

# ENVIRONMENTAL PRODUCT DECLARATION

TÜRKİYE EPD  
INTERNATIONAL EPD SYSTEM

EPD  
INTERNATIONAL EPD SYSTEM



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

## Hot-dip Galvanized Steel Towers

from  
**MİTAŞ Industry**



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

**Programme operator:** EPD International AB  
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**Licensee:** EPD Türkiye

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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](http://www.environdec.com)

# General Information

## Programme information

### Licensee

EPD Türkiye

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### Programme

The International EPD® System

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## Information about verification and reference PCR:

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)  
Product category rules (PCR)  
PCR 2019:14 Construction products (EN 15804:A2) Version 1.3.4

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

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

EPD process certification

EPD verification

**Third party verifier:** Sunil KUMAR  
SIPL Pvt. Ltd.  
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**Approved by:** The International EPD® System

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

Yes No

**LCA Accountability:** Semtrio Sustainability Consulting  
BUDOTEK Teknopark, No 8/27  
Umraniye / Istanbul Turkey  
[www.semtrio.com](http://www.semtrio.com)



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.

# Company Information

**Owner of the EPD:** MİTAŞ ENDÜSTRİ SANAYİ TİCARET ANONİM ŞİRKETİ

**Contact:** Hazal Küçükaydın  
hazalacar@mitasindustry.com

**Description of the organisation:** Mitaş Industry Inc. part of a Mitaş Group company, operates on energy transmission and distribution, renewable energy, telecommunication, lightning and engineering and manufacturing of masts and structures for transportation superstructure on a global scale. Mitaş Industry is a leader supplier that serves integrated, safe and responsive solutions from design to delivery, thanks to internal engineering and manufacturing capabilities. Along with the engineering and production facilities in Türkiye and Italy, Mitaş Industry also has the advantage of providing comprehensive solutions with various international representatives. Production factories are equipped with modern CNC machines and full automatic production systems that are compatible with various international standards. Headquartered in Ankara, MİTAŞ Industry has the following manufacturing facilities located in Türkiye.

- Lattice tower manufacturing factories in Ankara and İzmir, Türkiye, with annual capacity of 210.000 mt production and 210.000 mt galvanizing,
- Pole and high mast manufacturing factories in Ankara, Türkiye, with annual capacity of 45.000 mt production,
- Plate fabrication factory in Ankara, Türkiye, with annual capacity of 14.400 mt production and 32.000 mt galvanizing,
- Welding factory in Ankara, Türkiye, with annual capacity of 6.000 mt production,
- Galvanizing factory in Ankara, Türkiye, with annual capacity of 120.000 mt galvanizing,
- Powder coating factory in Ankara, Türkiye, with annual capacity of 12.000 mt coating.

All factories are certified to the latest versions of ISO 9001 (Quality Management System), ISO 14001 (Environmental Management System) and ISO 45001 (Occupational Health and Safety Management System) to meet the most stringent international standards. Selected factories have the distinguished CE, welding and other quality and safety certificates. Furthermore, some factories are also certified to ISO 50001 (Energy Management System), reinforcing MİTAŞ Industry's commitment to energy efficiency and sustainability.

The Company has an annual turnover of 300.000.000 USD and employs more than 3000 qualified employees.

MİTAŞ Industry delivered its products to over 140 countries in 5 continents and widened its customer portfolio across the world constantly, being long term preferred business partner by the utilities in many countries.

**Product-related or management system-related certifications:** ISO 9001 Quality Management System, ISO 14001 Environmental Management System, ISO 45001 Occupational Health and Safety Management System, ISO 50001 Energy Management System, TS EN ISO 3834 Quality Requirements for Fusion Welding of Metallic Materials, TS EN ISO 1461 Hot Dip Galvanized Coatings on Fabricated Iron and Steel Articles - Specifications and Test Methods, EN 1090-1 Execution of Steel Structures and Aluminium Structures - Part 1: Requirements for Conformity Assessment of Structural Components, CSA Standard W47.1 Certification of Companies for Fusion Welding of Steel

## **Name and location of production sites:**

**Plant 1:** ASO2 Eskişehir Yolu 42. Km Alcı Organize Sanayi Bölgesi Mahallesi 2001 Cadde No:16,19,20,21,22 06930 Sincan/Ankara

**Plant 2:** Eski Güvercinlik Yolu No:113 Gazi Yenimahalle/Ankara

# Product Information

|                        |  |
|------------------------|--|
| Product name           | Hot-dip Galvanized Steel Towers  |
| Product identification | Steel gantries for transmission of electric energy   |
| Product description    | Hot-dip Galvanized Steel Towers are used for transmission of electric energy from the power plants to the transformer stations in proximity of the electric consumption areas or the distribution thereof from these stations to end-users. These towers are designed and manufactured considering the parameters such as routes of the energy transmission lines, geographical, land and atmospheric conditions, line voltages, carrying capacity and intended use specified. |
| UN CPC code            | 42110  |
| Geographical scope     | Global   |

Hot-dip Galvanized Steel Towers are manufactured in the forms of lattice or pole type and, are delivered as galvanised and galvanised for the atmospheric corrosion resistance.

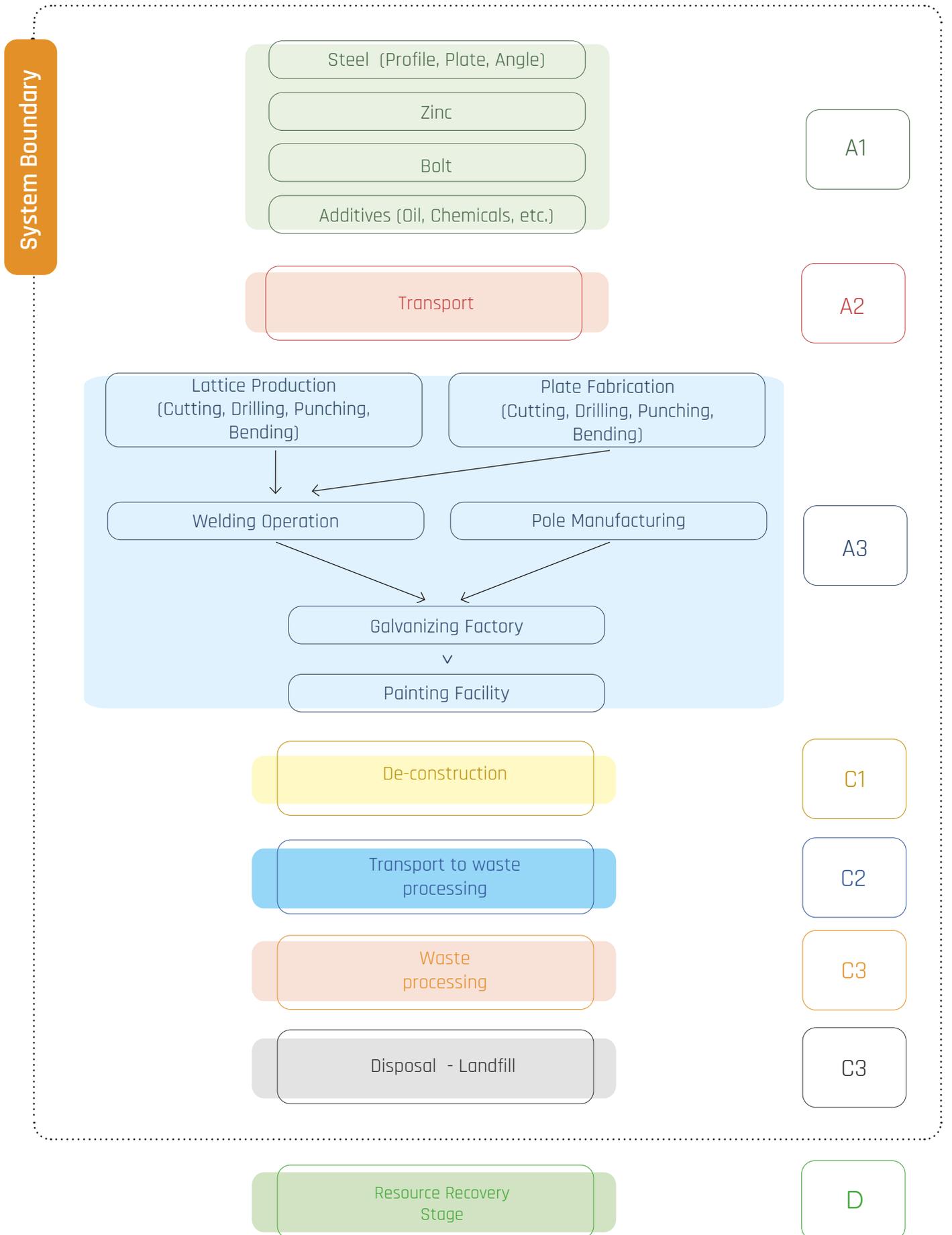
Surface area of final products can vary, average value is 55 m<sup>2</sup>/ton. Zinc coating process (galvanizing) is applied with the minimum average thickness coating thickness as stated in EN ISO 1461 and ASTM A123 standards.



# LCA Information

|  |  |
|--|--|
| <b>Declared unit</b>                     | 1 ton of Hot-dip Galvanized Steel Towers   |
| <b>Reference Service Life</b>            | > 50 years   |
| <b>Time Representativeness</b>           | The production data in this LCA study represents the period of 1 December 2023 - 1 December 2024   |
| <b>Database(s) and LCA Software Used</b> | SimaPro LCA v9.6.0.1 software with Ecoinvent v3.10   |
| <b>Description of System Boundaries</b>  | Cradle to gate with options, modules C1-C4, module D (A1-A3 + C1-C4 + D).  |
| <b>Data Quality and Data Collection</b>  | <p>Data collection for this LCA study has been carried out in accordance with data requirement stated in ISO 14040-44, ISO 14025, ISO 14020, and the requirements given in the General Program Instructions v5.0.1; PCR Construction products 2019:14, version 1.3.4 by The International EPD® System and EN 15804:2012+A2:2019.</p> <p>There are two different data classifications that has been used as primary (specific) and secondary (selected generic) data. All primary data has been collected from Mitaş Industry Ankara plants. For secondary data Ecoinvent v3.10 database has been used.</p> <p>A1 data, raw materials production, transportation, fossil fuels and electricity data have been obtained from Ecoinvent v3.10 as secondary data. All manufacturing data in A3 has been gathered from Mitaş Industry Ankara plants. The manufacturing data are collected based on a mass balance. The production data in this LCA study represents the period of 1st December 2023 and 1st December 2024.</p> <p>Mileage and tonnage figures for transport data to the core processes were provided by Mitaş Industry procurement department specifically per origin of departures, however roadway and seaway upstream data per ton per kilometers were taken from Ecoinvent v3.10.</p> |
| <b>Allocation</b>                        | <p>Allocation was avoided by dividing the unit process into two or more sub-processes and collecting the environmental data related to these sub-processes. If not possible, allocation problems were solved by partitioning the system inputs and outputs using the mass criteria according to GPI v5.0.1. Mass allocation has been applied for pre-consumer recycled materials according to EN 15804:2012+A2:2019. Allocation for module D is explained in section 3.6. In module D, loads and benefits are assessed at the point of functional equivalence, i.e. where the substitution of primary steel takes place.</p>   |
| <b>Cut-off Rules</b>                     | Life Cycle Inventory data for a minimum of 99 % of total inflows to the three life cycle stages have been included and a cut-off rule of 1% regarding energy, mass, and environmental relevance was applied.   |

# System Boundary



# Description of System Boundary

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

|                             | Product stage       |           | Construction process stage |           |                           | Use stage |             |        |             |               |                        |                       | End of life stage          |           |                  |          | Resource recovery stage | Environmental Information |
|-----------------------------|---------------------|-----------|----------------------------|-----------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|-------------------------|---------------------------|
|                             | 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 | Recycling potential     |                           |
| <b>Module</b>               | A1                  | A2        | A3                         | A4        | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                       |                           |
| <b>Modules declared</b>     | X                   | X         | X                          | ND        | ND                        | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | X                          | X         | X                | X        | X                       |                           |
| <b>Geography</b>            | GLO                 | GLO       | TR                         | -         | -                         | -         | -           | -      | -           | -             | -                      | -                     | GLO                        | GLO       | GLO              | GLO      | GLO                     |                           |
| <b>Specific data used</b>   | >60%                |           | -                          | -         | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                       |                           |
| <b>Variation - products</b> | Not relevant        |           | -                          | -         | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                       |                           |
| <b>Variation - sites</b>    | Not relevant        |           | -                          | -         | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                       |                           |

X: Declared, ND: Not declared.

## A1 - Raw Materials Supply

This module takes into account raw material extraction, processing and energy used in the production process.

## A2 - Transport to the Manufacturer

This module includes transportation of raw materials from suppliers to factory gate. Transportation types are considered as roadway and seaway.

## A3 - Manufacturing

This stage includes energy and water consumption during the manufacturing process. The processing of any waste arising from this stage is also included.

### A1-3 - Cradle to gate - Mandatory Module

The aggregation of the modules A1, A2 and A3 is allowed by EN 15804:2012+A2:2019. This rule is applied in this EPD and denoted by A1-3. This module represents the extraction and processing of raw materials, the transport to production sites and the manufacture.

### C1 - De-construction - Mandatory Module

It has been assumed that during the de-construction operations the same electricity is consumed as during the Construction installation of steel structures.

| Parameters C1 Module |        |        |
|----------------------|--------|--------|
| Data                 | Amount | Unit   |
| Energy Consumption   | 0.01   | kWh/kg |

\*It is assumed that electricity is consumed as energy.

### C2 - Transport to Waste Processing - Mandatory Module

An average distance of 100 km has been assumed for the transport to scrap dealers. Transport is calculated on the basis of a scenario with the parameters described in the attached table.

| Parameters C2 Module |                      |
|----------------------|----------------------|
| Transport by road*   | Lorry >32 metric ton |
| Distance (km)        | 100                  |
| Database             | Ecoinvent v3.10      |

\*Technology is Euro 6

### C3 - Waste Processing for Reuse, Recovery and/or Recycling - Mandatory Module

The material and energy expenses required for Module C3 are negligible. The recovery rates for steel during building dismantling are based on data from the World Steel Association, 2020 assuming a 95% recovery rate and 5% going to landfill.

### C4 - Final Disposal - Mandatory Module

All end-of-life products will be collected and recycled back into the production system. A total of 95% of these products are recycled and reused in construction projects or material production, while the remaining 5% are sent to landfill. The recovery rates for steel during building dismantling are based on data from the World Steel Association, 2020 assuming a 95% recovery rate and 5% going to landfill.

### D - Reuse, recovery or recycling - Mandatory Module

Scrap inputs to the production stage are subtracted from scrap to be recycled at end of life in order to obtain the net scrap output from the product system. This remaining net scrap is then sent to recycling. Module D reports the environmental aspects of recycled scrap generated at the end of life minus that used at the production stage. The scrap inputs to the production stage are subtracted from the scrap to be recycled at the end of life to obtain the net scrap output. This remaining net scrap is then sent to recycling. Module D reports the environmental impacts of the recycled scrap generated at the end of life, subtracting the amount used in the production stage. This ensures that only the net recycled scrap's environmental impacts are considered, providing a more accurate assessment of the actual environmental impact of the recycling processes. This methodology aims to accurately reflect the environmental impact of each stage, ultimately calculating the true environmental burden of the product system.

Among the input materials, scrap raw materials were removed and the recycling potential was calculated.

## Electricity

Energy sources of the electricity used in manufacturing processes of module A3 are modeled using the mix of electricity.

| INPUT  | GWP-GHG<br>(kg CO <sub>2</sub> e/kwh) |
|--|---------------------------------------|
| Electricity, medium voltage {TR}  market for electricity, medium voltage   EN15804, U  | 0.57538                               |
| Electricity, low voltage {RoW}  electricity production, photovoltaic, 570kWp open ground installation, multi-Si   EN15804, U | 0.08362                               |

## Content Declerations

| Product components             | Steel Product, kg | Zinc, kg | Others, kg | Post-consumer recycled material, weight-% of product | Biogenic material, weight-% of product |
|--------------------------------|-------------------|----------|------------|--|--|
| Hot-dip Galvanized Steel Tower | 913.06            | 33.70    | 53.25      | 80%  | 0                                      |



# Environmental Information

## Potential Environmental Impact – Mandatory Indicators According to EN 15804:2012+A2:2019/AC:2021

| Results for 1 tonne of Hot-dip Galvanized Steel Towers |   |                |          |          |          |          |           |
|--|---|----------------|----------|----------|----------|----------|-----------|
| Indicator  | Unit  | Total A1/A2/A3 | C1       | C2       | C3       | C4       | D         |
| <b>GWP-fossil</b>                                      | <b>kg CO<sup>2</sup> eq.</b>  | 1,86E+03       | 5,68E+00 | 1,04E+01 | 0,00E+00 | 3,15E-01 | -1,26E+02 |
| <b>GWP-biogenic</b>                                    | <b>kg CO<sup>2</sup> eq.</b>  | 1,38E+02       | 1,80E-01 | 6,48E-02 | 0,00E+00 | 2,36E-03 | -2,53E+00 |
| <b>GWP-luluc</b>                                       | <b>kg CO<sup>2</sup> eq.</b>  | 2,74E+00       | 6,07E-02 | 3,73E-03 | 0,00E+00 | 1,66E-04 | -7,02E-02 |
| <b>GWP-total</b>                                       | <b>kg CO<sup>2</sup> eq.</b>  | 2,00E+03       | 5,92E+00 | 1,04E+01 | 0,00E+00 | 3,18E-01 | -1,28E+02 |
| <b>ODP</b>   | <b>kg CFC 11 eq.</b>  | 2,76E-05       | 3,31E-08 | 2,14E-07 | 0,00E+00 | 9,00E-09 | -7,78E-07 |
| <b>AP</b>  | <b>mol H+ eq.</b>   | 1,41E+01       | 3,70E-02 | 2,45E-02 | 0,00E+00 | 2,22E-03 | -4,92E-01 |
| <b>EP-freshwater</b>                                   | <b>kg P eq.</b>   | 8,45E-01       | 5,71E-03 | 7,29E-04 | 0,00E+00 | 2,59E-05 | -4,77E-02 |
| <b>EP-marine</b>                                       | <b>kg N eq.</b>   | 1,00E+03       | 6,54E-03 | 6,42E-03 | 0,00E+00 | 8,44E-04 | -1,11E-01 |
| <b>EP-terrestrial</b>                                  | <b>mol N eq.</b>  | 5,21E+01       | 5,98E-02 | 6,94E-02 | 0,00E+00 | 9,22E-03 | -1,15E+00 |
| <b>POCP</b>  | <b>kg NMVOC eq.</b>   | 1,47E+01       | 1,77E-02 | 4,25E-02 | 0,00E+00 | 3,30E-03 | -4,49E-01 |
| <b>ADP minerals &amp; metals*</b>                      | <b>kg Sb eq.</b>  | 6,39E-02       | 6,34E-06 | 2,89E-05 | 0,00E+00 | 4,86E-07 | -5,81E-04 |
| <b>ADP-fossil*</b>                                     | <b>MJ</b>   | 2,53E+04       | 6,29E+01 | 1,55E+02 | 0,00E+00 | 7,67E+00 | -1,38E+03 |
| <b>WDP*</b>  | <b>m<sup>3</sup></b>  | 8,10E+02       | 2,01E+00 | 9,52E-01 | 0,00E+00 | 3,41E-01 | -7,83E+01 |
| <b>Acronyms</b>  | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |                |          |          |          |          |           |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

\*\*The results of this environmental product declaration (EPD) are only valid if modules A1-C4 are considered. The use of modules A1-A3 results alone without considering the end-of-life stage (module C) may lead to misinterpretation of the product's environmental performance.

## Potential Environmental Impact – Additional Mandatory and Voluntary Indicators

| Results according to PCR2019:14 for 1 tonne of Hot-dip Galvanized Steel Towers  |   |                   |          |          |          |          |           |
|---|---|-------------------|----------|----------|----------|----------|-----------|
| Indicator   | Unit  | Total<br>A1/A2/A3 | C1       | C2       | C3       | C4       | D         |
| GWP-GHG*  | kg CO <sup>2</sup> eq.  | 1,89E+03          | 5,75E+00 | 1,04E+01 | 0,00E+00 | 3,15E-01 | -1,26E+02 |
| Results according to EN 15804+A2 for 1 tonne of Hot-dip Galvanized Steel Towers |   |                   |          |          |          |          |           |
| PM  | [disease inc.]  | 1,30E-04          | 1,65E-07 | 1,01E-06 | 0,00E+00 | 5,04E-08 | -1,05E-05 |
| IRP   | [kBq U235 eq]   | 2,13E+02          | 4,63E-02 | 1,89E-01 | 0,00E+00 | 4,89E-03 | -5,54E+00 |
| ETP-fw  | [CTUe]  | 5,57E+07          | 1,44E+02 | 1,48E+02 | 0,00E+00 | 5,38E+00 | -8,33E+03 |
| HT-C  | [CTUh]  | 9,04E-05          | 6,67E-09 | 6,63E-08 | 0,00E+00 | 1,41E-09 | -1,02E-05 |
| HT-nc   | [CTUh]  | 5,57E-02          | 4,56E-08 | 1,26E-07 | 0,00E+00 | 3,16E-09 | -4,10E-06 |
| SQP   | [pt]  | 9,97E+03          | 7,80E+00 | 1,56E+02 | 0,00E+00 | 1,51E+01 | -3,52E+02 |
| Net use of<br>fresh water   | m <sup>3</sup>  | 1,21E+02          | 3,46E-01 | 1,47E-01 | 0,00E+00 | 1,25E-02 | -7,86E+00 |
| Eutrophication  | kg PO <sub>4</sub> --- eq   | 8,63E+02          | 1,97E-02 | 4,56E-03 | 0,00E+00 | 3,67E-04 | -1,85E-01 |
| <b>Acronyms</b>   | GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology; PM = Potential incidence of disease due to PM emissions; IRP = Potential Human exposure efficiency relative to U235; ETP-fw = Potential Comparative Toxic Unit for ecosystems; HT-C = Potential Comparative Toxic Unit for humans; HT-nc = Potential Comparative Toxic Unit for humans; SQP = Potential soil quality index (SQP) |                   |          |          |          |          |           |

\*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 CO<sub>2</sub> is set to zero.

# Use of Resources

| Results for 1 tonne of Hot-dip Galvanized Steel Towers |                |                |          |          |          |          |           |
|--|----------------|----------------|----------|----------|----------|----------|-----------|
| Indicator  | Unit           | Total A1/A2/A3 | C1       | C2       | C3       | C4       | D         |
| PERE   | MJ             | 3,20E+03       | 2,64E+01 | 2,47E+00 | 0,00E+00 | 7,11E-02 | -1,11E+02 |
| PERM   | MJ             | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| PERT   | MJ             | 3,20E+03       | 2,64E+01 | 2,47E+00 | 0,00E+00 | 7,11E-02 | -1,11E+02 |
| PENRE  | MJ             | 2,70E+04       | 6,74E+01 | 1,65E+02 | 0,00E+00 | 8,16E+00 | -1,47E+03 |
| PENRM  | MJ             | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| PENRT  | MJ             | 2,70E+04       | 6,74E+01 | 1,65E+02 | 0,00E+00 | 8,16E+00 | -1,47E+03 |
| SM   | kg             | 2,80E-01       | 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  |
| NRSF   | MJ             | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| FW   | m <sup>3</sup> | 1,21E+02       | 3,46E-01 | 1,47E-01 | 0,00E+00 | 1,25E-02 | -7,86E+00 |

**Acronyms** 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 Production

| Results for 1 tonne of Hot-dip Galvanized Steel Towers |      |                |          |          |          |          |          |
|--|------|----------------|----------|----------|----------|----------|----------|
| Indicator  | Unit | Total A1/A2/A3 | C1       | C2       | C3       | C4       | D        |
| Hazardous waste disposed                               | kg   | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Non-hazardous waste disposed                           | kg   | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,00E+01 | 0,00E+00 |
| Radioactive waste disposed                             | kg   | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

# Output Flows

| Results for 1 tonne of Hot-dip Galvanized Steel Towers |      |                |          |          |          |          |          |
|--|------|----------------|----------|----------|----------|----------|----------|
| Indicator  | Unit | Total A1/A2/A3 | C1       | C2       | C3       | C4       | D        |
| Components for re-use                                  | kg   | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Material for recycling                                 | kg   | 0,00E+00       | 0,00E+00 | 0,00E+00 | 9,50E+02 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery                          | kg   | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, electricity                           | MJ   | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, thermal                               | MJ   | 0,00E+00       | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

\*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.

# References

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

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EN 15804 reference package based on EF 3.1 [eplca.jrc.ec.europa.eu](http://eplca.jrc.ec.europa.eu)

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