0.28	kg
LDPE film	0.09	kg

Table 4. Packaging material per tonne of product

No substances listed in the Candidate List of Substances of Very High Concern (SVHC) for authorisation, or subject to other regulations, have been used in the manufacture.



3. Information on the LCA

3.1. Life cycle analysis

The Life Cycle Assessment Report that supports this EPD has been developed by Sinergy, based on specific data provided by the Cunext Group for the Standard A contact wire manufacturing process at the ECN plant in Vitoria, corresponding to the year 2021.

As a generic data source, the GaBi V10.6.2.9 software has been used together with the Professional DB 2022 database.

The LCA life cycle assessment has a cradle-to-gate scope with options, with modules A1-A3, C1 to C4 and D.

The scope of the LCA includes the stages of ore extraction and processing, the production of aluminium ingots, and their use as raw material in ECN's smelting and rolling processes for the production of contact wire, as well as end-of-life.

3.2. Declared unit

The declared unit is defined as **1 tonne** of Standard A aluminium contact wire.

3.3. Allocation and cut-off criteria

Where possible, allocation has been avoided. For processes shared with the production of other types of contact wire, where it has not been possible to avoid allocation, allocation rules have been applied based on the mass of the products.

In the quantification of material and energy flows, cut-off criteria have been used in accordance with the provisions of the UNE-EN 15804+A2 standard. Thus, matter flows of less than 1% of the cumulative mass of inputs and outputs can be excluded, unless their environmental relevance is significant. Similarly, energy flows of less than 1% of the cumulative energy inputs and outputs can be excluded, unless their environmental relevance is significant.

In any case, the sum of the excluded flows does not exceed 5% of the mass, energy or overall environmental impact. The cut-off criterion has not been applied to omit available data with relevant impact.

3.4. Representativeness, quality and selection of data

The data used for the LCA are representative of the aluminium contact wire production technology at the ECN plant, as well as the processes included in the scope of the LCA.

Specific data on contact wire production at the ECN plant covers the full year 2021.

As a generic data source, the GaBi V10.6.2.9 software has been used together with the Professional DB 2022 database. Generic data are representative of a period within the last 10 years.

The data are representative of the production technologies of the reference products, Green and Standard A aluminium contact wire, at the ECN plant where they are produced, as well as of the technologies involved in the various life cycle stages analysed.

The geographical scope of the data is representative of the operational reality of the different phases of the life cycle analysed.

Following the data quality criteria of the product category rules of the environmental footprint, and considering that the processes are representative of the declared geographical area, that the technological aspects are very similar with no need to modify technical aspects significantly and that the data are less than 3 years old, the level of data quality is considered to be good.

4. System limits, scenarios and additional technical information.

4.1. Pre-manufacturing processes

Module A1 includes the extraction and processing of raw materials.

Aluminium does not occur pure in nature, but is mainly combined with oxygen, forming oxides and hydroxides, which in turn are mixed with oxides of other metals and silica.

Bauxite is the mineral from which most aluminium is extracted. After extraction, the bauxite is processed and undergoes leaching, precipitation and calcination processes to obtain alumina.

Alumina is subjected to electrolysis, refining and casting processes for the production of aluminium ingots.

Standard A contact wire also includes recycled aluminium from recyclable materials as a raw material.

Module A2 includes the raw material transport processes. The primary aluminium that constitutes the raw material for Standard A contact wire is produced in Europe and transported from the countries of origin to ECN's facilities.

4.2. Manufacture of the product

Module A3 includes the manufacturing processes, all the way to the factory gate.

The production process of Standard A aluminium contact wire consists of melting the raw material aluminium in melting furnaces and passing the liquid aluminium into casting furnaces.

The casting furnaces supply the required quantity to a wheel-type casting machine, where a solid aluminium billet is continuously produced and rolled to a diameter of 9.5 mm, then cooled with water and wound into coils

4.3. End-of-life stage

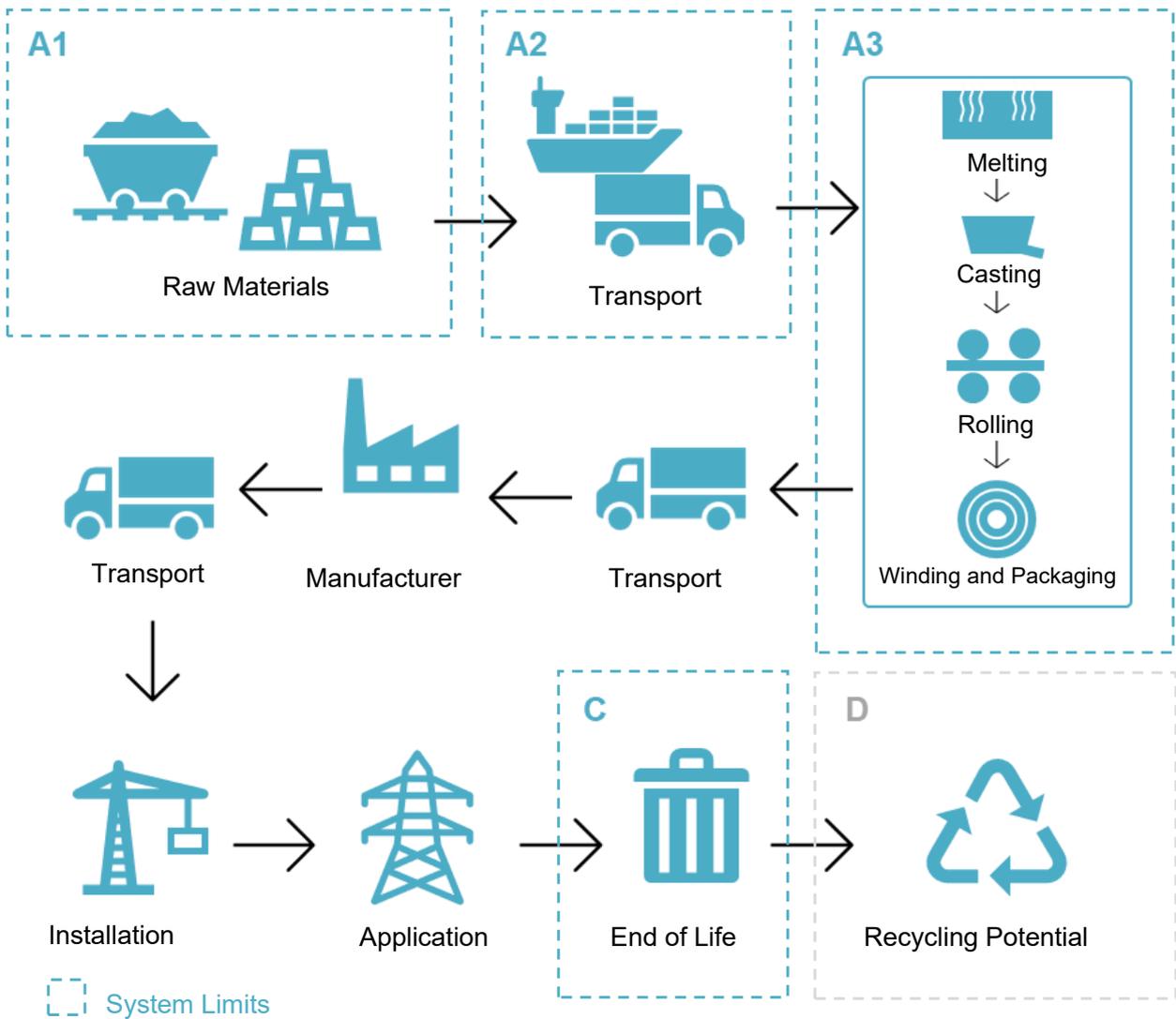
For modules C1-C4: the following assumptions and scenarios have been considered.

- In module C1 (deconstruction) the impact of the removal of cables is considered negligible in the context of demolition or dismantling work on the building or civil works.
- For module C2, aluminium is considered to be transported to a recycling centre considering a distance of 1,000 km by road (conservative assumption).
- For module C3, treatment of packaging materials by incineration has been considered.
- It has been taken into account that all the aluminium in the contact wire is recycled, so there is no impact from aluminium waste disposal in module C4.

4.4. Benefits and burdens beyond the system

For module D: the following assumptions and scenarios have been taken into account.

- It has been taken into account that no aluminium waste disposal takes place, and that all aluminium is sent for recycling. Recycled aluminium replaces aluminium produced from virgin raw materials.
- All packaging is sent for incineration with energy recovery.
- The net impacts related to the recycling potential have been calculated by adding the impacts related to the aluminium recycling processes, subtracting the impacts of the material it replaces as a raw material, and subtracting the benefits allocated to the secondary material used as a raw material.
- The net impacts related to the energy recovery potential have been calculated by adding the impacts related to the incineration processes of packaging plastics and subtracting the impacts of the generation of such energy in the national electricity mix.



5. LCA and LCI environmental parameter declarations

Environmental impacts.

The estimated impact results are relative and do not indicate the final value of the impact categories, nor do they refer to threshold values, safety margins or risks.

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	5.61E+03	6.82E+01	2.41E+02	5.92E+03	0.0E+00	6.64E+01	8.44E-01	0.0E+00	-5.04E+03
GWP-fossil	kg CO2 eq	5.56E+03	6.85E+01	2.80E+02	5.90E+03	0.0E+00	6.66E+01	8.43E-01	0.0E+00	-5.02E+03
GWP-biogenic	kg CO2 eq	1.72E+01	-6.42E-01	2.39E-01	1.68E+01	0.0E+00	-6.53E-01	3.71E-05	0.0E+00	-1.63E+01
GWP-luluc	kg CO2 eq	1.13E+00	3.88E-01	1.88E-02	1.54E+00	0.0E+00	4.50E-01	1.16E-06	0.0E+00	-9.83E-01
ODP	kg CFC11 eq	4.52E-08	6.39E-12	1.34E-09	4.66E-08	0.0E+00	6.56E-12	4.89E-14	0.0E+00	-4.17E-08
AP	mol H+ eq	2.14E+01	5.41E-01	3.12E-01	2.22E+01	0.0E+00	7.49E-02	8.13E-05	0.0E+00	-1.98E+01
EP-freshwater	kg P eq	2.85E-03	2.08E-04	4.01E-04	3.46E-03	0.0E+00	2.38E-04	1.14E-08	0.0E+00	-2.52E-03
EP-marine	kg N eq	3.15E+00	1.47E-01	1.28E-01	3.42E+00	0.0E+00	2.42E-02	2.28E-05	0.0E+00	-2.78E+00
EP-terrestrial	mol N eq	3.42E+01	1.63E+00	1.40E+00	3.73E+01	0.0E+00	2.89E-01	3.88E-04	0.0E+00	-3.03E+01
POCP	kg NMVOC eq	9.69E+00	4.08E-01	3.88E-01	1.05E+01	0.0E+00	6.45E-02	6.40E-05	0.0E+00	-8.62E+00
ADP-minerals&metals 2	kg Sb eq	1.50E-03	6.26E-06	4.86E-05	1.56E-03	0.0E+00	6.73E-06	1.18E-09	0.0E+00	-1.41E-03
ADP-fossil 2	MJ	8.05E+04	9.09E+02	4.90E+03	8.63E+04	0.0E+00	8.76E+02	1.34E-01	0.0E+00	-7.23E+04
WDP 2	m ³	2.36E+02	6.66E-01	6.20E+01	2.98E+02	0.0E+00	7.47E-01	7.52E-02	0.0E+00	-2.22E+02

GWP - total: Global warming potential; **GWP - fossil:** Global warming potential of fossil fuels; **GWP - biogenic:** Biogenic global warming potential; **GWP - luluc:** Global warming potential of land use and land use change; **ODP:** Stratospheric ozone depletion potential; **AP:** Acidification potential, cumulative surplus; **EP-freshwater:** Eutrophication potential, fraction of nutrients reaching the final freshwater compartment; **EP-marine:** Eutrophication potential, fraction of nutrients reaching the final marine water compartment; **EP-terrestrial:** Eutrophication potential, cumulative surplus; **POCP:** Tropospheric ozone formation potential; **ADP-minerals&metals** Abiotic resource depletion potential for non-fossil resources; **ADP-fossil:** Abiotic resource depletion potential for fossil resources; **WDP:** Water deprivation potential (user), weighted water deprivation consumption. **NR:** Not relevant

Additional environmental impacts

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PM	Incidence of illnesses	3.36E-04	8.61E-06	3.48E-06	3.48E-04	0.0E+00	5.14E-07	4.35E-10	0.0E+00	-3.19E-04
IRP 1	kBq U235 eq	1.79E+03	2.38E-01	1.09E+01	1.80E+03	0.0E+00	2.47E-01	1.33E-03	0.0E+00	-1.69E+03
ETP-fw 2	CTUe	2.96E+04	6.42E+02	4.77E+02	3.07E+04	0.0E+00	6.21E+02	5.95E-02	0.0E+00	-2.78E+04
HTP-c 2	CTUh	1.44E-06	1.30E-08	2.95E-08	1.48E-06	0.0E+00	1.28E-08	4.55E-12	0.0E+00	-1.36E-06
HTP-nc 2	CTUh	3.84E-05	6.89E-07	1.90E-06	4.10E-05	0.0E+00	6.93E-07	1.53E-10	0.0E+00	-3.62E-05
SQP 2	-	2.56E+03	3.20E+02	2.42E+03	5.30E+03	0.0E+00	3.71E+02	4.04E-02	0.0E+00	-2.01E+03

PM: Potential incidence of illness due to emissions of particulate matter (PM); **IRP:** Exposure efficiency of human potential relative to U235; **ETP-fw:** Comparative ecosystem toxic unit potential — freshwater; **HTP-c:** Comparative ecosystem toxic unit potential — carcinogenic effects; **HTP-nc:** Comparative ecosystem toxic unit potential — non-carcinogenic effects; **SQP:** Soil quality potential index; **NR:** Not relevant

Notice 1: This impact category deals mainly with the potential impacts of low doses of ionising radiation on human health from the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents and occupational exposure due to the disposal of radioactive waste in underground facilities. The ionising radiation potential of soil, due to radon or some building materials, is also not measured with this parameter.

Notice 2: The results of this environmental impact indicator should be used with caution, as the uncertainties of the results are high and experience with this parameter is limited.

Use of resources

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	3.72E+04	5.29E+01	7.53E+02	3.80E+04	0.0E+00	6.07E+01	3.14E-02	0.0E+00	-3.54E+04
PERM	MJ	0.00E+00	0.00E+00	3.27E-01	3.27E-01	0.0E+00	0.00E+00	0.00E+00	0.0E+00	0.00E+00
PERT	MJ	3.72E+04	5.29E+01	7.53E+02	3.80E+04	0.0E+00	6.07E+01	3.14E-02	0.0E+00	-3.54E+04
PENRE	MJ	8.05E+04	9.12E+02	4.90E+03	8.63E+04	0.0E+00	8.80E+02	1.34E-01	0.0E+00	-7.23E+04
PENRM	MJ	0.00E+00	8.88E-13	4.66E+00	4.66E+00	0.0E+00	0.00E+00	1.00E-15	0.0E+00	0.00E+00
PENRT	MJ	8.05E+04	9.12E+02	4.90E+03	8.63E+04	0.0E+00	8.80E+02	1.34E-01	0.0E+00	-7.23E+04
SM	kg	0.00E+00	0.00E+00	1.85E+02	1.85E+02	0.0E+00	0.00E+00	0.00E+00	0.0E+00	0.00E+00
FW	m ³	6.45E+01	6.14E-02	8.43E-01	6.54E+01	0.0E+00	7.02E-02	1.76E-03	0.0E+00	-6.17E+01

PERE: Renewable primary energy use excluding renewable primary energy resources used as feedstock; **PERM**: Use of renewable primary energy used as feedstock; **PERT**: Total use of renewable primary energy; **PENRE**: Non-renewable primary energy use, excluding non-renewable primary energy resources used as feedstock; **PENRM**: Use of non-renewable primary energy used as feedstock; **PENRT**: Total non-renewable primary energy use; **SM**: Use of secondary materials; **RSF**: Use of renewable secondary fuels; **NRSF**: Use of non-renewable secondary fuels; **FW**: Net use of flowing water resources; **NR**: Not relevant.

Waste categories

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	7.23E-05	9.12E-09	7.65E-07	7.31E-05	0.0E+00	4.66E-09	1.26E-11	0.0E+00	-6.84E-05
NHWD	kg	2.28E+03	2.50E-01	1.15E+01	2.29E+03	0.0E+00	1.43E-01	3.99E-03	0.0E+00	-2.18E+03
RWD	kg	2.01E+00	2.92E-03	1.60E-01	2.17E+00	0.0E+00	1.63E-03	8.10E-06	0.0E+00	-1.72E+00

HWD: Hazardous waste disposed of; **NHWD**: Non-hazardous waste disposed of; **RWD**: Radioactive waste disposed of; **NR**: Not relevant

Outflows

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.0E+00	0.00E+00	0.00E+00	0.0E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.0E+00	0.00E+00	1.00E+03	0.0E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.0E+00	0.00E+00	3.68E-01	0.0E+00	0.00E+00
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.0E+00	0.00E+00	0.00E+00	0.0E+00	-1.21E+00

CRU: Components for re-use; **MFR**: Materials for recycling; **MER**: Materials for energy recovery; **EE**: Energy exported; **NR**: Not relevant

Information on biogenic carbon content

Biogenic carbon content	Units	Result per declared functional unit
Product biogenic carbon content — KgC	kg C	0.0E+00
Biogenic carbon content packaging — KgC	kg C	0.0E+00

References

- [1] General Rules of the GlobalEPD Programme, 2nd revision. AENOR. February 2016
- [2] UNE-EN ISO 14025:2010 Environmental labels. Type III environmental declarations. Principles and procedures (ISO 14025:2006).
- [3] UNE-EN 15804:2012+A2:2020 standard. Sustainability in construction. Environmental product declarations. Basic product category rules for construction products
- [4] UNE-EN ISO 14040 standard. Environmental Management. Life Cycle Assessment. Principles and frame of reference. 2006.
- [5] UNE-EN ISO 14044 standard. Environmental Management. Life Cycle Assessment. Requirements and guidelines. 2006
- [6] EN AW-1370. Aluminium and aluminium alloys.
- [7] Aluminium contact wire LCA Report. ECN. March 2023. V02.
- [8] International Aluminium Institute.
https://international-aluminium.org/work_areas/recycling/

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A verified environmental declaration

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