ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A1*

Owner of the Declaration	CELSA Group
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-CEL-20200277-IBD1-EN
Issue date	05/07/2021
Valid to	04/07/2026

Structural section steel

CELSA Group

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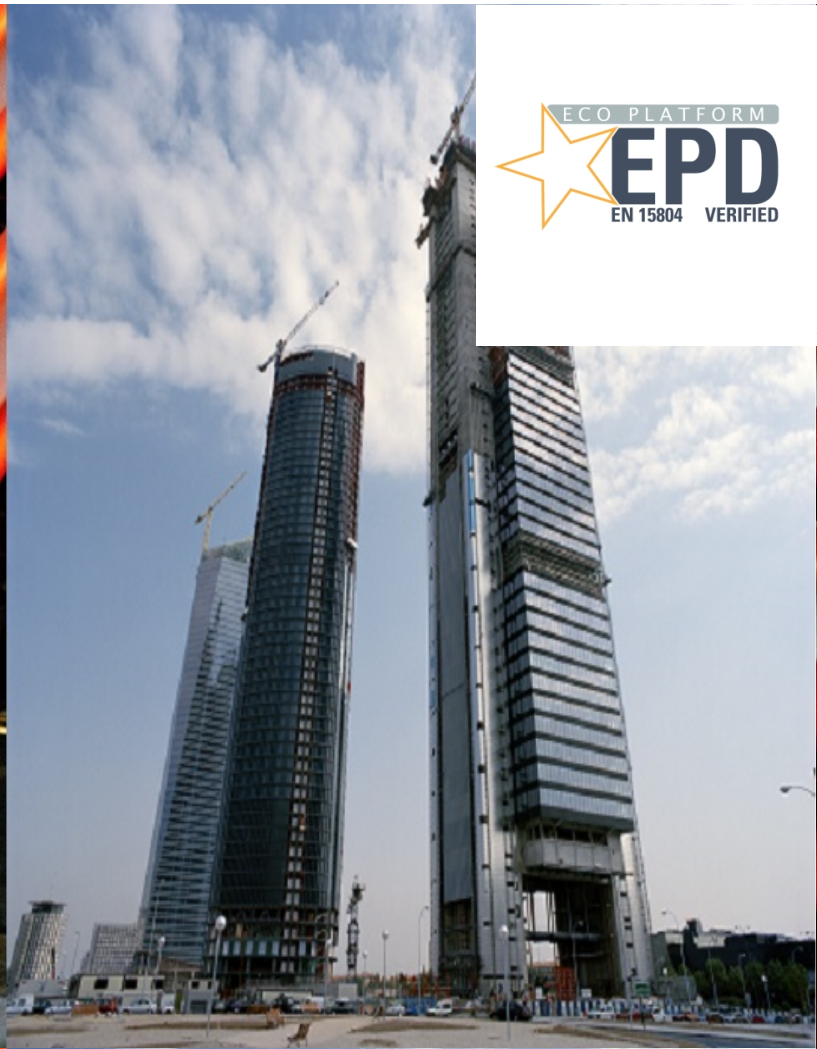

1. General Information

CELSA Group	Structural section steel
Programme holder IBU – Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Owner of the declaration** **CELSA Barcelona, S.L.** Carrer de la Ferralla, 2, Poligono Industrial San Vicente 08755 Castelbisbal Barcelona (Spain) **CELSA HUTA OSTROWIEC SP. Z.O.O.** ul. Samsonowicza 2 27400 OSTROWIEC SWIETOKRZYSKI POLAND
Declaration number EPD-CEL-20200277-IBD1-EN	**Declared product / declared unit** Structural steel section/ 1 ton
This declaration is based on the product category rules: Structural steels, 11.2017 (PCR checked and approved by the SVR)	**Scope:** This EPD represents a weighted average of the production of structural steel sections by the CELSA Group at the 2 sites: Huta Ostrowiec, Poland and Barcelona, Spain.
Issue date 05/07/2021	The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences. The EPD was created according to the specifications of *EN 15804+A1*. In the following, the standard will be simplified as *EN 15804*.
Valid to 04/07/2026	**Verification** The standard *EN 15804* serves as the core PCR Independent verification of the declaration and data according to *ISO 14025:2010* ☐ internally ☒ externally
Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)	Dr.-Ing. Andreas Ciroth (Independent verifier)
Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.))	

2. Product

2.1 Information about the enterprise

CELSA Group™ is one of the leading European multinationals in long steel products, the most diversified and vertically integrated. It currently operates in 11 countries and has six large business groups with steel mills, rolling mills, transformation plants, distribution companies, service centres and recycling companies.

CELSA Group™ production is based exclusively in electric arc furnaces, using scrap as raw material in 100% of products. Thanks to vertical integration, it covers the complete cycle of steel recycling; from the separation and recovery of scrap to its transformation into new steel products.

CELSA Huta Ostrowiec (Poland) and CELSA Barcelona (Spain) belong to this group. Both are large scrap-recycling companies. Their production process involves Electric Arc Furnaces (EAF), Ladle Furnaces (LF), continuous casting and hot rolling mills in order to provide various finished products, such as wire rod, smooth rods, corrugated rods, structural profiles, flats and mini flats.
In this case, the product declared is structural section steel. This product is used mostly in the construction of steel structures and the manufacturing of steel structural components of buildings, civil work and industry.

2.2 Product description/Product definition

The product declared is 'structural section steel'. The production process used is the Electric Arc Furnace (EAF). This route, used by CELSA for the production of structural steel, is based on the direct melting of scrap with an Electric Arc Furnace, which is subsequently processed in rolling mills in order to obtain the finished products.
The steel section is hot rolled into structural steel in various shapes (I, H, L, U, T, flats, etc.)
Technical properties (strength level) are: from quality S235 to S960. No metallic or organic coating.

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 *(CPR)* applies. The products need a Declaration of Performance taking into consideration the harmonised European standard *EN 10025* and the CE-marking. Related to *EN10025*, applies the following standards:

- *EN 10025-1:2004:* Hot rolled products of structural steels. Part 1: General technical delivery conditions.
- *EN 10025-2:2019:* Hot rolled products of structural steels. Part 2 Technical delivery conditions for non-alloy structural steels.

See further product standards in section “2.4 Technical Data”.
For the application and use, the respective national provisions apply.

2.3 Application

Steel products are used in the majority of buildings and civil works, mainly in reinforced structural concrete and structural steel constructions. In addition to the construction sector there are numerous applications in very diverse sectors, such as transport, agriculture, automotive, livestock farming, electricity pylons and cranes, etc.
Examples:

- Bridges (railway bridge, road bridge, pedestrian bridge, etc.)
- Multi-storey buildings (offices, residential, shops, car parks, high rise, etc.)
- Single-storey buildings (industrial and storage halls, etc.)
- Other structures (warehouses, industrial and commercial buildings)

2.4 Technical Data

Constructional data

Basic product characteristics according to relevant product standards:
EN 10025, ASTM A29, A36, A529, A572 and *A992*, etc.

Name	Value	Unit
Thermal conductivity at 20º	52	W/(mK)
Melting point	1495	°C
Minimum elongation	17	%
Density	7,86	gr/cm³
Modulus of elasticity	30	Psi x 106
Coefficient of termal expansion	11,7	(ºC-1) x 10-6
Electrical conductivity at 20 ºC	5,9	[(Ω.m)-1x106]
Minimum yield strength	235	MPa
Minimum tensile strength	360	MPa
Tensile strength	57	Ksi

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to:
- *EN 10365/2017* Hot rolled steel channels, I and H sections. Dimensions and masses.
- *EN 10056-1:2017* Structural steel equal and unequal leg angles. Dimensions.
- *EN 10056-2:1993* Structural steel equal and unequal leg angles. Part 2: Tolerances on shape and dimensions.
- *EN 10058:2008* Hot rolled flat steel bars for general purposes. Dimensions and tolerances on shape and dimensions.
- *EN 10059:2003* Hot rolled square steel bars for general purposes. Dimensions and tolerances on shape and dimensions.
- *EN 10060:2003* Hot rolled round steel bars for general purposes. Dimensions and tolerances on shape and dimensions.
- *EN 10024:1995* Hot rolled taper flange I sections. Tolerances on shape and dimensions.
- *EN 10034:1993* Structural steel I and H sections. Tolerances on shape and dimensions.
- *EN 10279:2000* Hot rolled steel channels. Tolerances on shape, dimension and mass.

2.5 Delivery status

Delivery conditions in accordance with customer requirements, intended use, and possible technical regulations and certification requirements, when applicable. The dimensions/ quantities of the products covered in this EPD are as follows:

- The packages are made from 1 to 36 units.
- The packages have a weight from 1500 kg to 5500 kg.

The supply lengths are between 6,0 m and 22,1 m.

2.6 Base materials/Ancillary materials

Structural steels produced by the CELSA Group are low-alloy steel products. The typical content of carbon is between 0.08 and 0.1%. The share of other elements besides iron is typically below 1%.

Auxiliary substances / additives

Calcium oxide, anthracite, HBI (hot briquetted Iron), coke from coal, and ferroalloys (ferrosilicon silicomanganese, calcium fluoride, ferroniobium, ferrovanadium, ferrotitanium, ferroboron and silicocalcium)
Percentages in weight of these additives depend on the required quality of the finished product.

Material explanation

Steel scrap is a secondary raw material, defined in different qualities, depending on the composition (Fe content) and certain characteristics (plate, section steel, galvanized sheets, etc.).
Anthracite and calcium oxide are natural raw materials, in different qualities, depending of course on their composition and structure available. The various alloys and coke from coal are natural resources, partially treated for use in steel production.
Alloys are, among other things made from recycled material.

Raw material extraction and origin

Scrap metal and, in part, the alloys are compiled following the dismantling and crushing plants, other ultimate consumers (post-consumer), steel production and manufacturing process of steel products (pre-consumer) and the internal preparation of scrap for steelmaking. Calcium oxide, carbon and ferroalloys are usually extracted from the soil as natural raw materials.

Availability of raw materials

Recycling of steel scrap saves primary material. Steel scrap is available and traded globally. Europe is in fact net exporter of steel scrap.

2.7 Manufacture

The product declared is structural section steel, produced by two sites: CELSA Huta Ostrowiec located in Poland and CELSA Barcelona located in Spain. Both are head companies of CELSA Group™.

In both cases, the plants melt ferrous scrap in an Electric Arc Furnace to obtain liquid steel. The chemical adjustment of molten steel is performed in Ladle Furnaces (LF), where the steel is alloyed (e.g. approx. 1% Mn, 0.2% Si) and micro alloyed (e.g., 0.01% V) to achieve the appropriate chemical composition for the product and to give the steel specific properties (quality, etc.).
At the end phase of steel mill, molten steel casted into a semi-finished product in a continuous casting machine. The semi-finished product (billet) is then hot rolled in order to obtein the structural steel in various shapes (I, H, L, U, T, flats, etc.). The final performance characteristics are reached by thermo-mechanical process.

The two sites, CELSA Huta Ostrowiec and CELSA Barcelona, operates under a Quality Management Systems in accordance with *ISO9001* (independent third party certification).

Manufacturing the building product

Scrap metal is melted in an electric arc furnace to obtain liquid steel. Refinement is used (reduction of sulphur and phosphorus) and can be alloyed (e.g. approx. 1% Mn, 0.2% Si) and micro alloyed (e.g., 0.01% V) to give the steel specific properties.
At the end of the production of steel, molten steel is transformed into a semi-finished product with a continuous casting system. The semi-finished product (billet) is hot rolled to obtain the final product.

2.8 Environment and health during manufacturing

The production sites are firmly committed to the safety of their workers and to the preservation of the environment in the areas where they operate. This is evidenced by the implementation and maintenance of management systems in accordance with international standards certified by third parties.

In terms of safety, both plants have implemented and certified safety management systems in accordance with *ISO 45001:2018*.

In terms of the environment, both plants have implemented and certified environmental management systems based on *ISO 14001:2015*.

In addition to the above, the extended commitment to sustainability is reflected in the certification of both facilities to the SustSteel scheme (www.steel-sustainability.org/esust), which is a private marks and certification systems related to sustainability and corporate responsibility within the steel construction products sector.

Health protection Production

Sostenibilidad Siderúrgica Management System: independent third party certification scheme which covers health and safety aspects, among other sustainability aspects beyond national regulations (http://sostenibilidadsiderurgica.com).

Environmental protection Production

Environmental management (EM) in accordance with *ISO 14001* and Sostenibilidad Siderúrgica Management System (http://sostenibilidadsiderurgica.com).

2.9 Product processing/Installation

Noise reduction

In the fabrication process, we identify the noise sources adopting all the technical measures in order to reduce their environmental impact, prioritizing the source encapsulation.

Occupational Safety/Environmental Protection

When handling and using the products, no additional means to protect health are required beyond the usual occupational safety measures.
No environmental impacts occur when working with or using these products under normal conditions of use.
No special measures are necessary for the protection of the environment.

Residual material

Residual materials are separated for in-house recycling. The steel scrap can be recycled almost completely.

2.10 Packaging

The product packaging is the minimum according to safety criteria, in order to handling and transport the product with security and for its identification until the customer delivery. The packaging is based on wooden pallets, labels and metal strips to tie the product. Most of the packaging is mono-material to facilitate their recycling, once they become waste.

2.11 Condition of use

The main constituent of structural steel sections is iron. Carbon steel, which is an alloy that consists mostly of iron, has carbon as alloying element in a percentage by weight depending on the required steel grade of the finished product. In minor quantities other alloying elements are used, such as manganese, chromium and vanadium.
The constituents are those referred to in Chapter 2.6.

2.12 Environment and health during use

Health aspects:

Steel products, under normal conditions of use, do not cause adverse health effects.

Environmental aspects:

If the steel products are used according to their intended use, under normal conditions, there are no significant environmental impacts known to water, air/ atmosphere and soil.

2.13 Reference service life

The use and maintenance requirements are not based on the steel products but on the specific design and application.
Design of construction elements using steel products usually considers the specific atmospheric and corrosive environment, and provides the necessary corrosion protection for the desired useful life.

2.14 Extraordinary effects

Fire

The product meets the requirements of building material safety class A1 (non-flammable according to *DIN EN 13501*.

Fire protection

Name	Value
Classification according to DIN EN 13501-1	A1

Water

Steel is stable, insoluble and does not emit substances into water. In the presence of oxygen in the water, steel is corroded (= slow oxidation).

Mechanical destruction

No relevant information.

2.15 Re-use phase

Structural steel can be reused after its recovery. In particular when steel constructions are properly designed to facilitate disassembly and re-use at the end of their useful lives.
Currently, around 14% of the considered steel products are re-used after dismantling *EU COMMISSION, LCA STEEL CONSTRUCTION*.
Recycling:
Steel is 100% recyclable and scrap can be converted to the same (or higher or lower) quality of steel depending upon the metallurgy and processing of the recycling route.
Currently, around 83% of the products are recycled *EU COMMISSION, LCA STEEL CONSTRUCTION.*

2.16 Disposal

Due to its high value as a resource, steel scrap is not disposed of, but instead in a well-established cycle fed to reuse or recycling. However, in case of disposal (disposal code: 17 04 03 *ECW*) no environmental impacts are expected.

2.17 Further information

Additional information on structural steel and can be obtained from CELSA GROUP™. (www.celsagroup.com).

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 metric ton of structural section steel as specified in Part B requirements on the EPD for structural steels.

Declared unit

Name	Value	Unit
Declared unit	1	t
Density	7850	kg/m^3
Conversion factor to 1 kg (mass in kg per declared unit)	1000	-

3.2 System boundary

Type of the EPD: cradle-to-gate - with options.
Module A1-A3 were considered.

Modules A1-A3 of the production include the following:

- The provision of resources, additives, and energy
- Transport of resources and additives to the production site
- Production processes on-site including energy, production of additives, disposal of production residues, and consideration of related emissions
- Recycling of production/manufacturing scrap. Steel scrap is assumed to reach the end-of-waste status once it is shredded and sorted, thus becomes an input to the product system in the inventory.

3.3 Estimates and assumptions

There are no assumptions and approximations important for the interpretation.

3.4 Cut-off criteria

All information from the data collection process has been considered, covering used materials, thermal energy, electrical energy and diesel consumption that are known to make a significant contribution to the environmental impact of the products studied. Measurement of on-site emissions took place and those emissions were considered. The specific emissions that are linked to the provision of thermal and electrical energy are considered in the specific processes.
All reported data were incorporated and modelled using the best available LCI data. Data for the sites were cross-checked with one another to identify potential data gaps. No processes, materials or emissions that are known to make a significant contribution to the environmental impact of the products studied have been omitted. On this basis, there is no evidence to suggest that input or outputs contributing more than 1% to the overall mass or energy of the system or that are environmentally significant have been omitted. It can be assumed, that all excluded flows contribute less than 5% to the impact assessment categories.
Packaging materials and its transportation are neglected due to low contribution to the overall life cycle results.

3.5 Background data

For life cycle modelling of the considered products, the GaBi Software System for Life Cycle Engineering, developed by Sphera Solutions GmbH, is used (*GaBi 2020*). The GaBi database contains consistent and documented datasets which can be viewed in the online GaBi documentation (*GaBi 2020 Documentation*). To ensure comparability of results in the LCA, the basic data of *GaBi 2020* database were used for energy, transportation and auxiliary materials. All relevant background datasets are taken from the GaBi database, content version 2020.2.

3.6 Data quality

Results are based on annual production data collected for the fiscal year 2018 for the CELSA sites under study (Barcelona, Spain and Ostrowiec Swietokrzyski, Poland). Weighting was applied according to production volume.

3.7 Period under review

This study is based on high-quality primary data, collected by CELSA for the period of 2018. Data were delivered in form of excel tables and manually integrated into the GaBi Software (*GaBi 2020*) with two iterations of data quality check, based on raw manufacturing data as well as based on cradle-to-gate data.

3.8 Allocation

The allocation method used here was developed by the World Steel Association and EUROFER to be in line with *EN 15804*. The methodology is based on physical allocation and takes account of the manner in which changes in inputs and outputs affect the production of co-products. The method also takes account of material flows that carry specific inherent properties. This method is deemed to provide the most representative partitioning of the processes involved. Economic allocation was not considered, as slag is considered a low-value co-product under *EN 15804*, however, as neither hot metal nor slag are tradable products, economic allocation would most likely be based on estimates. *Worldsteel & EUROFER 2013* also highlight those companies purchasing and processing slag work on long-term contracts which do not follow regular market dynamics of supply and demand. This approach deviates from the standard procedure in *EN 15804* but represents a conservative approach.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

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4. LCA: Scenarios and additional technical information

Since no scenarios are declared, no additional technical information is required.

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	MND	MND	MND	MND	MND

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A1: 1 ton structural section steel

Parameter	Unit	A1-A3
Global warming potential	[kg CO_2-Eq.]	5.58E+2
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	4.05E-12
Acidification potential of land and water	[kg SO_2-Eq.]	1.60E+0
Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	1.34E-1
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	1.16E-1
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	1.29E-4
Abiotic depletion potential for fossil resources	[MJ]	6.16E+3

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A1: 1 ton structural section steel

Parameter	Unit	A1-A3
Renewable primary energy as energy carrier	[MJ]	1.93E+3
Renewable primary energy resources as material utilization	[MJ]	0.00E+0
Total use of renewable primary energy resources	[MJ]	1.93E+3
Non-renewable primary energy as energy carrier	[MJ]	7.26E+3
Non-renewable primary energy as material utilization	[MJ]	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	7.26E+3
Use of secondary material	[kg]	1.11E+3
Use of renewable secondary fuels	[MJ]	0.00E+0
Use of non-renewable secondary fuels	[MJ]	0.00E+0
Use of net fresh water	[m^3]	3.32E+0

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A1: 1 ton structural section steel

Parameter	Unit	A1-A3
Hazardous waste disposed	[kg]	1.46E-5
Non-hazardous waste disposed	[kg]	2.91E+0
Radioactive waste disposed	[kg]	4.25E-1
Components for re-use	[kg]	0.00E+0
Materials for recycling	[kg]	0.00E+0
Materials for energy recovery	[kg]	0.00E+0
Exported electrical energy	[MJ]	0.00E+0
Exported thermal energy	[MJ]	0.00E+0

6. LCA: Interpretation

This chapter contains an interpretation of the Impact Assessment categories with regards to the functional unit. It focuses on the dominant contributions during the production stage.

The interpretation presented is subject to data quality, representativeness, completeness, limitations and assumptions made during the study. Some of the key elements that may have a potential impact on the results are listed below:

- Data quality: Primary data was used to model all on-site processes. This data was cross-checked to identify and eliminate data gaps. High quality secondary data from the *GaBi 2020* database was used to model upstream material and energy flows.
- Representativeness: Primary data was gathered to ensure maximum technological and temporal representativeness for the

product studied. Secondary data was as technologically and geographically representative as possible.

- Completeness: No processes, materials or emissions known to contribute significantly to the environmental impact of the product were omitted.
- Limitations and assumptions: None of the given assumptions and approximations are in contradiction to *ISO 14025*, *14040* or *EN 15804*, nor do they affect the described data quality and representativeness.

Materials and energy upstream have a high share to the environmental impact across all the selected impact categories. Looking at the details of this stage, the contribution to the environmental burdens are dominated by the resource depletion and emissions caused by the generation of electricity. This is explained by the fact that steel production is an energy-intensive industry.
Regarding the impacts coming from transportation, a significant part of transportation is already included under raw material LCI data. The impact from the transport of raw material from local distributors to steel making plant or internal transport is relatively small compared to the impacts from the other stages or components of the system under consideration.
The impacts coming from onsite operations are mostly related to the consumption of energy.
The most relevant and significant emissions on steel production:

- for GWP are CO2, CH4
- for AP are SO2 and NOx;
- for EP are NOx
- for POCP are CO, SO2, NOx, and NMVOC

Global Warming Potential (GWP), Acidification Potential (AP), Eutrophication Potential (EP) and Photochemical Ozone Creation Potential (POCP) are mostly caused by onsite emissions and the generation of electricity, as the steel production is an energy intensive process (A1-A3), followed by the extraction and processing of raw materials and the generation of steam and heat.

Ozone Depletion Potential (ODP) is mostly caused by emissions from the pre-chains of the power generation processes, in particular nuclear power generation. For the product system under study, the nuclear power share in the electricity generation for module A1-A3 is very little, resulting in a low ODP impact for Module A1-A3.

Abiotic Depletion (elements) relates to the use of non-renewable elements in the production of ancillary materials/pre-products e.g. molybdenum (A1-A3). Abiotic Depletion Potential (fossil) is strongly dominated by the extraction and processing of raw materials and the generation of electricity, steam and heat from primary energy resources, including extraction, refining and transport.

Total use of renewable primary energy carrier (PERT) and total use of non-renewable primary energy (PENRT) are dominated by the extraction and processing of raw materials and the generation of electricity, steam and heat from primary energy resources, including extraction, refining and transport.

Radioactive waste comes from the provision of electrical energy, especially from the share of nuclear power in the grid mix. Non-hazardous wastes include overburden and tailings. Hazardous waste for deposition is produced in small amounts during production.

7. Requisite evidence

This EPD covers semi-finished structural steel of hot-rolled construction products. Further processing and fabrication depend on the intended application. Therefore further documentation is not applicable.

8. References

ASTM A29/A29M
ASTM A29/A29M:2020, General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought

ASTM A36/A36M
ASTM A36/A36M:2019, Standard Specification for Carbon Structural Steel

ASTM A529/A529M
ASTM A529/A529M:2019, Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality

ASTM A572/A572M
ASTM A572/A572M:2021,Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel

ASTM A992/A992M
ASTM A992/A992M:2011, Standard Specification for Structural Steel Shapes

CPR
Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

DIN EN 13501-1
DIN EN 13501-1:2019, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

EN 10025:

- **EN 10025-1:2004**, Hot rolled products of

structural steels. Part 1: General technical delivery conditions.
- **EN 10025-2:2019**, Hot rolled products of structural steels. Part 2 Technical delivery conditions for non-alloy structural steels.

EN 10056-1
EN 10056-1:2017, Structural steel equal and unequal leg angles. Dimensions.

EN 10056-2
EN 10056-2:1993, Structural steel equal and unequal leg angles. Part 2: Tolerances on shape and dimensions.

EN 10058:2008
EN 10058:2008, Hot rolled flat steel bars for general purposes. Dimensions and tolerances on shape and dimensions.

EN 10059
EN 10059:2003, Hot rolled square steel bars for general purposes. Dimensions and tolerances on shape and dimensions.

EN 10060
EN 10060:2003, Hot rolled round steel bars for general purposes. Dimensions and tolerances on shape and dimensions.

EN 10024
EN 10024:1995, Hot rolled taper flange I sections. Tolerances on shape and dimensions.

EN 10034
EN 10034:1993, Structural steel I and H sections. Tolerances on shape and dimensions.

EN 10279
EN 10279:2000, Hot rolled steel channels. Tolerances on shape, dimension, and mass.

EN 10365
EN 10365:2017, Hot rolled steel channels, I and H sections. Dimensions and masses.

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Life-cycle assessment (LCA) for steel construction, Science Research Dev, European Commission, EUR 20570 EN; Instrumente zur Wiederverwendung von Bauteilen und hochwertigen Verwertung von Baustoffen, Texte 93/2015, Umwelt Bundesamt

EWC
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GaBi 2020
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ISO 9001
ISO 9001:2015, Quality Management System

ISO 45001
ISO 45001:2018, Occupational Health and Safety

ISO 14001
ISO 14001:2015, Environment Management System

ISO 14025
DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14040
EN ISO 14040:2006, Environmental management - Life cycle assessment - Principles and framework

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

PCR 2016, Part A
Product category rules for building-related products and services. Part: Calculation rules for the life cycle assessment and requirements on the project report, Version 1.8. Berlin: Institut Bauen und Umwelt e.V. (Hrsg.), 2019.

PCR 2017, Part B
Institut Bauen und Umwelt e.V., Königswinter (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part B: Calculation Rules for the Life Cycle Assessment of structural steel products. November 2017.

Worldsteel & EUROFER 2013
A methodology to determine the LCI of steel industry co-products (February 2013)

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