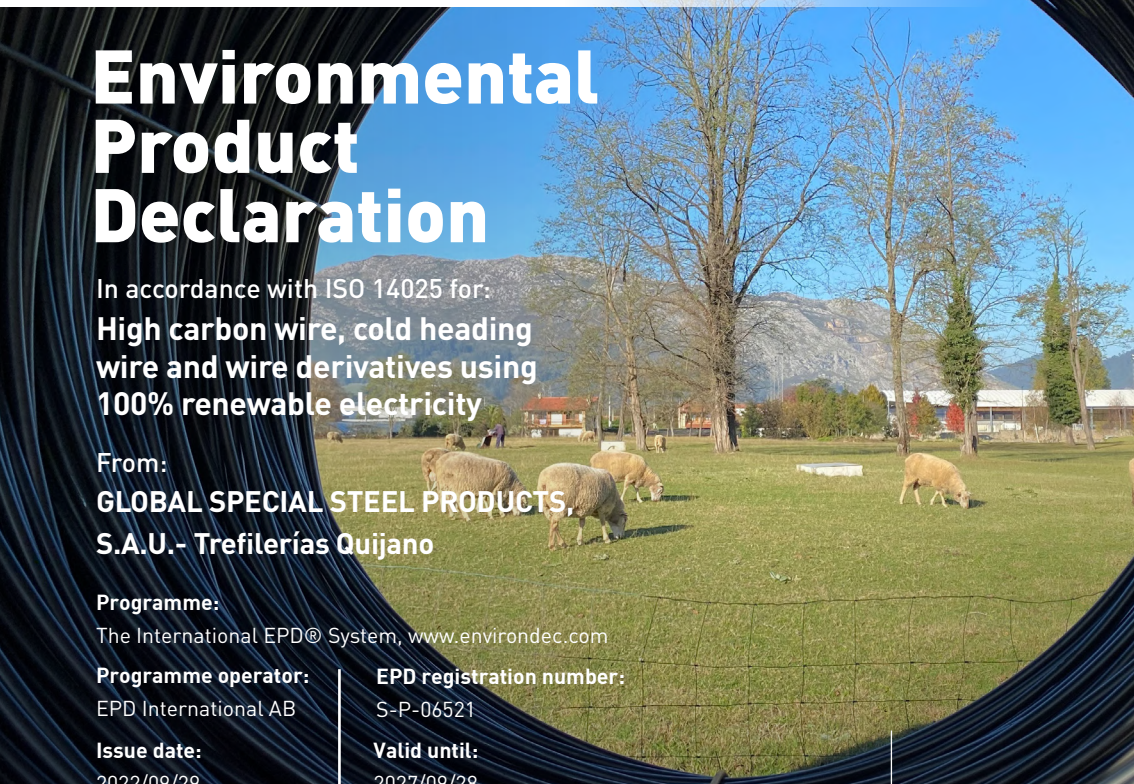
CELSA GROUP™ | trefilerías quijano

EPD®

Environmental Product Declaration

In accordance with ISO 14025 for:

High carbon wire, cold heading wire and wire derivatives using 100% renewable electricity



From:

GLOBAL SPECIAL STEEL PRODUCTS, S.A.U.- Trefilerías Quijano

Programme:
The International EPD® System, www.environdec.com

Programme operator:
EPD International AB

EPD registration number:
S-P-06521

Issue date:
2022/09/29

Valid until:
2027/09/28

Index

1. Programme information

Programme:

The International EPD® System,
www.environdec.com

EPD International AB
Box 210 60
SE-100 31 Stockholm
Sweden

www.environdec.com
info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

PCR 2015:03 Basic iron or steel products & special steels, except construction steel products, version 2.0; UN CPC 4112 AND 412.

PCR review was conducted by:
The International EPD® System Technical Committee

Visit www.environdec.com for full list of members.

Chair of the PCR review: Hudai Kara.
The review panel may be contacted via info@environdec.com

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025: 2010, via:

☑ EPD verification by individual verifier

Rubén Carnerero - IK Ingeniería

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third-party verifier:

☑ Yes ☐ 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.

For more information on comparability see ISO 14025.

2. Company information

Owner of the EPD:

GLOBAL SPECIAL STEEL PRODUCTS, S.A.U.
-TREFILERÍAS QUIJANO
Av. José María Quijano, s/n
39400 Los Corrales de Buelna,
Cantabria (Spain)

(+34) 942 837 369
www.tquijano.com

Name and location of the production site:

GLOBAL SPECIAL STEEL PRODUCTS, S.A.U.
-TREFILERÍAS QUIJANO
Av. José María Quijano, s/n
39400 Los Corrales de Buelna
Cantabria
Spain

Certifications related to the product or management system:

UNE-EN-ISO 9001, IATF 16949, UNE-EN-ISO 14001, ISO 45001.

Description of the organisation:

The activity of GLOBAL SPECIAL STEEL PRODUCTS, S.A.U. -TREFILERÍAS QUIJANO is the manufacture of cold stamping steel wire, hard steel and steel wire derivatives.

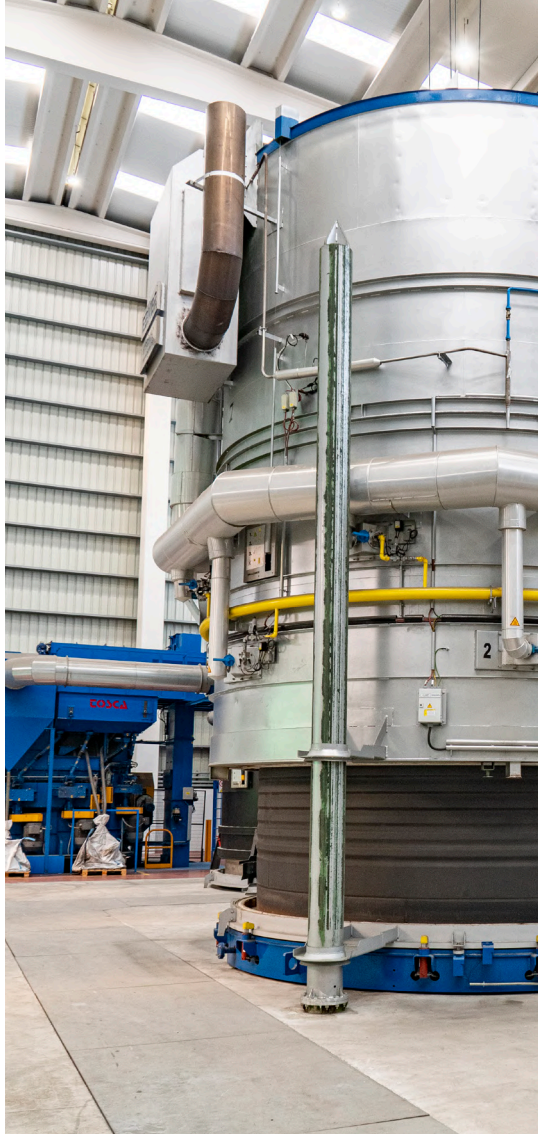
About the company

TREFILERÍAS QUIJANO, is the heir of the conical-tip nail workshop founded in 1873 at Corrales del Buelna, on the banks of the river Besaya, by D. José María Quijano.

The workshop started manufacturing wire, and later steel. The range of products grew as well, and already in 1914, the Jose María Quijano company had presence in all wire applications and its derivatives.

By 1940 our company began to diversify its business portfolio, without abandoning wire manufacturing, into the automotive industry. In 1969 the company achieved a new milestone in terms of capacity and wire drawing tonnage, a situation that set it apart from the rest of domestic wire-drawing companies.

Almost 20 years later, in 1987, the Celsa Group became interested in the company and re-named it as Trefilerías Quijano S.A. This is the name with which the company has become a benchmark in the wire-drawing industry.



In 1988 the company split into two separate entities, one for production of wire rod in Santander, Global Steel Wire, and the other, Trefilerías Quijano, focused on the manufacturing of steel wires, cords and wire products.

Finally, we can highlight as a key milestone of our trajectory the year 1999, when we started our cold heading business.

In 2015, Trefilerías Quijano S.A. was renamed Global Special Steel Products, S.A.U. integrated into the Wire Works Division of the GSW group, maintaining the Trefilerías Quijano brand and focusing on the manufacture of high carbon wire and cold stamping wire and wire derivatives, mainly for the automotive, household appliances and communications industry. The Global Steel Wire Group consists of an electric steel mill, rolling mill and 6 other integrated companies for wire rod processing.

Additionally, the Global Steel Wire Group is integrated into CELSA Group™, the leading European circular steel manufacturer with 8 million tons of scrap recovered annually and an annual transformation and sale of 7 million tons of steel.

In Trefilerías Quijano and all CELSA Group™, steel is only manufactured from the recycling of scrap in electric arc furnaces, the most energy and environmentally efficient steel manufacturing process, which allows CELSA Group™ to produce steel with low CO2 emissions.

The GSW Group, in its firm commitment to the circular economy, allows waste to be reincorporated back into the economic cycle, valorizing 98% of the waste generated in the manufacture of steel. This waste is used as a secondary raw material for processes such as road construction or for reuse in the steel process itself.

3. Product information

Product name:

High carbon wire, cold stamping wire and wire derivatives produced with 100% renewable electricity.

Product identification:

High carbon wire and cold stamping wire and wire derivatives.

Product composition:

Steel wire 100%. Galvanized steel wire: 96,74% steel; 3,26% zinc

Product description

Trefilerías Quijano supplies three major product families:

- **High carbon wire** with a % of C between 0.24% and 0.88% that in some cases can carry microalloying such as chromium and / or vanadium.
- **Cold stamping wire** made of boron steels, aluminum soothed steels and alloy steels.
- **Derivatives of wire** mainly annealed wire rod and pickling.

These three families are used in different sectors: automotive, industry, communication, household appliances ...

Diameter ranges vary from 0.80 mm to 15.00 mm for high carbon wires, from 2.00 mm to 47.00 mm for wires for cold stamping and from 5.50 mm to 52.00 mm for annealed wire rod and pickling.

All the products are manufactured in accordance with international standards and are adapted to the technical specifications of our customers.

CPC code: 4126. **/ Geographical scope:** Global.

4. LCA information

Name and contact information of LCA author:

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jlcanga@abaleo.es
info@abaleo.es

Declared unit:

1 ton (1,000 kg) of wire steel, including packaging.

Temporal representativeness:

Production dates for the year 2021.

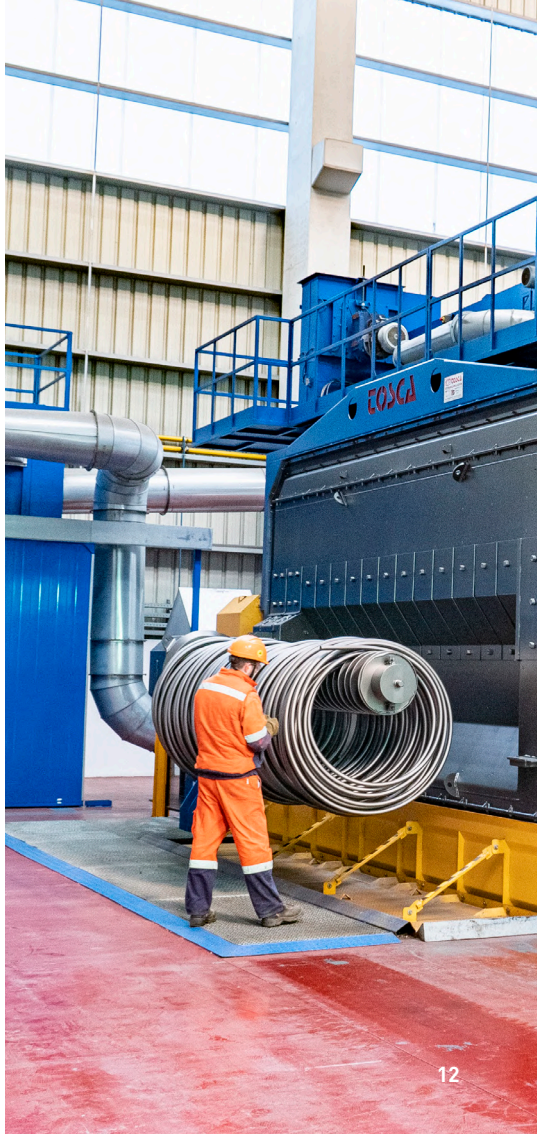
Databases and ACL software used:

Ecoinvent 3.8 and Environmental Footprint Database 2.0 data sources.

Software SimaPro 9.3.0.3

For the choice of the most representative processes, the following criteria have been applied:

- That they are representative data of the technological development really applied in the manufacturing processes. If no information is available, a representative data of an average technology has been chosen.
- Let it be medium regionalized data.
- Let it be the most current data possible.



System diagram:

All upstream and main process phases of wire production have been studied.

The limits of the system studied in the Life Cycle Analysis are shown below in the Trefilerías Quijano wire production diagram.

Upstream

Raw material

Steel wire rod

Packaging

Coreboard, strips, film, wood, big-bag, airbag...

Transportation

Materials reception & quality control

Core

Transport to the plant

Mechanical pickling

Chemical pickling

Auxiliary materials and consumables

Energy

Electricity

Gas

Machinery operation

Gas

Electricity

Heat treatment annealed

Patented heat treatment

Galvanizing

Cold drawing

Waste transportation & management

Process emissions

TQ's manufacturing process begins with the reception and sorting of the various raw materials.

Subsequently, the production process consists on:

- Mechanical pickling: Surface cleaning process, removal of calamine and oxide.
- Chemical pickling: The process of surface cleaning, removal of calamine and rust, and surface preparation for subsequent processes, such as drawing and cold stamping.
- Annealing heat treatment: Annealing is a heat treatment that consists of heating the metal to a certain temperature, generally between 650-750 ºC, after which the temperature is maintained for 3-4 hours before slowly decreasing its temperature, so that the treated material loses hardness and gains ductility.
- Patent heat treatment: It consists of heating the wire rod or wire at a temperature between 850 and 1,050 ºC, (austenization temperature) and then cooling it abruptly in lead or other medium to a temperature between 450/600 ºC to generate an internal structure of the wire, which allows a considerable increase in the wire drawing capacity.
- Galvanizing: Hot-dip galvanizing is a process by which the oxidation of iron and steel is prevented. In essence, it consists of submerging the wire rod or wire, in a bath of molten zinc, which reacts with the iron and forms a coating.
- Cold drawing: Drawing consists of cold drawing the metal by passing it through a conical hole called a die. The product obtained is called wire. Drawing produces a product with a smooth surface, with a uniform cross-section and its dimensions can be fixed with maximum ease and precision.

Description of system boundaries:

The EPD covers the upstream and core process stages.

Upstream:

- Extraction and production of raw materials.
- Production of primary and secondary packaging and its transport to the plant.

Core:

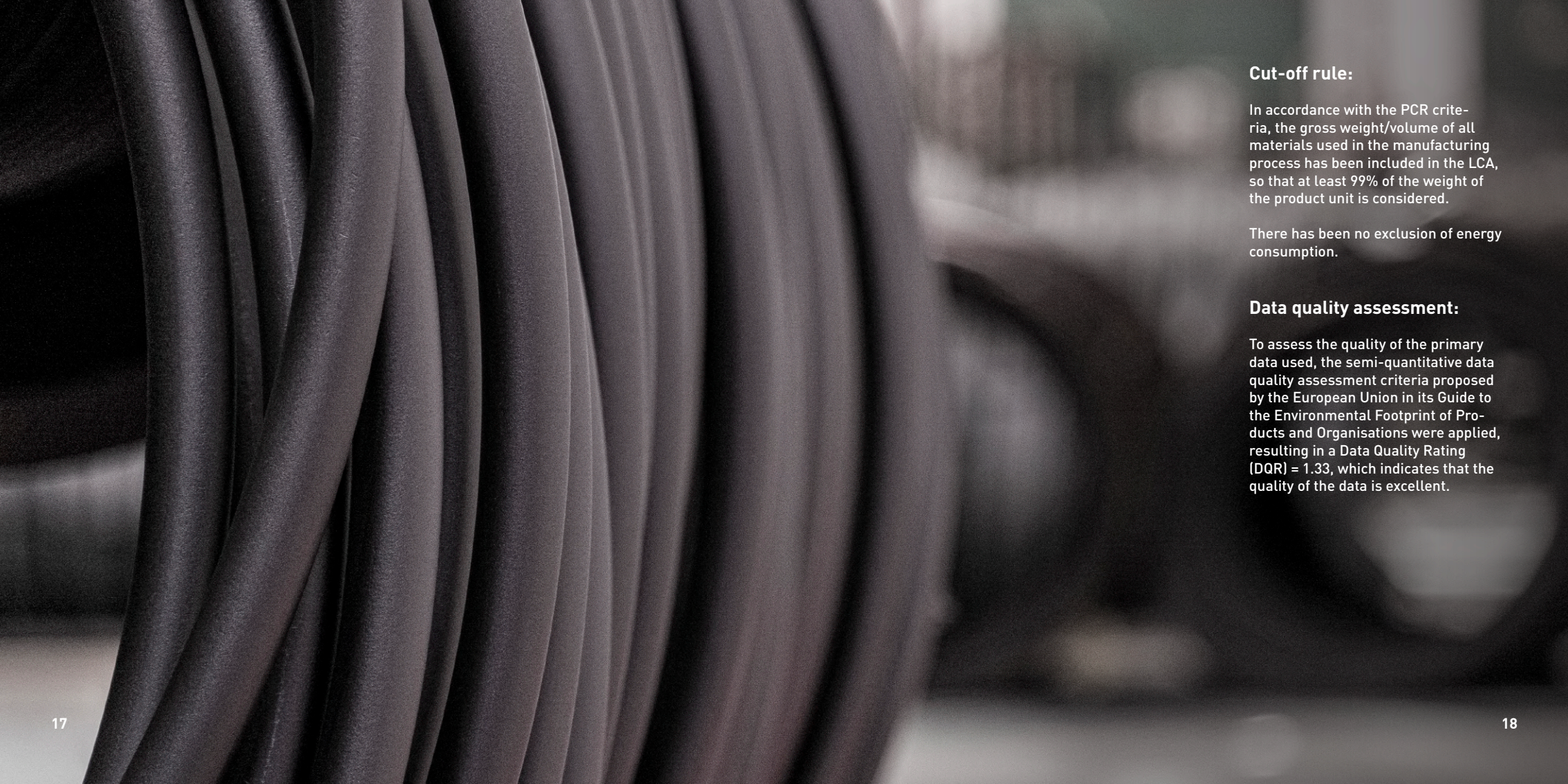
- Bright steel bars manufacturing process.
- Transportation of raw materials to the production plant.
- Waste generated during the manufacturing process and their transport and treatment.
- Emissions to air and water during the manufacturing process.
- Impacts due to the production of the energy consumed.
- Production and transportation of auxiliary materials to the production plant.

The polluter pays principle and the modularity principle (environmental burdens are assigned to the stage where the impact occurs) have been followed.

The EPD covers the phases from cradle to gate.

The remaining phases of the life cycle are highly dependent on scenarios and are best developed for each specific product.

During 2021, the Global Steel Wire Group purchased renewable energy with GoO for a portion of the production of all Group companies, including TQ.



Cut-off rule:

In accordance with the PCR criteria, the gross weight/volume of all materials used in the manufacturing process has been included in the LCA, so that at least 99% of the weight of the product unit is considered.

There has been no exclusion of energy consumption.

Data quality assessment:

To assess the quality of the primary data used, the semi-quantitative data quality assessment criteria proposed by the European Union in its Guide to the Environmental Footprint of Products and Organisations were applied, resulting in a Data Quality Rating (DQR) = 1.33, which indicates that the quality of the data is excellent.

5. Content declaration

Packaging

Primary and secondary packaging for the shipment of the product (distribution packaging) has been included in the study.

Product:

Steel, the single component of the springs, is a material in which iron is the predominant element (more than 95%), with a carbon content generally lower than 2% and also containing other minority elements (UNE-EN 10020 Definition and classification of steel grades).

Chemical composition and properties of the wire is set out in the following product standards:

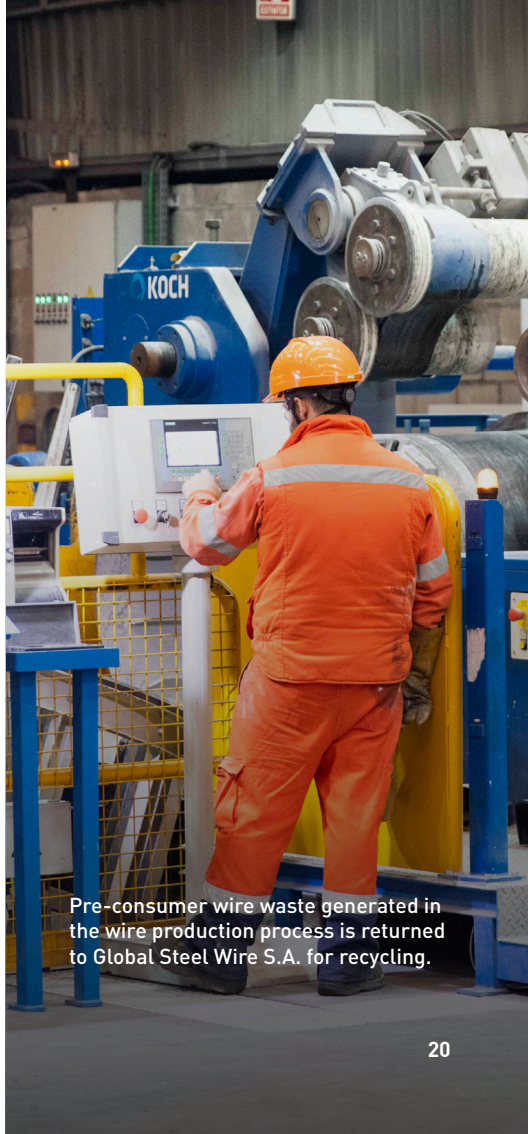
- UNE-EN ISO 16120-1, UNE-EN ISO 16120-2, UNE-EN ISO 16120-3, UNE-EN ISO 16120-4
- UNE EN ISO 10263-1, UNE EN ISO 10263-2, UNE EN ISO 10263-3, UNE EN ISO 10263-4
- UNE-EN ISO 10270-1,
- UNE-EN-ISO 10264-1, UNE-EN-ISO 10264-2.

No substances listed in "Candidate List of Substances of Very High Concern (SVHC) for authorisation" in a percentage greater than 0.1% and less than 0.3% of the weight of the product are used during the wire cycle production.

Recycled material

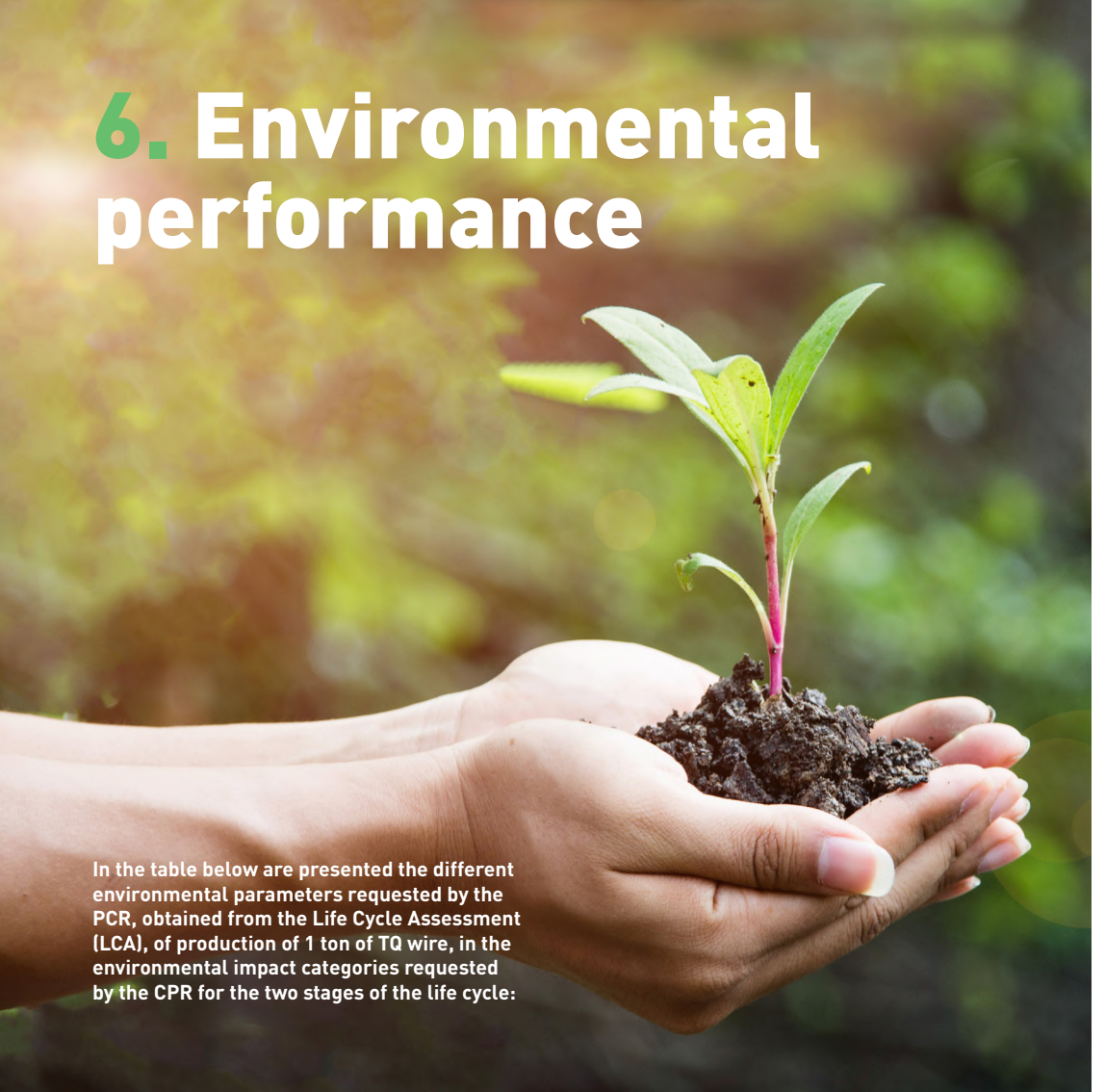
Origin of the recycled materials (pre-consumer or post-consumer) in the product

TQ wire is obtained from steel wire rod manufactured by Global Steel Wire S.A. The recycled materials come from scrap and derivatives used in the wire rod manufacturing process, with a proportion of 21.69% post-consumer and 49.41% pre-consumer.



Pre-consumer wire waste generated in the wire production process is returned to Global Steel Wire S.A. for recycling.

6. Environmental performance



In the table below are presented the different environmental parameters requested by the PCR, obtained from the Life Cycle Assessment (LCA), of production of 1 ton of TQ wire, in the environmental impact categories requested by the CPR for the two stages of the life cycle:

Potential environmental impacts:

1,000 kg TQ steel wire					
Parameter		Unit	Upstream	Core	TOTAL
Global warming potential (GWP)	Fossil	kg CO2 eq.	552,31	70,52	622,83
	Biogenic	kg CO2 eq.	4,57	3,75E-01	6,97E-01
	Land use and land use change	kg CO2 eq.	4,74E-01	2,23E-01	6,97E-01
	TOTAL	kg CO2 eq.	557,35	71,12	628,47
Ozone Depletion Potential (ODP)		kg CFC 11 eq.	6,30E-05	2,47E-05	8,77E-05
Acidification potential (AP)		mol H+ eq	1,96	3,89E-01	2,35
Eutrophication potential (EP)		kg P eq	1,95E-02	3,12E-03	2,26E-02
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	1,57	2,48E-01	1,82
Abiotic depletion potential (ADP) for non-fossil resources		kg Sb eq.	2,91E-03	5,73E-03	8,64E-03
Abiotic depletion potential (ADP) for fossil resources		MJ, net calorific value	7.010,70	2.085,43	9.096,13
Water deprivation potential (WDP)		m3 eq.	138,35	215,18	353,53

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.

Use of resources:

1,000 kg TQ steel wire					
Parameter		Unit	Upstream	Core	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	3,091.16	513.67	3,604.83
	Used as raw materials	MJ, net calorific value	0.00	0.00	0.00
	TOTAL	MJ, net calorific value	3,091.16	513.67	3,604.83
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	7,777.93	2,220.19	9,998.12
	Used as raw materials	MJ, net calorific value	0.00	0.00	0.00
	TOTAL	MJ, net calorific value	7,777.93	2,220.19	9,998.12
Secondary material		kg	711.77	0.00	711.77
Renewable secondary fuels		MJ, net calorific value	0.00	0.00	0.00
Non-renewable secondary fuels		MJ, net calorific value	0.00	0.00	0.00
Net use of fresh water		m3	17.50	4.01	21.51

Waste production and output flows:

Waste production:

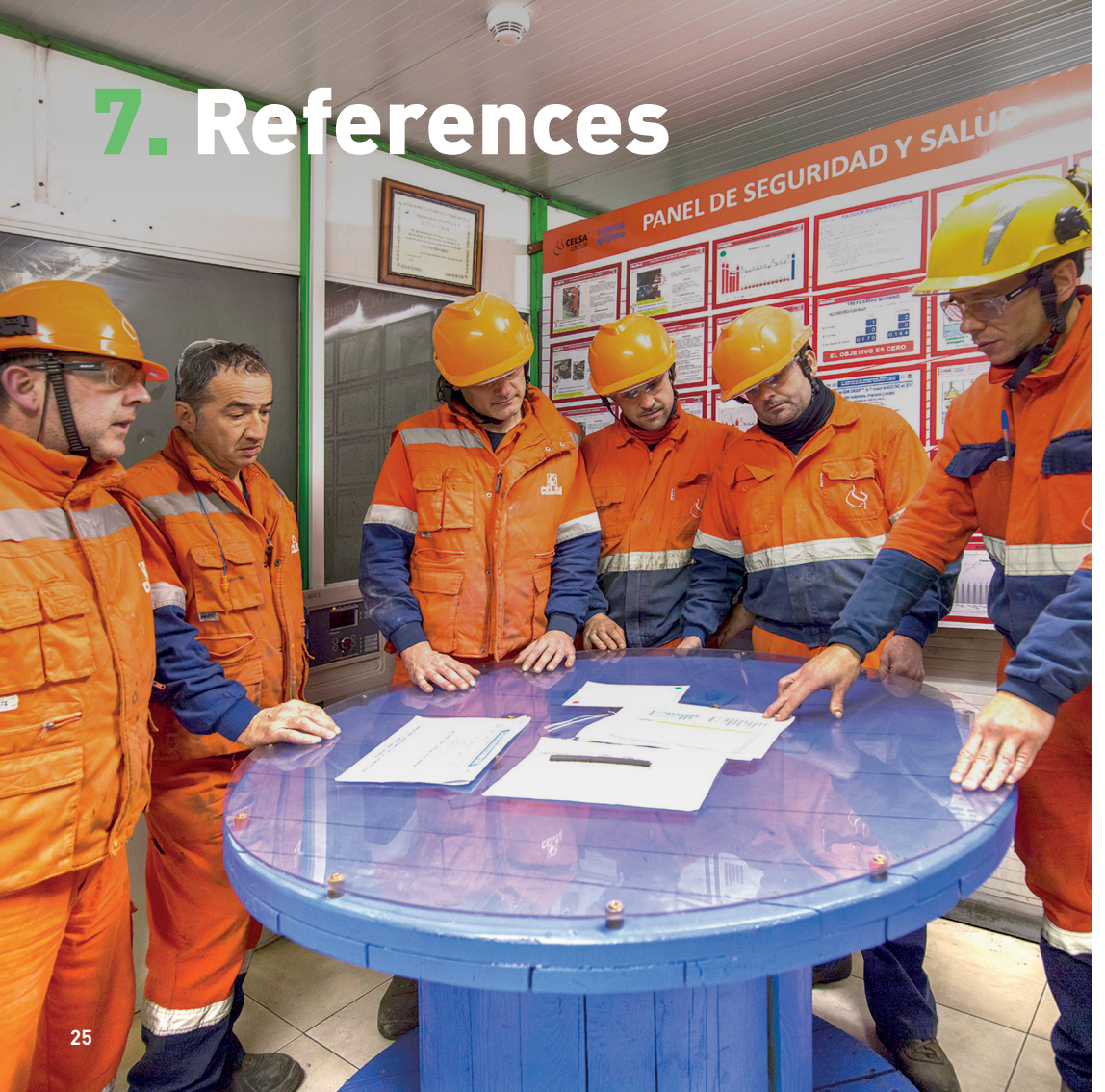
1,000 kg TQ steel wire				
Parameter	Unit	Upstream	Core	TOTAL
Hazardous waste disposed	kg	9.92E-03	27.96	27.97
Non-hazardous waste disposed	kg	170.15	8.65	178,80
Radioactive waste disposed	kg	1.92E-02	4.85E-03	2.41E-02

Note: The materials generated during the production process that are considered waste are those sent to landfill for final disposal (materials that are not reused, recycled and/or recovered).

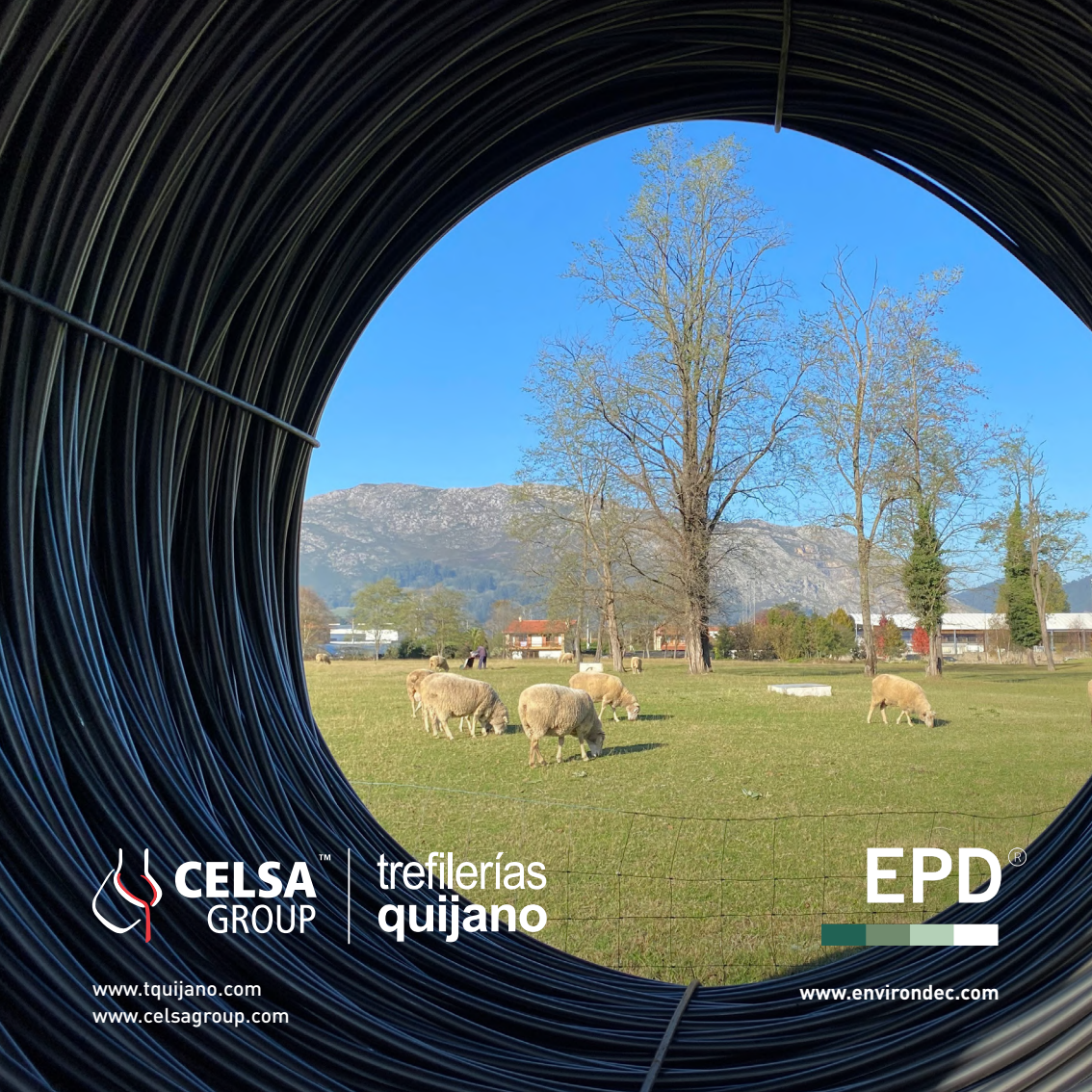
Output flows:

1,000 kg TQ steel wire				
Parameter	Unit	Upstream	Core	TOTAL
Components for reuse	kg	0,00	0,00	0,00
Material for recycling	kg	0,00	1.23E-02	1.23E-02
Materials for energy recovery	kg	0,00	0,00	0,00
Exported energy, electricity	MJ	0,00	0,00	0,00
Exported energy, thermal	MJ	0,00	0,00	0,00

7. References



- Product Category Rule 2014:10 Fabricated steel products, except construction products, machinery and equipment. version 2.12. UN CPC 412, 422,429. DATE 2019-09-06. VALID UNTIL: 2022-10-04.
- S-P-06129 Special Steel wire rod produced in Electric Arc Furnace. EPD International AB. Publication date 2022-06-01; Valid until: 2027-05-31.
- Life Cycle Assessment Report for the environmental product declaration of Trefilerías Quijano's high carbon wire and cold stamping wire, carried out by Abaleo S.L. Julio 2022. Version 1.0.
- EPD International (2019). General Programme Instructions for the International EPD® System. Version 3.1. Date 2019-09-18, based on ISO 14025 and ISO 14040/14044.
- Environmental impact databases and methodologies applied through SimaPro 9.3.0.3.
- Standard UNE-EN ISO 14025:2010. Environmental labels and declarations. Type III environmental declarations. Principles and procedures. (ISO 14025:2006).
- Standard UNE-EN ISO 14040:2006/A1:2021. Environmental Management. Life Cycle Analysis. Principles and reference framework. Amendment 1. (ISO 14040:2006/Amd 1:2020).
- Standard UNE-EN ISO 14044:2006/A1:2021. Environmental management. Life cycle assessment. Requirements and guidelines. Amendment 2. (ISO 14044:2006/Amd 2:2020).



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