



# Environmental Product Declaration

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

**HOT DIP GALVANIZED STEEL STRUCTURES**

manufactured by **ŞA-RA ENERJİ İNŞ.TİC.VE SAN. A.Ş.**

**Programme:** The International EPD® System, [www.environdec.com](http://www.environdec.com)

**Programme Operator:** EPD International AB

**Licensee:** EPD Türkiye

**EPD Registration Number:** EPD-IES-0018662

**Publication Date:** 2025-03-27

**Validity Date:** 2030-03-26



# How to Read This EPD?

An Environmental Product Declaration (EPD) is an ISO Type III Environmental Declaration based on ISO 14025 standard. An EPD transparently reports the environmental performance of products or services from a lifecycle perspective. The preparation of an EPD includes different stages, from acquiring raw materials to the end of life of the final product/service. EPDs are based on international standards and consider the entire value chain. Additionally, EPD is a third-party verified document. This EPD includes several sections described below.

## 1. General and Program Information

The first part of an EPD has information about the name of the manufacturer and product/service and other general information such as the validity and expiration dates of the document, the name of the program operator, geographical scope, etc. The second page states the standards followed and gives information about the program operator, third-party verifier, etc. The followed Product Category Rule (PCR) is indicated on the second page.

## 2. Company and Product/Service Information

Information about the company and the investigated product is given in this section. It summarizes the characteristics of the product provided by the manufacturer. It also includes information about the product such as product composition and packaging.

## 3. LCA Information

LCA information is one of the most important parts of the EPD as it describes the functional/ declared unit, time representativeness of the study, database(s) and LCA software, along with system boundaries.

The table presented in this part has columns for each stage in the life cycle. The considered stages are marked 'X' whereas the ones that are not declared are labeled as 'ND'. Not all EPDs consider the full life cycle assessment for a product's entire life stages. The 'System Boundary' page is also the place where one can find detailed information about the stages and the assumptions made.

## 4. LCA Results

The results of the Life Cycle Assessment analysis are presented in table format. The first column in each table indicates the name of the impact category and their measurement units are presented in the second column. These tables show an amount at each life cycle stage to see the impact of different indicators on different stages. Each impact can be understood as what is released through the production of the declared unit of the material—in this case, 1 ton hot dip galvanized steel structures. The benefits of reuse/recycling of the declared product is reflected in this section.

The first impact in the table is global warming potential (GWP), which shows how much CO<sub>2</sub> is released at each stage. Other impacts include eutrophication potential, acidification potential, ozone layer depletion, land use related impacts, etc. The second table provides results for resource use and the third table is about the waste produced during the production. The fourth and final table shows the results for the GWP-GHG indicator, which is almost equivalent to the GWP-Total indicator mentioned previously. The only difference is that this indicator excludes the biogenic carbon content by following a certain methodology.

# Programme Information

The International EPD® System: EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden,  
info@environdec.com

CEN standard EN 15804 serve as the core Product Category Rules (PCR)

PCR 2019:14 Construction products, version 1.3.4., Construction EN 15804:2012+A2:2019/AC:2021 Sustainability of Construction Works ,

UN CPC Code: 42110 Bridges, bridge sections, towers and lattice masts, of iron or steel.

PCR review was conducted by: Technical Committee of the International EPD® System. See [www.environdec.com](http://www.environdec.com) 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](http://www.environdec.com/contact).

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External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via EPD verification through an individual EPD verification

**Third party individual verifier:** Agnieszka Pikus, Greenwise

**Approved by:** The International EPD® System

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

Yes                      No

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**ŞA-RA Enerji İnş. Tic. ve San. A.Ş.** has the sole ownership, liability, and responsibility for this EPD.

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## Life Cycle Assessment (LCA)

**LCA accountability:** Furkan Can Akalın & Yıldırım Yılmaz - Metsims Sustainability Consulting

The International EPD® System

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Box 210 60 SE-100 31  
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EPDs within the same product category but registered in different EPD programmes 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 cutoff 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."

# About the Company

**Owner of the EPD:** ŞA-RA Enerji İnş. Tic. ve San. A.Ş.  
Ceyhan Yolu 30.km Yüreğir / ADANA / TÜRKİYE  
**Production Plant:** Adana/TÜRKİYE

ŞARA Energy, whose foundations date back to 1985 and has been announcing its achievements to the world for more than 30 years, is an important brand that has gained a pioneering identity in its sector. ŞARA has achieved success in the field of energy transmission and distribution for many years with its nearly 2000 employees and expert staff in their fields, modern production facilities and strong contracting team that values people.

ŞA-RA's Energy Transmission Line factory is the largest among its 4 factories located in Adana campus. This factory has a steel manufacturing capacity of 200.000 tons and manufactures Power Transmission Line poles and Substation Steel Constructions up to 800 kV, as well as heavy steel constructions for Air and Gas turbines, which makes ŞA-RA one of the 3 main suppliers in the world. The Energy Transmission Line factory is one of the most modern and pioneering facilities in its field with its CNC machines and the ability to weld in European, American and Canadian standards. Its products are preferred in more than 120 countries. The main export destinations are Canada, Algeria, Iraq, Germany, France, Colombia, Turkmenistan, Ireland, Pakistan, Saudi Arabia, Nigeria, Mozambique, Australia, Poland, Iceland, Finland, Azerbaijan, Rwanda and Georgia. While the experienced engineering group within the company carries out all kinds of pole designs, it also performs type tests of these structures in international and accredited stations upon request. All products that have not been manufactured before are first prototyped and then controlled by quality teams. Products are manufactured on fully automatic CNC machines in accordance with international standards and the specifications of the ordering customer/administration. After manufacturing, they are galvanized and finally packaged in accordance with the transport conditions and delivered to the place and in the way requested by the customer in accordance with the latest INCOTERM conditions in force. All manufacturing and shipment stages, including raw material acceptance, are controlled by quality teams independent of factory management. It is the first Turkish company in the sector that can weld in accordance with European, American and Canadian standards.



# About the Product

Hot Dip Galvanized Steel Structures are used to transmit electrical energy from power plants to substations and to distribute it from substations to users.

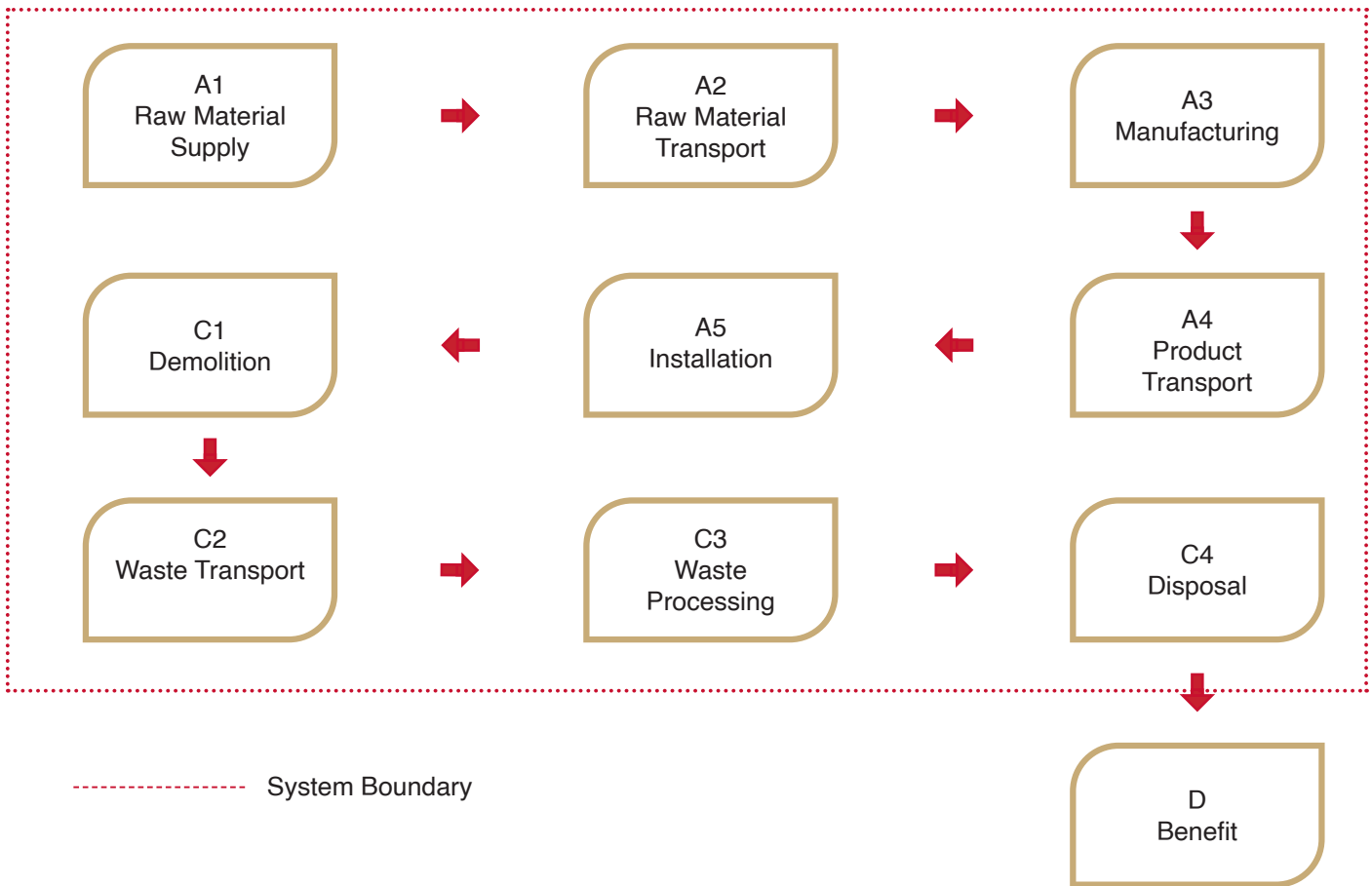
Towers are designed and manufactured according to criteria such as route, climate, geographical conditions, line voltage, capacity and intended use.

**UN CPC Code:** 42110 Bridges, bridge sections, towers and lattice masts, of iron or steel.

Product Composition	
Flat Steel	95-99%
Steel Wire	0-5%



## System Boundaries & Description



### A1 - Raw Material Supply

This stage includes the extraction and pre-treatment processes of raw materials before production. ŞARA's main raw material is steel, with additional use of zinc. The impacts of these raw materials are calculated in this section.

### A2 - Raw Material Transport

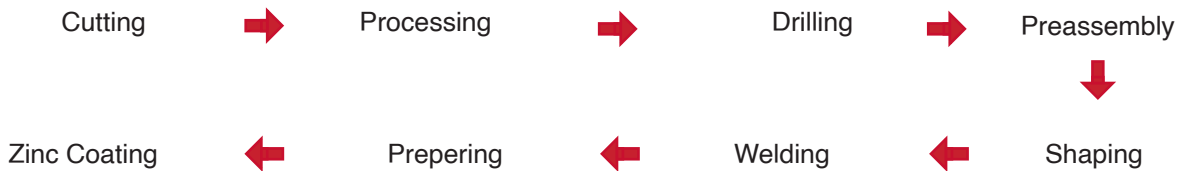
Raw material transport from supplier to manufacturer is considered in raw material supply stage. ŞARA sources most of its raw materials from the local region. The distances and routes are calculated accordingly.

Transport Mode	Type
Road	Vehicle: Lorry Size Class: >32 metric ton Emission Standard: EURO6 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil

### A3 - Manufacturing

This stage includes production-related environmental impacts of the investigated product. All energy-related inputs are supplied by the manufacturer.

The general production flow of the hot dip galvanizing process for the corrosion protection of the products produced by the company is as follows: hanging and loading of the products to be galvanized, cleaning the surface of the material from oxides and foreign materials by pre-surface treatment, surface protection with fluxing and preparation for coating, dipping the products into the molten zinc pool after flux drying, and subjecting the products after diving to post-galvanizing processes according to customer specifications. Pre-surface treatment can be mechanical (sandblasting) and chemical (alkaline degreasing, acidic degreasing, inhibiboric acid) according to the properties of the products. After the surface cleaning process, since the surface is reactivated and open to oxidation, the products rinsed with mains water are immersed in the flux pool. The flux covering the surface as a thin film layer is dried and the products are dipped into the molten zinc pool. The products, which remain in the furnace until the reaction is completed, are slowly removed from the furnace after reaching sufficient coating thickness.



Electric and natural gas are consumed during the manufacturing.

Information	Description
Electricity Data	Türkiye electricity grid mix from Ecoinvent, Medium Voltage
Type of dataset	Cradle to gate
Geographical representativeness description	Split of energy sources in Türkiye - Natural gas, 19% - Hydro, 29% - Coal, 35% - Wind, 9% - Other, 1% - Geothermal, 3% - Biogas, 1% - Biomass, <1%
GWP of Electricity Data	0.575 kg CO <sub>2</sub> eq./kWh

#### A4 - Product Transport

Product transport from manufacturer to customer is considered in product material supply stage. The distances and routes are calculated accordingly. Depending the customer location, product is transported via trucks and other supplies come through seaway.

Transport Mode	Type
Road	Vehicle: Lorry Size Class: >32 metric ton Emission Standard: EURO6 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil

#### A5 - Installation & C1 - Demolition

Installation and demolition stages may vary according to the use area and the auxiliary equipment. This study assumes that half an hour of crane operation is performed for installation and demolition per declared unit with a diesel mobile crane.

Fuel Consumption (Mobile Crane)	8 liters/hour
Working Time (assumption)	30 minutes per declared unit

#### C2 - Waste Transport

This step includes the transport of materials after they reach their end-of-life. The average distance was assumed 100 km by truck from demolition site to a waste or recycling area.

Transport Mode	Type
Road	Vehicle: Lorry Size Class:16-32 metric ton Emission Standard: EURO5 Fuel Type: Diesel

#### C3 - Waste Processing

It is assumed that no waste processing is needed after the product reaches its end-of-life. Recycling has already been calculated in module D, so the impact of this stage is considered zero.

#### C4 - Disposal

Based on the figures of World Steel Association (WSA), the recycling rate of steel is around 95%. Based on this, 5% of the steel is assumed to be landfilled and this landfilling impact is considered at this stage.

#### D - Benefit

In order to consider net output benefits, scrap inputs to the production stage are subtracted from scrap to be recycled at end of life. This remaining net scrap is then delivered to recycling process.

# LCA Information

**Declared Unit:** 1 tonne of Hot Dip Galvanized Steel Structure

**Time Representativeness:** 2023 (12 months)

**Database(s) and LCA Software:** Ecoinvent 3.10 and SimaPro 9.6

**System Boundaries:** Cradle to gate with options, modules A4, A5, C1–C4, module D and with optional modules (A1–A3 + A4 + A5 + C + D).

	Product Stage			Construction Process Stage		Use Stage							End of Life Stage				Benefits and Loads
	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	Transport	Waste Processing	Disposal	Reuse-Recycling-Recovery Potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	TR	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific Data Used	6%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - Sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(ND: Not declared, X:Included in LCA, GLO:Global)

## Geographical Scope

The geographical scope of this EPD is global.

## Allocation

Source of raw material, water consumption, energy consumption and raw material transportation were weighted according to 2023 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the 2023 total waste generation.

## Cut-Off Criteria

The criteria for exclusion were set so that individual input flows less than 1% of the total, with a cumulative limit of less than 5%, could be omitted. This was contingent upon confirming that these excluded flows did not significantly alter the reported data, with “significant” defined as affecting the total by less than 5%.

### Reach Regulation

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

### Product Composition

The content declaration is provided as intervals due to confidentiality reasons.

Product Component	Weight, %	Post-consumer material, weight-%	Biogenic material, weight-% of product	Biogenic material, kg C/ declared unit
EAF Flat Steel	95%-99%	0	0	0
Wire Rod	0%-5%	0	0	0
Sum	100%	<b>0</b>	<b>0</b>	<b>0</b>

### Packaging Composition

There is no packaging material used in the product.

### LCA Modelling, Calculation And Data Quality

The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water use is calculated with selected inventory flows in SimaPro according to the PCR. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations. The Mass Balance Approach (MBA) was not applied since the study did not include biobased, renewable, and/or recycled product content.

### Background Data

For all LCA modelling and calculation, Ecoinvent database (v3.10) and SimaPro (v9.6) LCA software were used. Characterization factors of EN 15804 reference package based on EF 3.1 are utilized. Impact of infrastructure and capital goods are excluded from the analysis.

# LCA Results

It is discouraging the use of the results of modules A1-A3 without considering the results of module C. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

CORE ENVIRONMENTAL IMPACTS PER DECLARED UNIT										
Mandatory indicators		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Potential	Total	kg CO <sub>2</sub> eq.	1.98E+03	8.54E+01	1.44E+01	1.44E+01	1.96E+01	0.00E+00	7.05E+00	-1.94E+02
	Fossil	kg CO <sub>2</sub> eq.	1.97E+03	8.53E+01	1.44E+01	1.44E+01	1.96E+01	0.00E+00	7.05E+00	-1.94E+02
	Biogenic	kg CO <sub>2</sub> eq.	3.42E+00	1.47E-02	1.28E-03	1.28E-03	3.33E-03	0.00E+00	1.92E-03	-1.60E-02
	Luluc	kg CO <sub>2</sub> eq.	4.03E+00	3.89E-02	1.25E-03	1.25E-03	7.76E-03	0.00E+00	3.63E-03	-3.16E-02
ODP		kg CFC-11 eq.	1.24E-05	1.32E-06	2.21E-07	2.21E-07	2.73E-07	0.00E+00	2.04E-07	-4.82E-07
AP		mol H+ eq.	9.63E+00	1.03E+00	1.30E-01	1.30E-01	6.53E-02	0.00E+00	4.99E-02	-6.33E-01
EP - Freshwater		kg P eq.	1.03E+00	5.42E-03	4.21E-04	4.21E-04	1.53E-03	0.00E+00	5.85E-04	-4.95E-02
EP - Marine		kg N eq.	2.25E+00	2.57E-01	6.04E-02	6.04E-02	2.11E-02	0.00E+00	1.90E-02	-1.42E-01
EP - Terrestrial		mol N eq.	2.11E+01	2.84E+00	6.61E-01	6.61E-01	2.30E-01	0.00E+00	2.08E-01	-1.54E+00
POCP		kg NMVOC	7.10E+00	8.78E-01	1.97E-01	1.97E-01	9.07E-02	0.00E+00	7.44E-02	-5.25E-01
*ADPE		kg Sb eq.	8.79E-02	1.85E-04	5.15E-06	5.15E-06	6.27E-05	0.00E+00	1.10E-05	-8.90E-05
*ADPF		MJ	1.28E+04	9.53E+01	7.65E+00	7.65E+00	2.68E+01	0.00E+00	1.07E+01	-1.53E+03
*WDP		m <sup>3</sup> depriv.	8.29E+02	5.09E+00	4.09E-01	4.09E-01	1.24E+00	0.00E+00	7.55E+00	-1.26E+01
Additional environmental impact indicators per declared unit (Optional)										
PM		disease inc.	1.82E-04	6.30E-06	3.70E-06	3.70E-06	1.55E-06	0.00E+00	1.14E-06	-1.72E-05
**IR		kBq U-235 eq.	6.84E+01	9.00E-01	8.46E-02	8.46E-02	2.25E-01	0.00E+00	1.10E-01	-1.34E+00
*HTP - C		CTUh	8.55E-05	4.10E-07	5.64E-08	5.64E-08	1.01E-07	0.00E+00	3.18E-08	-1.93E-05
*HTP - NC		CTUh	1.01E-04	6.20E-07	2.33E-08	2.33E-08	1.71E-07	0.00E+00	2.95E-08	-4.86E-07
*SQP		Pt	7.13E+03	8.62E+02	1.33E+01	1.33E+01	1.64E+02	0.00E+00	3.40E+02	-3.95E+02
Legend	A1: Raw Material Supply. A2: Transport. A3: Manufacturing. A1-A3: Sum of A1. A2. and A3. A4: Transport to Site. A5: Installation C1: De-Construction. C2: Waste Transport. C3: Waste Processing. C4: Disposal. D: Benefits and Loads Beyond the System Boundary.									
Acronyms	GWP-total: Climate change. GWP-fossil: Climate change- fossil. GWP-biogenic: Climate change - biogenic. GWP-luluc: Climate change – land use and transformation. ODP: Ozone layer depletion. AP: Acidification terrestrial and freshwater. EP-freshwater: Eutrophication freshwater. EPmarine: Eutrophication marine. EP-terrestrial: Eutrophication terrestrial. POCP: Photochemical oxidation. ADPE: Abiotic depletion - elements. ADPF: Abiotic depletion - fossil resources. WDP: Water scarcity. PM: Respiratory inorganics - particulate matter. IR: Ionising radiation HTP-c: Cancer human health effects. HTP-nc: Non-cancer human health effects. SQP: Land use related impacts. soil quality									
*Disclaimer 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									
**Disclaimer 2	This impact category deals mainly with the eventual impact of low dose ionising radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents. occupational exposure. or due to radioactive waste disposal in underground facilities. This indicator also does not measure potential ionising radiation from the soil. from radon and from some construction materials is also not measured by this indicator.									

ADDITIONAL MANDATORY IMPACT CATEGORY INDICATORS PER DECLARED UNIT									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
***GWP - GHG	kg CO <sub>2</sub> eq.	1.98E+03	8.56E+01	1.45E+01	1.45E+01	1.96E+01	0.00E+00	7.08E+00	-1.94E+02
***Disclaimer 3	GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology. The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. The GWP-GHG indicator is identical to GWP-total except that the characterisation factor (CF) for biogenic CO <sub>2</sub> is set to zero.								

RESOURCE USE INDICATORS PER DECLARED UNIT									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2.54E+03	1.37E+01	1.16E+00	1.16E+00	3.61E+00	0.00E+00	1.62E+00	-3.86E+01
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
PERT	MJ	2.54E+03	1.37E+01	1.16E+00	1.16E+00	3.61E+00	0.00E+00	1.62E+00	-3.86E+01
PENRE	MJ	1.28E+04	9.53E+01	7.64E+00	7.64E+00	2.68E+01	0.00E+00	1.07E+01	-1.53E+03
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
PENRT	MJ	1.28E+04	9.53E+01	7.64E+00	7.64E+00	2.68E+01	0.00E+00	1.07E+01	-1.53E+03
SM	kg	0.00E+00	0.00E+00	0.00E+00	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
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
FW	m <sup>3</sup>	6.57E+01	1.84E-01	1.29E-02	1.29E-02	4.29E-02	0.00E+00	1.79E-01	-6.94E-01
Legend	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								

WASTE & OUTPUT INDICATORS									
Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	2.57E+00	2.86E-02	1.72E-03	1.72E-03	6.89E-03	0.00E+00	2.43E-03	-3.25E-02
NHWD	kg	3.15E+02	7.11E+01	1.15E-01	1.15E-01	1.29E+01	0.00E+00	1.13E+03	-4.09E+00
RWD	kg	1.73E-02	2.20E-04	2.07E-05	2.07E-05	5.52E-05	0.00E+00	2.69E-05	-3.27E-04
CRU	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.02E+02	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE (Electrical)	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
EE (Thermal)	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
Legend	HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, thermal.								

# References

**GPI** / General Programme Instructions of the International EPD® System. Version 5.0.

**GPI** / General Programme Instructions of the International EPD® System. Version 4.0.

**EN 15804:2012+A2:2019** / Sustainability of construction works - Environmental Product Declarations - Core rules for the product category of construction products

**ISO 14025 / DIN EN ISO 14025:2009-11**: Environmental labels and declarations - Type III environmental declarations - Principles and procedures

**PCR for Construction Products and Construction Services** / Prepared by IVL Swedish Environmental Research Institute, Swedish environmental Protection Agency, SP Trä, Swedish Wood Preservation Institute, Swedisol, SCDA, Svenskt Limträ AB, SSAB, The International EPD System, 2019:14 Version 1.3.4

**ISO 14040/44 / DIN EN ISO 14040: 2006-10 /** Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

**ISO 9001** / Quality Management System

**ISO 45001** / Occupational Health and Management System

**ISO 14001** / Environmental Management System

**The International EPD® System** / The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. [www.environdec.com](http://www.environdec.com)

**Crane Fuel Consumption** / [www.scribd.com/doc/44059673/Standard-Fuel-Consumption-Model-2](http://www.scribd.com/doc/44059673/Standard-Fuel-Consumption-Model-2)

**Ecoinvent** / Ecoinvent Centre, [www.ecoinvent.org](http://www.ecoinvent.org)

**SimaPro** / SimaPro LCA Software, Pré Consultants, the Netherlands, [www.pre-sustainability.com](http://www.pre-sustainability.com)

**Metsims** / [www.metsims.com](http://www.metsims.com)

**ŞARA** / [www.sara.com.tr/](http://www.sara.com.tr/)

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