

Environmental Product Declaration

In accordance with ISO 14025:2006 and
EN 15804:2012+A2:2019/AC:2021 for:

STEEL BEAMS AND STEEL MERCHANT BARS

From:
CELSA HUTA OSTROWIEC



Programme:

The International EPD® System,
www.environdec.com

Programme operator:

EPD International AB

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An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



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1.

General information

Programme information	
Programme	The International EPD® System
Address	EPD International AB, Box 210 60 SE-100 31 Stockholm, Sweden
Website	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

Environmental Product Declaration in accordance with ISO standard ISO 14025 and ISO 21930 and CEN standard EN 15804 since they serve as the core Product Category Rules (PCR). PCR 2019:14, Construction products version 1.2.5 and CPC = 412 (Products of iron or steel). UN CPC code:

- 4124 beams (Bars and rods, hot-rolled, of iron or steel)
- 4125 merchants (angles and shapes)

PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/T for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact

Life Cycle Assessment (LCA)

UNESCO Chair in Life Cycle and Climate Change (<https://www.unesco-chair.esci.upf.edu/en>)

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by accredited certification body

Third-party verifier: **TECNALIA R&I Certificación S.L.**

Auditor: **Maria Feded Mateu**

Accredited by: **ENAC with accreditation no. 125/C-PR283**

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 registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

2.

Company information

Description of the organisation

CELSA has its origin in 1967 in Castellbisbal (Barcelona) with the start-up of its first rolling mill. Ten years later, and as a turning point, the company inaugurated the first electric furnace, a fact that would allow greater competitiveness. At the end of the 80s and during the 90s, CELSA began to establish itself as a national benchmark with the acquisitions of THC, Siderúrgica Besós, GSW or Nervacero. And not only that, but it would also become one of the most diversified groups with the integration of two important Spanish wire drawers: Tycsa PSC and Trefilerías Moreda in 1991 and Riviere in 1999.

All these years of perseverance and enthusiasm have made CELSA one of the most important steel groups in Europe. With more than 9,657 people in its companies, around 120 workplaces around the world, more than 10 languages spoken, 8 million tons of scrap recycled per year and several university chairs, the Group has become a benchmark for steel.

CELSA Huta Ostrowiec is a large scrap-recycling company. Our production process involves Electric Arc Furnaces (EAF), Ladle Furnaces (LF), continuous casting and hot rolling mills in order to provide various finished products. In autumn 2003 CELSA Group acquired Huta Ostrowiec - steel plant in Poland of almost 200 years of experience in steel products manufacturing. Today CELSA Huta Ostrowiec is an industrial enterprise consisting of two divisions:

- **Rolled Products Division** equipped with continuously casting melt shop, rolling mill of bars and rolling mill of steel section.
- **Forged Products Division** equipped with melt shop and modern machines producing completely finished products with mechanical and thermal treatment.

Celsa Group in figures



6,600,000

Steel produced in 2021



7,010,000

T recycled in 2021



120

Work centers distributed all over the world



5,280

Million euros turnover in 2021



11,929

Number of professionals (own and subcontractors employees)



3,758

Million euros total Investment in local suppliers

Product-related or management system-related certifications:

ISO 9001:2015, ISO 45001:2018, ISO 14001:2015, Sustainability for steel construction products mark.

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Owner of the EPD

CELSA Huta Ostrowiec
<https://www.celsaho.com/>

Jana Samsonowicza 2, 27-400,
Ostrowiec Świętokrzyski
(Poland)

Where we are

CELSA Group™ has a clear international vocation. It is currently present throughout the world with more than 120 work points. Each location allows us to operate and supply our customers with great strategic and competitive advantages.



3.

Product information

Celsa Group offers a wide range of structural profiles up to 600 mm in height and lengths up to 24 metres. Its range of profiles is mainly composed of UPN, IPN, IPE, HEA, HEB profiles according to European standards and wide flange profiles type W according to American standards.

The product consists of **100 % recycled steel** produced by the Electric Arc Furnace route from post- consumer and pre-consumer scrap. Three types of hot rolled channels are produced at the Sections Mill: Heavy, Light and UPN channels.

These are mainly used in steel and composite construction, although they have numerous applications including the manufacture of cranes, hand-rail posts and traffic signposts. CELSA also manufacture hot rolled heavy equal and unequal angles. These channels are mainly used in construction, however as with flat bars and channels, they can also be used in numerous applications including the construction of electricity pylons, cranes, roofs, and also in structural design including steel frames, brackets, bracing, trim and reinforcements.

CELSA flat bars have numerous applications in sectors as varied as the automobile industry, the naval industry, construction, agriculture, mining and metal joinery.

The results in this EPD are an average representative of all steel products manufactured for CELSA at the Sections Mill. Averages are obtained through the total production, total consumption of raw materials and total generation of waste and emissions in CELSA facilities.

The target group is B2B.

Steel beams & Steel merchant bars and others steel sections

Product identification

The results in this EPD are an average representative of steel beams and steel merchant bars products manufactured for CELSA Huta Ostrowiec. Activity data has already been provided by Celsa Huta Ostrowiec for this products.

In the table below are shown the product-related certifications for steel beams and steel merchant bars:

Country	Standard
Europe	EN 10025-1:2004 Hot rolled products of structural steels Part 1: General technical delivery conditions
Europe	EN 10025-2:2019 Hot rolled products of structural steels Part 2: Technical delivery conditions for non-alloy structural steels
Europe	PN-EN 10058:2019-11 Hot rolled flat steel bars and steel wide flats for general purposes -- Dimensions and tolerances on shape and dimensions
Europe	PN-EN 10279:2003 Hot rolled steel channels - Tolerances on shape, dimensions and mass
Europe	PN-EN 10365:2017-03 Hot rolled steel channels, I and H sections – Dimensions and masses
Europe	PN-EN 10024:1998 Hot rolled taper flange I sections - Tolerances on shape and dimensions
Europe	PN-EN 10034:1996 Structural steel I and H sections - Tolerances on shape and dimension
Malaysia	MS EN 10025-2:2011 Hot rolled products of structural steels Part 2: Technical delivery conditions for non-alloy structural steels (second revision)
Argentina	IRAM IAS U500-503:2019 Carbon steels for structural use
Spain	UNE 36084:79 Hot rolled products for shipbuilding. Steels of 400/490 n/mm2 strength

Product description

Steel sections for structural and general use & Square, rectangular and square steel bars, hot rolled, for general purposes.

The product consists of 100% recycled steel produced by Electric Arc Furnace route from post-consumer and pre-consumer scrap. The following tables corresponds to the main characteristics of the products.

Product do not contain any of the substances listed on the “Candidate List of Substances of Very High Concern (SVHC) for authorization”.

Location of production site(s):

Jana Samsonowicza 2, 27-400 Ostrowiec Świętokrzyski, Poland

Geographical scope

Europe. Products under study are produced in Poland but can be used at world wide.

UN CPC code:

4124 beams (Bars and rods, hot-rolled, of iron or steel); 4125 merchants (angles and shapes)

Beams

Characteristic	Value, units	
Size	Thickness options	80 - 300 mm
	Length options	6 - 18 m. Special lengths to 22 m are also available by prior order
Length tolerance	0/+100 mm	
Yield strength min	235 MPa	
Tensile strength min	360 MPa	
Elongation	17%	
Impact Test	≥27J	
Welding requirements	Ceq ≤ 0.45%	



Product family:

HEA, HEB, HEM, IPE, IPEA, IPN, L, UPN, UPE, UB, UC, PFC, BW

Merchants

Characteristic	Value, units	
Size	Thickness options	3 - 40 mm
	Length options	6 - 12 m. Special lengths to 16 m are also available by prior order
Length tolerance	0/+100 mm	
Yield strength min	235 MPa	
Tensile strength min	360 MPa	
Elongation min	17%	
Impact Test min.	≥27J	
Welding requirements	Ceq ≤ 0.45%	



Product description:

Square, rectangular and square steel bars, hot rolled, for general purposes.

4.

LCA information

The scenario studied in the present report is the most representative updated version in the date of developing the study; utilizing data of sufficient accuracy and technological, temporal and geographical representativeness; and utilizing complete datasets, in accordance with the limits of the system.

Functional unit / declared unit:

1,000 kg of steel beams and steel merchant bars

Reference service life

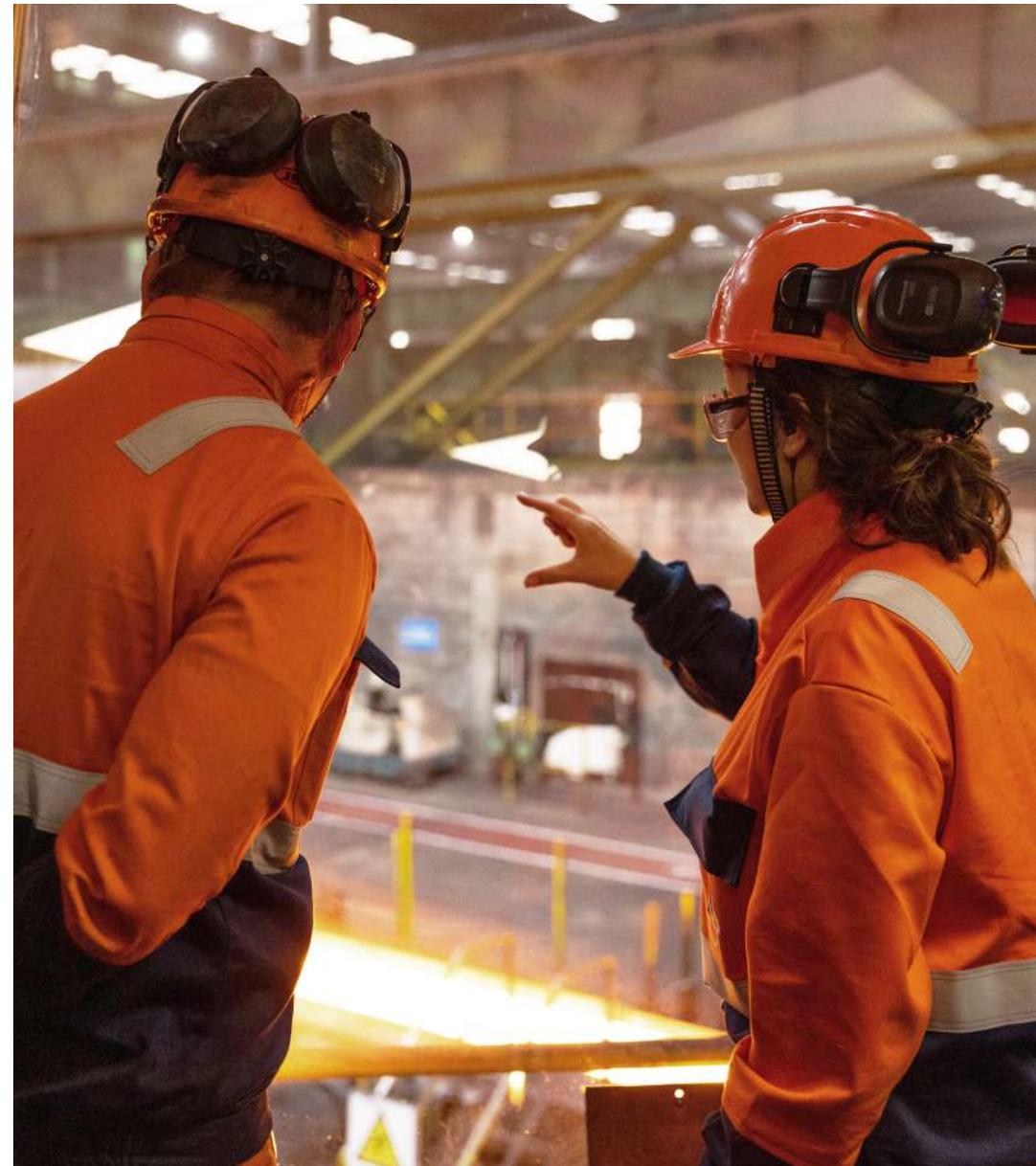
Not applicable.

Time representativeness

Reference year, 2021 (January to December, representing conventional operation conditions). This inventory data was compiled in 2022 using questionnaires issued by UNESCO Chair in Life Cycle and Climate Change and completed by CELSA, which were iteratively refined.

Database(s) and LCA software used

Unless otherwise indicated, all relevant background LCI datasets were sourced from the Professional GaBi Databases (GaBi Professional Software (version 10.6.1.35)). In specific cases, the original Sphera datasets were modified according to the specificities of the study. These corrections are distinctly identified in this report and the changes are clearly described.



4.1. Description of system boundaries

Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)

This EPD provides information on the production stage of steel products (raw material supply, transport to plants and manufacturing) and their end-of-life. Recycling/reuse potential of steel with burden savings due to use in a second product systems is also reported. The information is presented in a modular way separated in the following stages.

A1-3

Cradle to gate

Production of raw materials, energy (Module A1) and auxiliary materials (Module A3). Transport of raw materials, semi-finished products, and auxiliary materials to the production site (Module A2).

Production of steel onsite, including the production of auxiliary materials on-site, disposal of production residues and packaging of raw materials, also considering on-site emissions (Module A3). Scrap occurring during the production on-site is looped back to satisfy some of the demand for scrap input to the process.

Steel scrap that enters the product system is assumed to reach end of waste state after it has gone through a sorting and shredding process that takes place at demolition sites or waste processing facilities. Scrap emerging from these sites or facilities meets end of waste criteria, as it is a valuable commodity with a well-established existing market. Maintenance of equipment is not included. The electricity consumed at the plant has been adapted to specific power mix supply.



C1

Dismantling

This module has been modelled assuming that 100% of products are used in construction section, i.e., as integrated into other structures.

For rebars has been used generic dataset from Ecoinvent for the treatment of waste reinforcement steel.

Default data to estimate environmental burdens are shown in the table below.

C2

Transport to waste processing

Transport is calculated based on a scenario with the parameters described in the table below.

C3

Waste processing for reuse, recovery and/or recycling

The material and energy expenses required for Module C3 are negligible. It is assumed that there is no sorting or processing required for steel sections.

C4

Final disposal

The End-of-life of the selected scenario is representative of steel products consumed in UK. According to the reference used¹, the data has been validated for consistency with other, European countries and it has been concluded to be representative for Europe.



¹ M. Sansom and N. Avery, "Briefing: Reuse and recycling rates of UK steel demolition arisings," Engineering Sustainability, vol. 167, no. ES3, doi: <http://dx.doi.org/10.1680/ensu.13.00026>

D

Benefits and loads beyond the product system

Module D includes any declared benefits and loads from net flows leaving the product system that have not been allocated as co-products and that have passed the end-of-waste state in the form of reuse, recovery and/or recycling potentials. Potential environmental benefits are given for the net scrap that is produced at the end of a final product's life. This net scrap is determined as follows: Net scrap = Amount of steel recycled at end-of-life* – Scrap input from previous product life cycles

The net recovered material and substitution of the avoided product has been considered with the process "Value of scrap" from GaBi databases. Which has been calculated with data referred to the Worldsteel Life Cycle Inventory Study for Steel Industry Products, 2021. Data collected on site by steel industry experts in accordance with the worldsteel methodology and ISO 14040 standards, and consistency-checked by worldsteel LCA-experts.



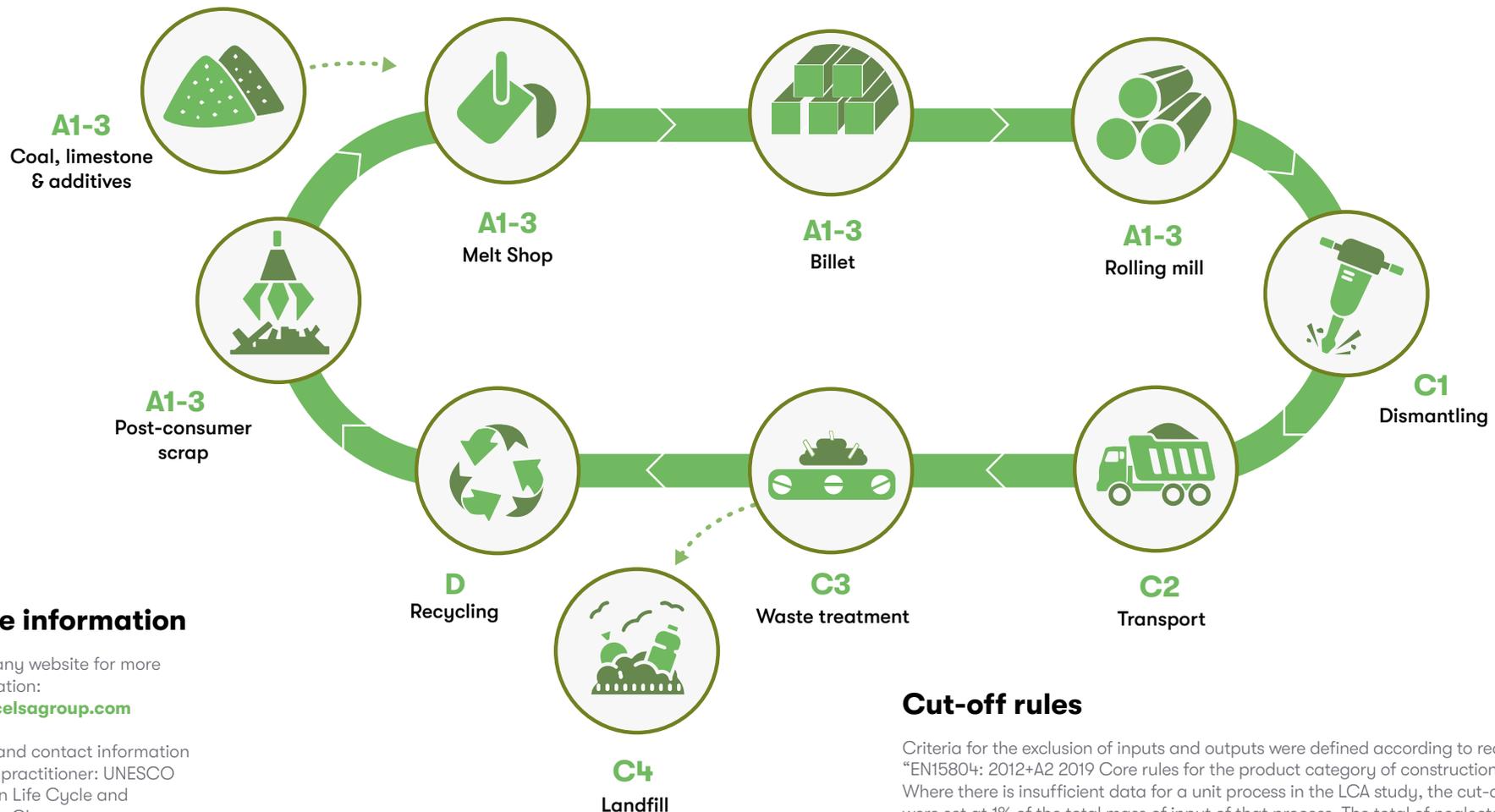


C1 module parameters	
Diesel burned ²	626 MJ/t
Diesel consumed	Thermal energy from light fuel oil (LFO)
C2 module parameters	
Transport by road	Truck-trailer, Euro 6 A-C, 28 - 34t gross weight / 22t payload capacity
Diesel consumed	Diesel mix at filling station
Distance to waste management	50 km
Biogenic carbon dioxide	0
C3 module parameters	
Consumption (kwh)	Negligible. It is assumed that there is no sorting or processing required for steel sections.
C4 module parameters	
Recovery rate (recycling)	91%
Reuse rate	5%
Landfill	4%
Mass of Steel collected	1000 kg

² Ecoinvent, 2021. Ecoinvent Database 3.8. www.ecoinvent.org/database.

4.2. System diagram

The stages of transport to site (A4), installation (A5) and use (B1-B7) are not included.



More information

Company website for more information:

www.celsagroup.com

Name and contact information of LCA practitioner: UNESCO Chair in Life Cycle and Climate Change

www.unescochair.esci.upf.edu

Cut-off rules

Criteria for the exclusion of inputs and outputs were defined according to requirements “EN15804: 2012+A2 2019 Core rules for the product category of construction products”. Where there is insufficient data for a unit process in the LCA study, the cut-off criteria were set at 1% of the total mass of input of that process. The total of neglected input flows per module was set at a maximum of 5% of energy and mass use. Based on this cut-off criteria, ancillary materials (such as expendable components, spare parts and chemicals for wastewater treatment, etc.) have been excluded from the analysis”.

4.3. Assumptions and considerations applied

Next topics have not been included in the LCA:

- The construction of the plant's buildings, equipment, and other capital goods with more than 3 years of lifespan.
- Use stage (B)
- Commuting of the employees; business trips
- Research and development activities

The transport stages have been modelled with generic data from GaBi databases:

- Road transport (Transport, truck-trailer. 40 t total cap., 24.7t payload)
- Water transport (Transoceanic ship, bulk, 100,000 - 200,000 dwt payload capacity, ocean going)
- Rail transport (Transportation by rail)

The electricity source was simulated in GaBi in accordance to the suppliers of electricity for Celsa Huta Ostrowiec from year 2021.

- Biomass, 2.81%
- Wind, 8.86%
- Solar, 2.27%
- Hydropower, 1.91%
- Coal, 47.66%
- Lignite, 28.07%
- Natural gas, 8.39%
- GWP-GHG (kg CO₂ e/kwh): 0.8568



Type and format of the report: units and quantities

The units required in the PCR are used in this report. The decimals mark are identified with points according to the SI style (English version).

4.4. Allocation

Total energy consumption was attributed entirely to total production. This is also the case for raw materials and waste generation.

The steel making process generates coproducts which have a commercial application. These include the EAF steelmaking slag and EAF steel dust (both produced only in Melt shop), and the mill scale (produced both in Melt shop and in Section Mill).

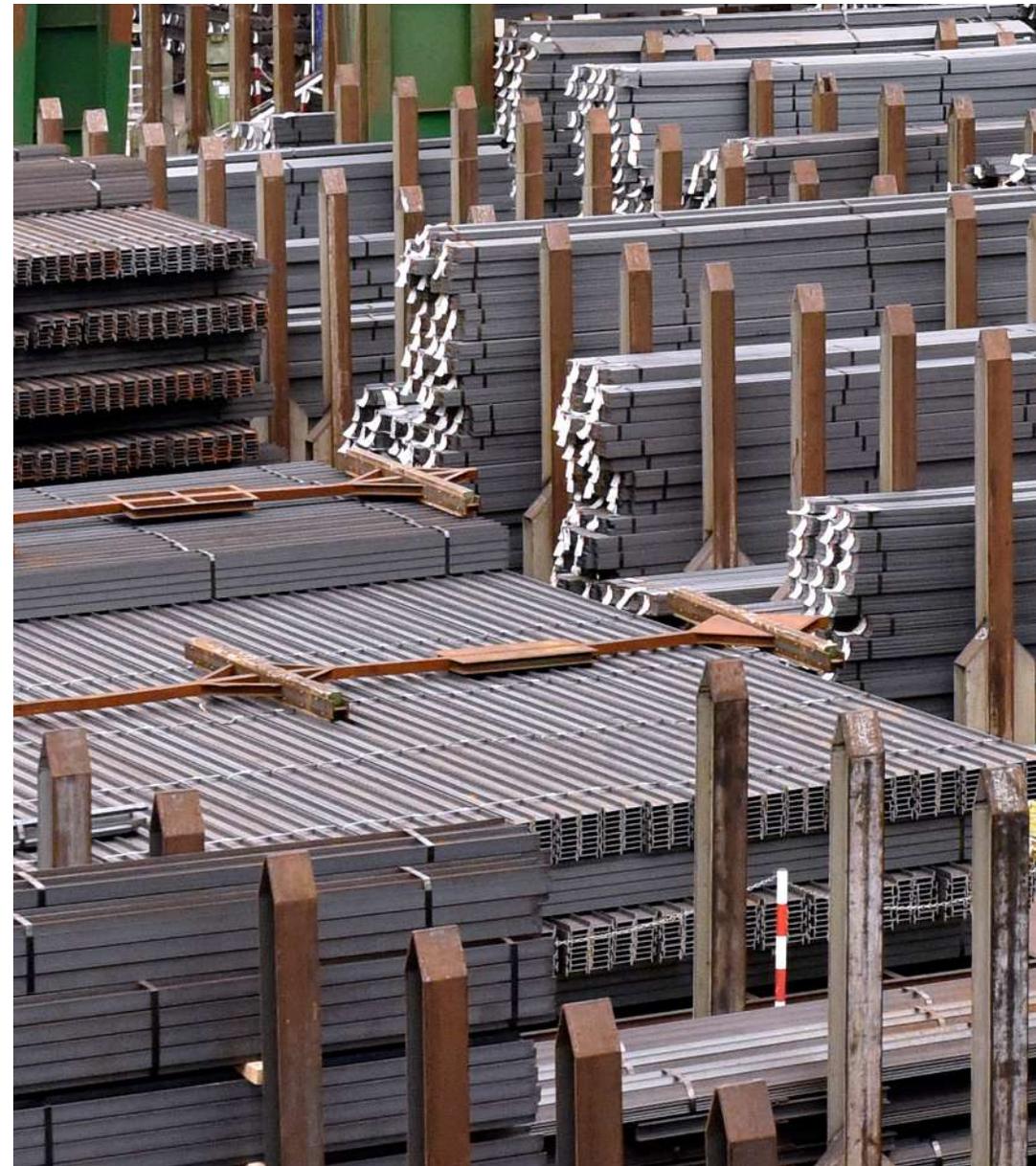
For Melt shop, a physical allocation method based on the calorific value of the coproducts has been used. This methodology is based on the procedures developed by the World Steel Association and EUROFER (see references).

For the Section Mill, an economic approach was applied to determine the allocation of environmental flows between the laminated products and the mill scale.

4.5. Data quality requirements

The quality of the data used to calculate this LCA meets the following requirements:

- The data used in the LCA were as up to date as possible (updated within the last 10 years for generic data and within the last 5 years for manufacturer-specific data).
- Used background data are of recognised prestige and acceptance in the technical and scientific fields. In particular, the Sphera database, in the most recent version existing at the time of the study, is considered to be of preferential use.
- Regionally specific datasets were used to model the energy consumption (electricity, natural gas or diesel). For the processes of transport, production of raw materials or end-of-life, datasets were chosen according to their technological and geographical representation of the actual process.



4.6. Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):																	
	Product stage			Construction process stage		Use stage							End of life stage			Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	ND	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	GLO	GLO	PL	-	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ND: not declared; PL: Poland; EU: European Union; GLO: Global

Raw material supply (A1) is measured as contribution to the potential environmental impact from specifically inventoried processes.

Modes of transport and distances (A2) are specific, the data for vehicles and fuel production is generic.

Use of raw materials and energy wares (A3) are specific, the data for the generation of thermal heat on-site is generic, as is the data for producing fuels and commodities and generating electricity.

5.

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Pre-consumer material, weight-%	Renewable material	Biogenic carbon dioxide
Fe	980	78	22	0	0
Si, Mn, C	20	78	22	0	0
TOTAL (Functional unit)	1000	-	-	-	-

Packaging materials	Weight, kg	Weight-% (versus the product)
Steel strap - packaging	50	0.05
TOTAL	50	

*The product does not contain hazardous substances.

*The recycled material used is defined as post consumer and pre consumer scrap in the table presented above.

Results of the environmental performance indicators

Environmental impact results of both products (steel beams and steel merchant bars) are presented in the following table. The process production for both process is similar, following the same stages and with a difference in the results of less than 10% variation. So on, the average values between both products is presented in the table.



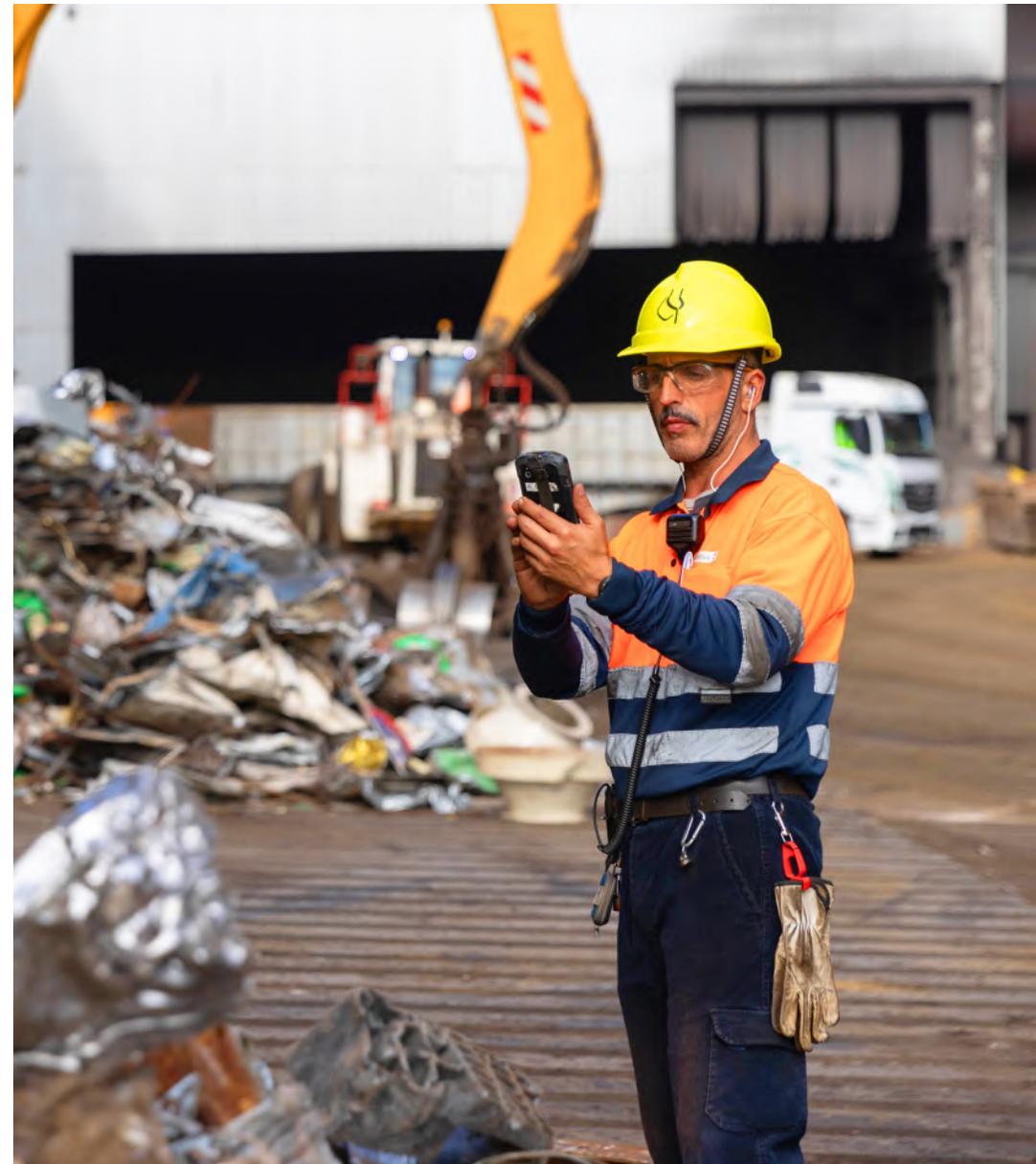
5.1. Mandatory impact category indicators according to EN 15804

Results per functional or declared unit										
	Unit	A1	A2	A3	A1-3	C1	C2	C3	C4	D
										
GWP-GHG(1)	kg CO ₂ eq	5.60E+02	4.08E+00	1.50E+02	7.14E+02	5.51E+01	8.06E+00	0.00E+00	4.52E-01	-1.30E+03
GWP-total	kg CO ₂ eq	5.60E+02	4.02E+00	1.50E+02	7.14E+02	5.53E+01	8.03E+00	0.00E+00	4.37E-01	-1.30E+03
GWP-fossil	kg CO ₂ eq	5.60E+02	4.04E+00	1.50E+02	7.14E+02	5.51E+01	8.01E+00	0.00E+00	4.51E-01	-1.30E+03
GWP-biogenic	kg CO ₂ eq	1.01E-01	-5.60E-02	1.91E-01	2.36E-01	1.25E-01	-2.91E-02	0.00E+00	-1.50E-02	6.64E-01
GWP-luluc	kg CO ₂ eq	4.73E-02	3.70E-02	6.12E-03	9.04E-02	1.56E-03	4.76E-02	0.00E+00	1.40E-03	-2.68E-02
ODP	kg CFC-11 eq	2.93E-10	7.44E-13	8.22E-12	3.02E-10	2.43E-12	1.96E-12	0.00E+00	1.15E-12	-2.84E-12
AP	mol H ⁺ eq	1.49E+00	2.58E-02	3.87E-01	1.90E+00	1.09E-01	9.31E-03	0.00E+00	3.20E-03	-2.79E+00
EP-freshwater	kg P eq	2.53E-04	1.47E-05	9.08E-06	2.77E-04	1.24E-05	1.88E-05	0.00E+00	9.07E-07	-2.36E-04
EP-marine	kg N eq	2.89E-01	1.26E-02	1.39E-01	4.41E-01	3.73E-02	3.28E-03	0.00E+00	8.26E-04	-4.91E-01
EP-terrestrial	mol N eq	3.11E+00	1.40E-01	1.53E+00	4.78E+00	4.10E-01	3.94E-02	0.00E+00	9.09E-03	-4.31E+00
POCP	kg NMVOC eq	8.35E-01	2.44E-02	4.19E-01	1.28E+00	1.07E-01	8.14E-03	0.00E+00	2.49E-03	-1.99E+00
ADPE (2)	kg Sb eq	7.88E-05	2.65E-07	1.48E-06	8.05E-05	5.99E-07	5.73E-07	0.00E+00	2.08E-08	-3.24E-03
ADPF (2)	MJ	5.63E+03	5.46E+01	1.96E+03	7.65E+03	7.35E+02	1.08E+02	0.00E+00	6.00E+00	-1.19E+04
WDP (2)	m ³ eq	4.45E+01	4.85E-02	1.07E-01	4.46E+01	1.08E-01	4.18E-02	0.00E+00	4.95E-02	-2.41E+02

(1) This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

(2) The results of this 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.

- **GWP-GHG.** Global Warming Potential.
- **GWP-fossil.** Global Warming Potential - fossil fuels.
- **GWP-biogenic.** Global Warming Potential - biogenic.
- **GWP-luluc.** Global Warming Potential - land use and land use change.
- **GWP-total.** Global Warming Potential - total.
- **ODP.** Depletion potential of the stratospheric ozone layer.
- **AP.** Acidification potential, Accumulated Exceedance.
- **EP-freshwater.** Eutrophication potential - freshwater.
- **EP-marine.** Eutrophication potential - marine.
- **EP-terrestrial.** Eutrophication potential - terrestrial.
- **POCP.** Photochemical Ozone Creation Potential.
- **ADPE.** Abiotic depletion potential - non-fossil resources.
- **ADPF.** Abiotic depletion potential - fossil resources.
- **WDP.** Water (user) deprivation potential.



5.2. Use of resources

Resource use										
	Unit	A1	A2	A3	A1-3	C1	C2	C3	C4	D
										
PERE	MJ	1.15E+03	4.07E+00	5.39E+00	1.16E+03	3.30E+00	7.25E+00	0.00E+00	9.78E-01	7.52E+02
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.15E+03	4.07E+00	5.39E+00	1.16E+03	3.30E+00	7.25E+00	0.00E+00	9.78E-01	7.52E+02
PENRE	MJ	5.63E+03	5.48E+01	1.96E+03	7.65E+03	7.35E+02	1.08E+02	0.00E+00	6.00E+00	-1.19E+04
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	5.63E+03	5.48E+01	1.96E+03	7.65E+03	7.35E+02	1.08E+02	0.00E+00	6.00E+00	-1.19E+04
SM	kg	8.02E+02	0.00E+00	0.00E+00	8.02E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m ³	2.26E+00	4.38E-03	5.49E-03	2.27E+00	6.28E-03	6.45E-03	0.00E+00	1.52E-03	-5.45E+00

Resource use

- **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 re-sources.
- **SM.** Use of secondary material.
- **RSF.** Use of renewable secondary fuels.
- **NRSF.** Use of non-renewable secondary fuels.
- **FW.** Use of net fresh water

5.3. Waste production and output flows

Waste										
	Unit	A1	A2	A3	A1-3	C1	C2	C3	C4	D
										
HWD	kg	-2.50E-08	1.47E-10	3.15E-07	2.91E-07	1.57E-09	1.83E-10	0.00E+00	1.31E-10	-9.22E-08
NHWD	kg	2.93E+00	8.44E-03	5.02E-01	3.44E+00	2.08E-01	1.62E-02	0.00E+00	3.00E+01	1.81E+02
RWD	kg	3.32E-02	1.14E-04	5.93E-04	3.39E-02	4.99E-04	1.43E-04	0.00E+00	6.83E-05	1.48E-03

Other output flows										
	Unit	A1	A2	A3	A1-3	C1	C2	C3	C4	D
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.00E+01	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	1.91E+02	1.91E+02	0.00E+00	0.00E+00	9.10E+02	0.00E+00	0.00E+00
MER	kg	0.00E+00								
EEe	MJ	0.00E+00								
EEt	MJ	0.00E+00								

Waste

- **HWD.** Hazardous waste disposed.
- **NHWD.** Non-hazardous waste disposed.
- **RWD.** Radioactive waste disposed.

Other output flows

- **CRU.** Components for re-use.
- **MFR.** Materials for recycling.
- **MER.** Materials for energy recovery.
- **EEe.** Exported energy (electricity).
- **EEt.** Exported energy (thermal).

5.4. Potential environmental impact. Additional indicators according to EN 15804

Additional environmental impacts										
	Unit	A1	A2	A3	A1-3	C1	C2	C3	C4	D
										
PM (1)	disease inc.	1.49E-05	9.73E-08	1.73E-06	1.68E-05	6.18E-07	6.59E-08	0.00E+00	3.93E-08	-3.95E-05
IRP (2)	kBq U235 eq	3.70E+00	1.64E-02	6.68E-02	3.79E+00	3.86E-02	1.53E-02	0.00E+00	7.89E-03	2.92E+01
ETP-fw (1)	CTUe	1.59E+03	3.88E+01	2.53E+01	1.66E+03	6.54E+02	7.82E+01	0.00E+00	3.31E+00	-7.35E+02
HTP-c (1)	CTUh	6.61E-08	7.95E-10	1.35E-07	2.02E-07	1.67E-08	1.57E-09	0.00E+00	5.04E-10	-5.31E-07
HTP-nc (1)	CTUh	2.61E-06	4.51E-08	1.52E-05	1.79E-05	6.00E-07	8.00E-08	0.00E+00	5.54E-08	-1.75E-05
SQP (1)	dimensionless	1.53E+03	2.28E+01	7.48E+00	1.56E+03	4.48E+00	3.85E+01	0.00E+00	1.46E+00	1.44E+02

Additional Environmental Impacts

- **PM.** Particulate Matter emissions
- **IRP.** Ionizing radiation, human health.
- **HTP-c.** Human toxicity, cancer effect.
- **HTP-nc.** Human toxicity, non-cancer effects.
- **ETP-fw.** Eco-toxicity - freshwater.
- **SQP.** Land use related impacts/Soil quality.

(1) The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

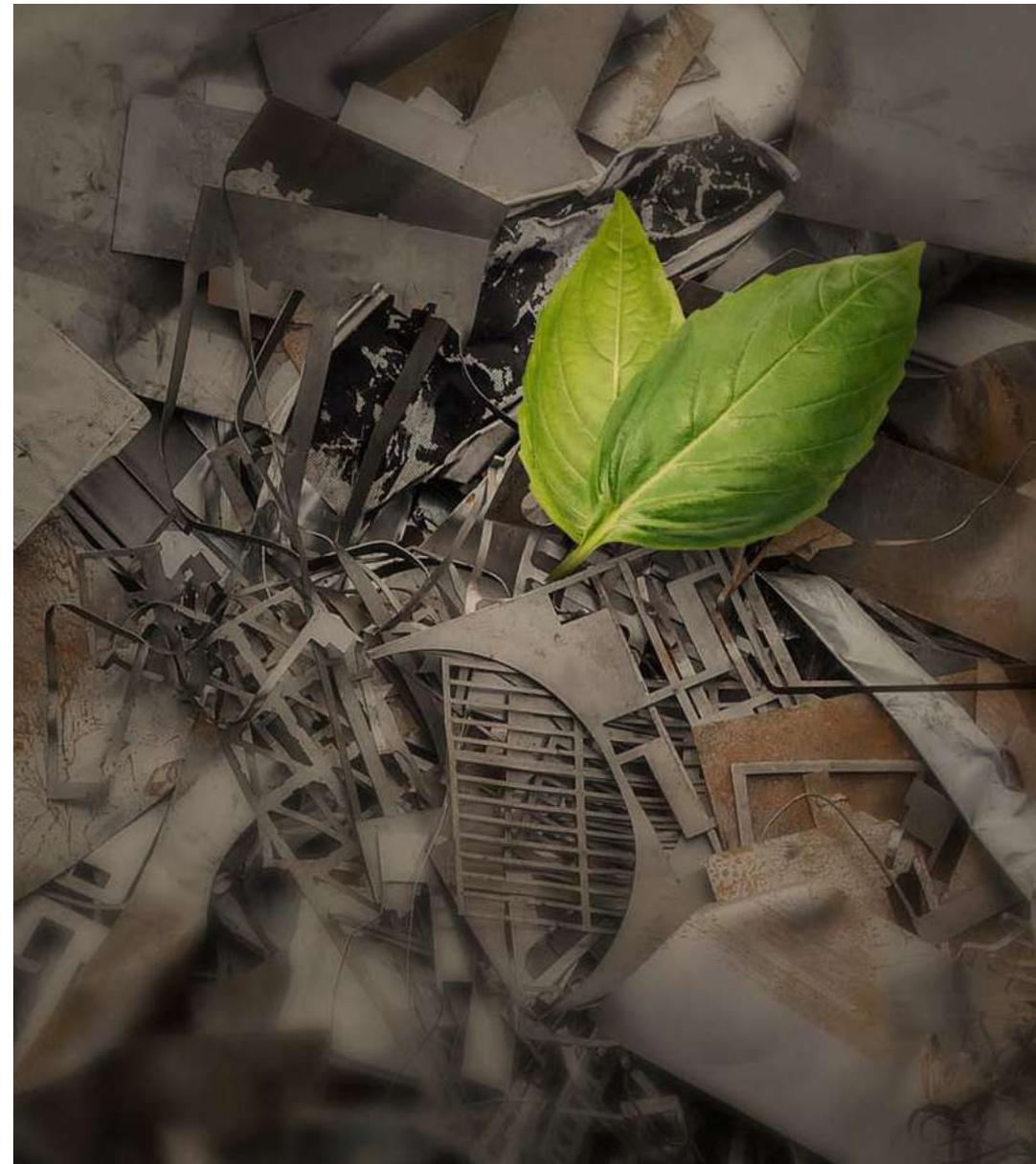
(2) This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

5.5. Additional environmental information

The EPD of construction products may not be comparable if they do not comply with the requirements of comparability set in EN 15804.

EPDs within the same product category but from different programmes may not be comparable.

- **Exclusion of small amounts** follow the rules of Product Category Rules of Construction Materials, and include the infrastructure, construction, production equipment and tools that are not directly consumed in the production process, and personnel related impacts. These are deemed negligible.
- **The scenarios included** are currently in use and are representative for one of the most likely scenarios alternatives.
- **The estimated impact results** are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks
- **Average environmental performance** for steel beams and merchant bars in year 2021 is being declared





6.

Differences versus previous versions

This document is the second version of the EPD. “Product Family” and “Product Description” sections have been added. Some product-related certifications have been added. Editorial changes have been made versus the previous version.

7.

References

- General Programme Instructions of The International EPD® System. Version 4.0.
- CELSA Huta Ostrowiec, “CELSA Huta Ostrowiec.” <https://www.celsaho.com/>
- PCR 2019:14 v1.2.5. Construction products and construction services. International EPD System
- Sphera, “Professional Database.” <https://gabi.sphera.com/databases/gabi-databases/professional/>
- Ecoinvent, 2021. Ecoinvent Database 3.8. <http://www.ecoinvent.org/database/>
- ISO Standards, “ISO 14025:2010 Environmental labels and declarations — Type III environmental declarations — Principles and procedures,” 2010. <https://www.iso.org/standard/38131.html>.
- ISO 14040:2006(en), “Environmental management — Life cycle assessment — Principles and framework,” Iso 140402006, vol. 2006, 2006.
- ISO 14044:2006(E), “Environmental management — Life cycle assessment — Requirements and guidelines,” 2006.
- European Commission, “Commission Recommendation (EU) 2021/2279 of 15 December 2021 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations,” 2021.
- World Steel Association, EUROFER, 2014. A methodology to determine the LCI of steel industry co-products. 14 February 2014. <https://worldsteel.org/steel-topics/life-cycle-thinking/methodology-for-slag-lci-calculation/>
- M. Sansom and N. Avery, “Briefing: Reuse and recycling rates of UK steel demolition arisings,” Engineering Sustainability, vol. 167, no. ES3, doi: <http://dx.doi.org/10.1680/ensu.13.00026>

VERIFICATION STATEMENT CERTIFICATE CERTIFICADO DE DECLARACIÓN DE VERIFICACIÓN

Certificate No. / Certificado nº: EPD08616

TECNALIA R&I CERTIFICACION S.L., confirms that independent third-party verification has been conducted of the Environmental Product Declaration (EPD) on behalf of:

TECNALIA R&I CERTIFICACION S.L., confirma que se ha realizado verificación de tercera parte independiente de la Declaración Ambiental de Producto (DAP) en nombre de:

CELSA HUTA OSTROWIEC SP. Z O.O. (CELSA Group™)
Samsonowicza 2
27-400 OSTROWIEC ŚWIĘTOKRZYSKI - POLAND

for the following product(s):
para el siguiente(s) producto(s):

STEEL BEAMS AND STEEL MERCHANT BARS
PERFILES ESTRUCTURALES Y BARRAS Y PERFILES COMERCIALES DE ACERO

with registration number **S-P-08504** in the International EPD® System (www.environdec.com).
*con número de registro **S-P-08504** en el Sistema Internacional EPD® (www.environdec.com).*

it's in conformity with:
es conforme con:

- **ISO 14025:2010 Environmental labels and declarations. Type III environmental declarations.**
- **General Programme Instructions for the International EPD® System v.4.0.**
- **PCR 2019:14 Construction products v.1.2.5**
- **UN CPC 4124 beams (Bars and rods, hot-rolled, of iron or steel)**
- **UN CPC 4125 merchants (angles and shapes).**



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Manager

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