MEGASA

Hot-rolled wire rod

from the electric arc furnace of SN Seixal

EN ISO 14025:2010

PCR 2015:03

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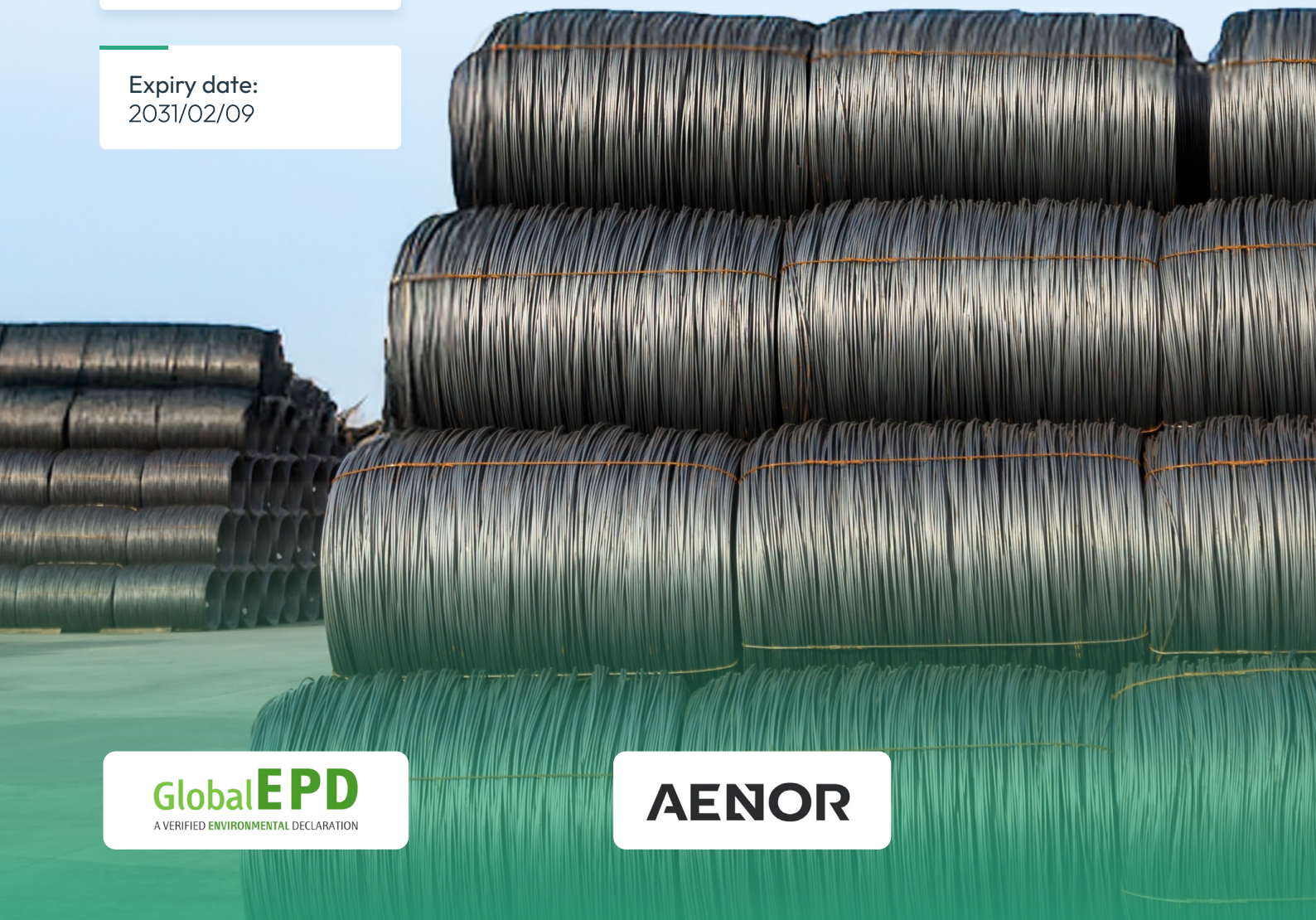

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The holder of this declaration is responsible for its content, as well us for keeping the supporting documentation that justifies the data and statements included in it for the duration of its vadility.

Holder of the Declaration

SN Seixal Siderúrgica Nacional S.A.
Rua Independência Nacional 10, 2840-996
Aldeia de Paio Pires, Seixal, Portugal.

+351 21 227 8500
info@megasa.com
www.megasa.com

LCA study

Abaleo S.L.
D. José Luis Canga Cabañes.
c/ Poza de la Sal, 8; 3º A.
28031 Madrid, Spain.

(+34) 639 901 043
jlcanga@abaleo.es / info@abaleo.es
www.abaleo.es

GlobalEPD Programme Administrator

AENOR CONFÍA, S.A.U.
C/ Génova 6
28004 Madrid
Spain.

(+34) 902 102 201
aenordap@aenor.com
www.aenor.com

PCR 2015:03

BASIC IRON OR STEEL PRODUCTS & SPECIAL STEELS, EXCEPT CONSTRUCTION STEEL PRODUCTS

Verification body:

AENOR

Independent verification of the declaration and data, in accordance with the Standard EN ISO 14025:2010

☐ Internal ☑ External

1 GENERAL INFORMATION

1.1. The Organisation

GRUPO MEGASA is a family-owned company specialising in the production and distribution of long steel products. The group has more than a thousand employees, spread across its various production plants and distribution units in the Iberian Peninsula and France.

With a installed capacity of over three million tonnes, MEGASA uses electric arc furnaces to produce a wide range of long steel products: reinforcing bars, wire rod, electrowelded mesh and merchant bars and sections.

SN Seixal, located on the outskirts of Lisbon, specialises in themanufacture of low, medium and high carbon wire rod. thanks to its flexibility, it can offer reinforcing bars and coils.

1.2. Scope of the declaration

This environmental product declaration decribes the environmental information relating to the cradle-to-gate life cycle analysis of the hot-rolled wire rod from an electric arc furnace manufactured by SN Seixal Siderurgia Nacional, S.A.

› **Seixal** (Portugal)
Rua Independência Nacional 10, 2840-996
Aldeia de Paio Pires, Seixal (Portugal)

1.3. Life cycle and conformity

This EPD has been developed and verified in accordance with Standard EN ISO 14025:2010 and the PCR 2015:03.

Name	Basic iron or Steel products & special steels, except construction steel products
Registration /version	PCR 2015:03 V 3.0.0.0
Date of issue	2025-07-14
Administrator	Environdec

> The function performed by the product system studied is the production of wire rod for multiple uses.

System boundaries. Information modules considered			
Product Stage	A1	Supply of raw materials	X
	A2	Transport to factory	X
	A3	Manufacturing	X

***X** = Module incluedd in the LCA; **ND** = Module not declared*

This EPD may not be comparable with those developed in other programmes or in accordance with different reference documents: specifically, it may not be comparable with declarations not developed and verified in accordance with Standard EN 15804.

Similary, EPDs may not be comparable if the source of the data is different (e.g. databases), 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 decalred unit and at level of the building (or architectural or engineering work), i.e. inlcuding the behaviour of the product throught its life cycle, as well as the specifications of section 6.7.2 of Standard UNE-EN ISO 14025.

1.4. Differences from previous versions of this EPD

Revision 2 of this EPD has been issued to correct SM and MER indicators.

2 THE PRODUCT

2.1. Product identification

This EPD applies to hot-rolled wire rod manufatured in an electric arc furnace.

SN SEIXAL manufacturres wire rod with diameters ranging 5.5 mm to 27 mm.For its production process, the factory has equipmenttahat allows it to carry out secondary metallurgy appropiate to each case, and continuous casting with different jet protections systems, depending on th type of material manufactured. Its rolling mill has in-lin heat treatmente and a cooling conveyor. The products manufatured vary depending on the intended use, which defines the technical properties to be guaranteed, bot in terms of chemical composition, mechanicasl characteristics, surface and microstructure.

CPC Code: 412 – Bars and rods, hot-rolled, of iron or steel.

2.2. Product composition

The following average composition of the product studiied is declared:

Material	% by weight
Post-consumer scrap	55.98%
Pre-consumer scrap	32.21%
HBI/DRI	11.81%

During ehr product's life cycle, no hazardous substances listed in the "Candidate List of Very High Concern (SVHC) for authorisation" are used in a percentage greater than 0.1% of the product's weight.

2.3. Packaging

The primary packaging used to ship the product (distribution packaging) has been inlcuded in the study:

Material	kg / unit declared
Labels	9.88E-04
Wooden bars	3.00E-01
Binding wire rod	6.14E-01

Material	kg / unit declared
Metal hooks	2.79E-03
Tape	1.80E-02

2.4. Regulations applicable to the product

The chemical composition and other properties are established in the various applicable standards:

Regulations - Wire rod	
UNE 36066	Non-alloy steel wire rod intended for the manufacture, by cold deformation, of plain or ribbed wire for reinforced concrete reinforcement.
ET IPQ 104	Non-alloy steel wire rod intended for the manufacture by cold deformation of plain or ribbed wires for reinforced concrete reinforcement.
BS 4482	Steel wire for the reinforcement of concrete products - Specification
ASTM A510/A510M	Standard Specification for general requirements for wire rods and coarse round wire, carbon steel, and alloy steel.
UNE EN ISO 16120	Non-alloy steel wire rod for conversion to wire.

3 INFORMATION ON LCA

3.1. Life cycle analysis

The Life Cycle Assesment Report for the EPD of Megasa Group steel products, dated on December 2025, was carried out by the company Abaleo S.L.

The LCA study follows the recommendations and requirementes of international standards:

ISO 14040:2006 | ISO 14044:2006 | RCP 2015:03

3.2. Scope of the study

The scope of this EPD is the production of cradle to gate wire rod (modules A1-A3) manufactured by SN Seixal.

The specific data on the production process comes from the Seixal plant, where the product is manufactured and correspond to production data for the yea 2024, which is considered representative.

The product is manufactured in Portugal and distributed worlwide, altough the LCA calculation has been carried out for Europe. the following have not been included in the LCA:

- The briquetting process of the DRI, as it does not exist any process in the databases.
- All equipment with a useful life of more than 3 years.
- The construction of the plant buildings or other capital goods.
- La construcción de los edificios de la planta, ni otros bienes de capital.
- Staff business travel nor staff conmute to and from work.

- Research and development activities.
- Long-term emissions.

3.3. Declared unit

The declared unit is one tonne (1,000 kg) of product, plus its distribution packaging.

3.4. Allocation criteria

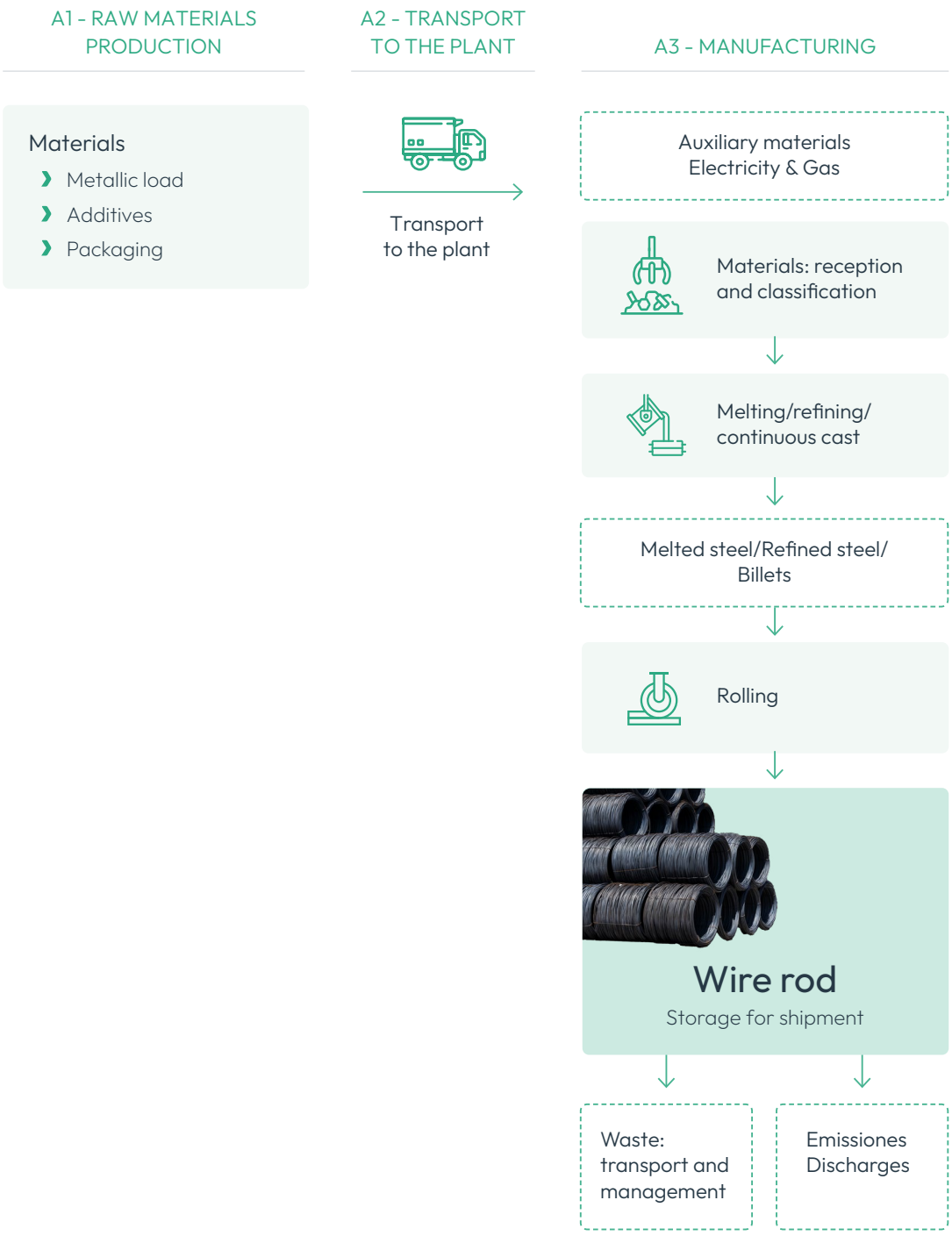
In accordance with the criteria of the reference standard, the allocation of inputs and outputs from the system has been applied on the basis of economic values, as the difference between the income from the product and the co-productsis very high. This allocation criterion has been applied to the plant's general consumption (consumption of raw materials and energy), emissions, transport and waste.

The quantities of the different materils used and produced in the manufacturing process come from measurements taken at the steel plant itself.

3.5. Cut-off rule

The LCA inlcudes the gross weight/volume of all materialsused in the manufacturing process, so that at least 99% of the environmental impacts are obtained.
No energy consumption has been excluded.

3.6. Manufacturing process diagram



The factory produces steel using electric arc furnace route. The steelworks mainly melt scrap metal, adjusting th chemical composition to obtain the required steel specifications.

The resulting material is solidified into billets of different sections and lengths, which constitute the inermediate product used as raw material in the rolling process.

At this stage, the billets are reheated to the appropiate temperature and rolled through successive roller mills, where the section is progressively reduced and the material elongation until acheaving the dimensions ans characteristics of the final product.

After cooling, the steel is ready for shipment or further processing.

3.7. Representativeness, quality and selection of data

To model the manufacturing process of the product under study, specific production data from the Seixal plant for the year 2024 a period with representative production data – has been used.

The plant is authorised as a ferrous metal waste treatment facility for recovery operations, using the scrap metal it receives directly as secondary raw material in the production process without any treatment prior to melting in the electric furnace; therefore, the scrap metal used as raw material is considered to be burden free, as is its transport to the steelworks, the impact of which corresponds to the previous product system.

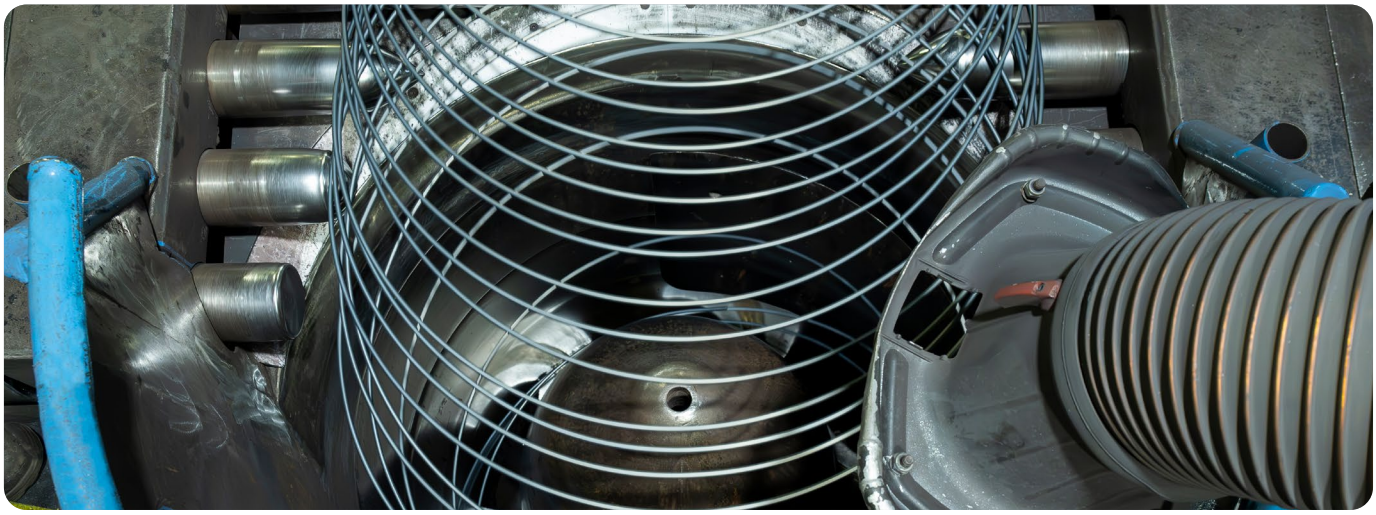
Internal scrap metal consumption has not been considered in the calculation of the secondary material indicator used.

Where necessary, the Ecoinvent 3.11 database (March 2025) has been used, which is the latest version available at the time of the LCA.

SimaPro 10.2.0.0 software – the most up-to-date version available at the time of the study – was used for the inventory data, to model the LCA and to calculate the environmental impact categories required by the reference standard.

The semi-quantitative data quality assessment criteria proposed by the European Union in its Environmental Footprint Guidance for Products and Organisations were applied to assess the quality of the primary data used in the LCA. The following results were obtained:

- Technological representativeness (TeR) – 1.99
- Geographical representativeness (GeR) – 2.23
- Temporal representativeness (TiR) – 1.86
- Accuracy (A) – 1.00.



According to the above data, the Data Quality Rating (DQR) takes the following value 1.80, indicating that the data quality is very good.

To better understand the data quality assessment carried out, it should be noted that the score for each criterion ranges from 1 to 5 (the lower the rating, the higher the quality) and that the following table is used to obtain the final rating:

Overall data quality rating (DQR)	Overall data quality level
≤ 1.6	Excellent quality
1.6 a 2.0	Very good quality
2.0 a 3.0	Good quality
3 a 4.0	Reasonable quality
> 4	Insufficient quality

4 SYSTEM LIMITATIONS

Scenarios and additional technical information

Module A1:
Raw material production

In this module it is included the extracction and processing of raw materials and the processing of scrap and the production of the distribution packaging.

Module A2:
Transport

Transport by truck and ship of raw and auxiliary materials from the production sites (suppliers) to the steelworks has been considered. The transport distances have been provided by the plant managers, who are aware of the location of their suppliers' facilities.

Internal plant transport is also included.

Module A3:
Manufacturing

At this stage it has been considered:

- The production of the auxiliary materials consumed in the production process.
- Treatment of the waste generated during the production.
- Electricity used in production process.
- Production and consumption of fuels and other energy vectors used in the production.

5 DECLARATION OF LCA AND LCI ENVIRONMENTAL PARAMETERS

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. The EN 15804 characterisation factors are based on EF 3.1.

Mandatory impact category indicators					
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
GWP-total	kg CO2 eq	3.82E+02	1.40E+01	2.34E+02	6.30E+02
GWP-fossil	kg CO2 eq	3.81E+02	1.40E+01	2.30E+02	6.25E+02
GWP-biogenic	kg CO2 eq	3.78E-01	4.80E-04	5.09E-01	8.88E-01
GWP-luluc	kg CO2 eq	1.93E-01	3.30E-04	3.07E+00	3.26E+00
ODP	kg CFC11 eq	1.10E-06	2.69E-07	9.11E-06	1.05E-05
AP	mol H+ eq	1.01E+00	1.78E-01	5.74E-01	1.76E+00
EP-freshwater	kg P eq	4.33E-02	9.75E-06	1.14E-03	4.44E-02
EP-marine	kg N eq	2.64E-01	4.52E-02	1.44E-01	4.53E-01
EP-terrestrial	mol N eq	2.33E+00	5.01E-01	1.18E+00	4.01E+00
POFP	kg NMVOC eq	7.12E-01	1.48E-01	7.23E-01	1.58E+00
ADP-minerals&metals [2]	kg Sb eq	1.31E-04	2.75E-07	1.67E-04	2.98E-04
ADP-fossil [2]	MJ	3.42E+03	1.80E+02	4.75E+03	8.35E+03
WDP [2]	m^3	-2.44E+01	6.17E-02	2.05E+02	1.80E+02

- **GWP-total (kg CO_2 eq):** Global warming potential.
- GWP-fossil (kg CO_2 eq): Global warming potential of fossil fuels.
- **GWP - biogenic (kg CO_2 eq):** Biogenic global warming potential.
- **GWP - luluc (kg CO_2 eq):** Global warming potential of land use and land use change.
- **EP-marine (kg N eq):** Eutrophication potential, fraction of nutrients reaching the final marine water compartment.
- **EP-terrestrial (mol N eq):** Eutrophication potential, cumulative surplus.
- **POFP (kg NMVOC eq):** Tropospheric ozone formation potential.
- **ODP (kg CFC-11 eq):** Ozone depletion potential.
- **AP (mol H+ eq):** Acidification potential, cumulative surplus.
- **EP-freshwater (kg P eq):** Eutrophication potential, fraction of nutrients reaching the final freshwater compartment.
- **ADP-minerals&metals (kg Sb eq):** Abiotic depletion potential for non-fossil resources.
- **APD-fossil (MJ, v.c.n):** Abiotic depletion potential for fossil resources.
- **WDP (m^3):** Water deprivation potential (user), weighted water deprivation consumption.

Additional indicators of voluntary impact categories					
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
PM	disease inc.	3.64E-05	7.38E-07	5.55E-06	4.27E-05
IRP [1]	kBq U-235 eq	3.51E+00	1.59E-02	2.88E+01	3.23E+01
ETP-fw [2]	CTUe	2.67E+03	6.15E+00	1.41E+02	2.82E+03
HTP-c [2]	CTUh	3.03E-07	1.30E-09	6.95E-08	3.74E-07
HTP-nc [2]	CTUh	9.36E-07	6.60E-08	4.95E-06	5.95E-06
SQP [2]	Pt	4.19E+02	2.33E-01	4.58E+00	4.24E+02

- **PM (disease incidence).** Potential for disease incidence due to particulate matter emissions.
- **IRP (kBq U235 eq).** Human exposure efficiency relative to U235.
- **ETP-fw (CTUe).** Comparative toxic unit potential for ecosystems - freshwater.
- **HTP-c (CTUh).** Comparative toxic unit potential for ecosystems - carcinogenic effects.
- **HTP-nc (CTUh).** Comparative toxic unit potential for ecosystems - non-carcinogenic effects.
- **SQP (Pt).** Soil quality potential index.

Note 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 the effects of possible nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The ionising radiation potential of soil due to radon or certain building materials is also not measured in this parameter.

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

*This indicator accounts for all greenhouse gases except the absorption and emissions of biogenic carbon dioxide and biogenic carbon stored in the product. Therefore, the indicator is identical to the total GWP, except that the conversion factor for biogenic CO_2 is set to zero.

Indicators for resource use					
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
PERE	MJ	1.79E+02	4.03E-01	1.28E+03	1.46E+03
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.79E+02	4.03E-01	1.28E+03	1.46E+03
PENRE	MJ	3.42E+03	1.80E+02	4.75E+03	8.35E+03
PENRM	MJ	5.11E-01	0.00E+00	0.00E+00	5.11E-01
PENRT	MJ	3.42E+03	1.80E+02	4.75E+03	8.35E+03
SM	kg	8.85E+02	0.00E+00	0.00E+00	8.85E+02
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	3.06E+00	3.50E-03	4.03E+00	7.09E+00

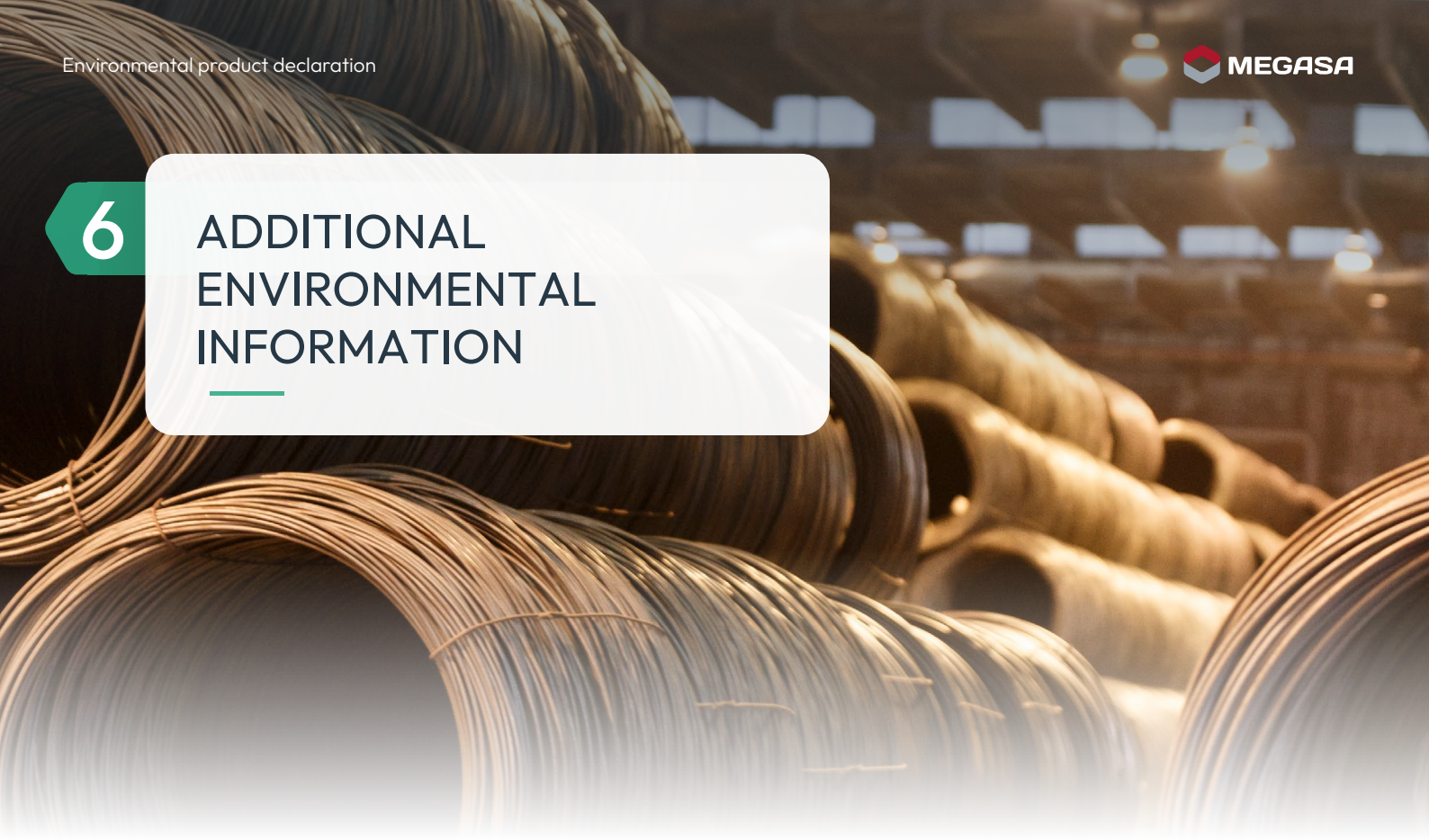
- PERE (MJ, v.c.n.). Use of renewable primary energy excluding renewable primary energy resources used as raw materials.
- PERM (MJ, v.c.n.). Use of renewable primary energy used as raw materials.
- PERT (MJ, v.c.n.). Total use of renewable primary energy.
- PENRE (MJ, v.c.n.). Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials.
- PENRM (MJ, v.c.n.). Use of non-renewable primary energy used as raw materials.
- PENRT (MJ, v.c.n.). Total use of non-renewable primary energy;.
- SM (kg). Use of secondary materials.
- RSF (MJ, v.c.n.). Use of renewable secondary fuels
- NRSF (MJ, v.c.n.). Use of non-renewable secondary fuels.
- FW (m3). Net use of fresh water resources.

Waste categories					
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
HWD	kg	4.61E-03	1.08E-03	2.03E-02	2.60E-02
NHWD	kg	1.08E+02	5.07E-03	3.13E+00	1.11E+02
RWD	kg	2.32E-03	9.52E-06	1.43E-02	1.66E-02

- HWD (kg). Hazardous waste disposed of.
- NHWD (kg). Non-hazardous waste disposed of.
- RWD (kg). Radioactive waste disposed of.

Output flows					
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	6.80E-01	6.80E-01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	1.29E+00	1.29E+00
EET	MJ	0.00E+00	0.00E+00	1.74E+01	1.74E+01

- CRU (kg). Components for reuse.
- MFR (kg). Materials for recycling.
- MER (kg). Materials for energy recovery.
- EEE (MJ). Electrical energy exported.
- EET (MJ). Thermal energy exported.



6 ADDITIONAL ENVIRONMENTAL INFORMATION

6.1. Other indicators

The manufacture of the wire rod for welded wire fabric studied generates the following coproducts for sale to third parties:

Parameter	Kg (per declared unit)
Flakes, Mill scale	2.09E+01
Scrap soil	1.46E+01
Black slag	1.76E+02

6.2. Indoor air emissions

The manufacturer declares that the steel studied does not generate emissions to indoor air during its useful life.

6.3. Emissions to soil and water

The manufacturer declares that the steel studied does not generate significant emissions to soil or water during its useful life.

6.4. Electricity mix used

The base energy mix of the Portuguese mainland system for 2024 has been used.

Mix - GWP - gCO2 eq/kWh	
Average Mix	137.94

REFERENCES

1

PCR 2015:03 Basic iron or Steel products & special steels, excepd construction steel products. Product category classification: UN CPC 4221 and 421.Versión 3.0.0. Válida hasta 2029-07-14

2

General Programme Instructions (GPI) for the GlobalEPD, 3rd revison. AENOR. October 2023.

3

EN ISO 14025:2010 Environmental labels. Type III environmental claims. Principles and procedures (ISO 14025:2006).

4

EN ISO 14040:2006/A1:2021. Environmental management. Life cycle assessment. Principles and framework. Amendment 1. (ISO 14040:2006/ Amd 1:2020).

5

EN ISO 14044:2006/A1:2021. Environmental management.Life cycle assessment. Requirements and guidelines. Amendment 2. (ISO 14044:2006/Amd 2:2020).

6

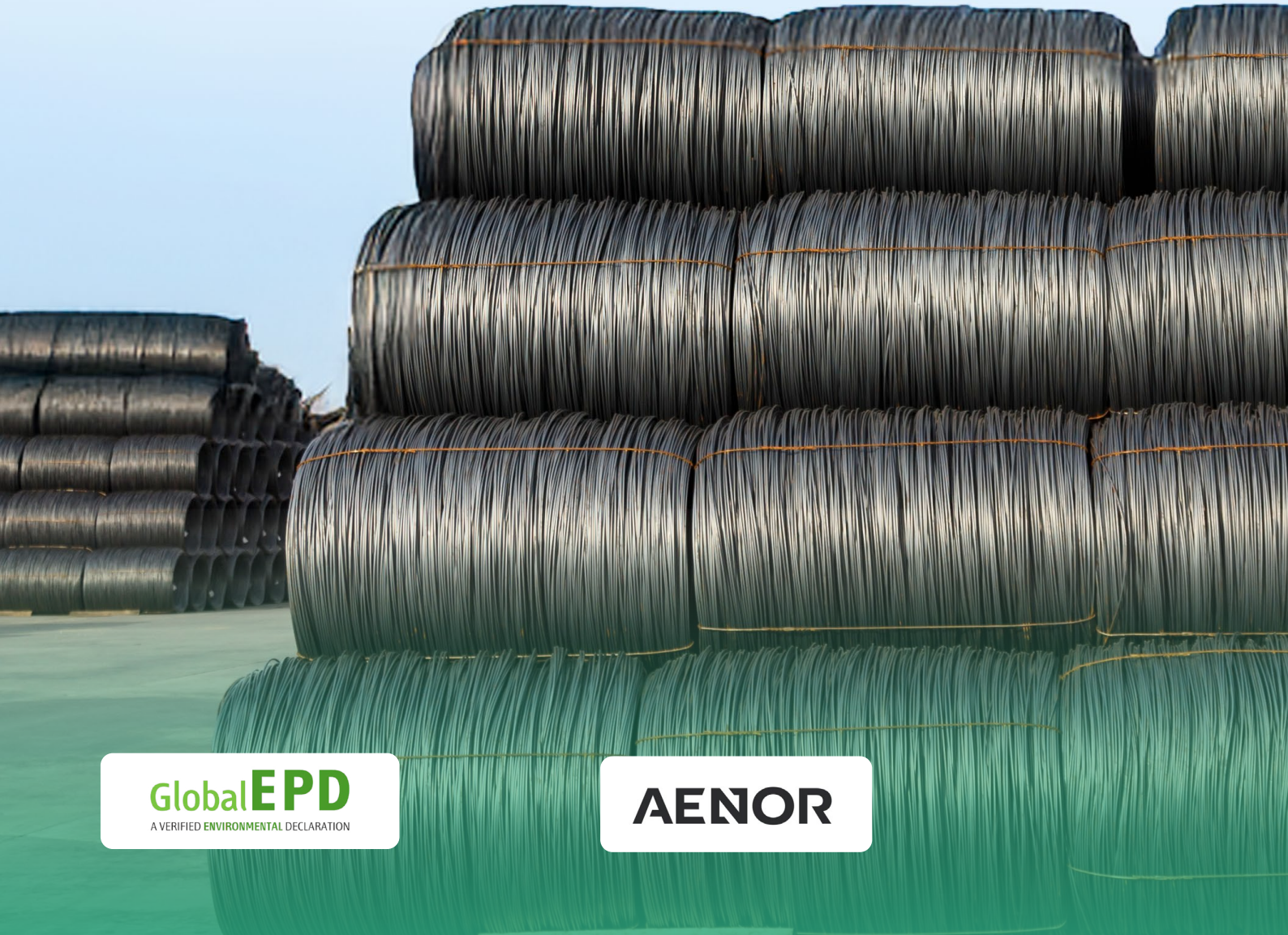
Life Cycle Assessment Report for Environmental Product Declarations for Megasa Group steel products,prepared by Abaleo S.L., December 2025.Version 2.

7

Environmental impact assessment databases and methodologies applied using SimaPro 10.2.0.0.

MEGASA

Environmental product declaration



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