### ENVIRONMENTAL PRODUCT DECLARATION

TURKEY EPD®

ENVIRONMENTAL PRODUCT DECLARATIONS

In accordance with ISO 14025 and EN 15804 for

# Hot-dip Galvanized Steel Gantries

**MİTAŞ Industry** 



Programme:	The International EPD® System www.environdec.com	
Programme operator:	EPD Turkey: SÜRATAM – Turkish Centre for Sustainable Production Research & Design Nef 09 B Blok No:7/15 34415 Kağıthane/Istanbul, TURKEY	EPD International AB
EPD registration num- ber:	S-P-01676	
Publication date:	11.11.2019	
Validity date:	10.11.2024	
Geographical scope:	Global	

### **Programme Information**

EPD Turkey, a fully aligned regional programme

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Product Category Rules (PCR): The International EPD® System's PCR 2012:01 Construction Products and Construction Services, Version 2.3, 2018-11-15

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

EPD process certification

Programme

EPD verification

Third party verifier: Vladimír Kočí, PhD

Approved by: The International EPD® System

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

Yes

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The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

## Company Information

MİTAŞ Industry Inc., a MİTAŞ Group company, operates on a global scale in the business of engineering and manufacturing of towers, poles and high masts for power transmission and distribution, solar, telecommunication, lighting, and transportation infrastructure.

Headquartered in Ankara, MİTAŞ Industry has the following manufacturing facilities located in Turkey and Italy.

- Lattice tower manufacturing factories in Ankara and İzmir, Turkey, with annual capacity of 180.000 mt production and 175.000 mt galvanizing,
- Pole and high mast manufacturing factories in Ankara, Turkey and in Siderpali, Italy with annual capacity of 45.000 mt production,
- Plate fabrication factory in Ankara, Turkey, with annual capacity of 14 400 mt production and 32 000 mt galvanizing,
- Welding factory in Ankara, Turkey, with annual capacity of 6 000 mt production,
- Galvanizing factory in Ankara, Turkey, with annual capacity of 120 000 mt galvanizing,
- Powder coating factory in Ankara, Turkey, with annual capacity of 12 000 mt coating,

All factories are certified to the latest versions of ISO 9001 quality, ISO 14001 environment and ISO 45001 to meet the most stringent standards. Some factories have CE, welding and other certificates, as well.

The Company has an annual turnover of 200 000 000 USD and employs 1 300 qualified employees.

MİTAŞ Industry delivered its products to over 135 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 Information**

Product name	Hot-dip Galvanized Steel Gantries
Product identification	Steel Gantries for substations
Product description	Gantry structures are used for guiding the power conductor from dead-end tower near substation to the electrical equipments in a substation. This structure consist of a number of columns and girder beams, which depend on number of circuits of the line. Gantry structures are manufactured in the forms of steel lattice or pole type, column-beam support, type A welded columns, welded supports, H/I or pipe/box welded supports and, are delivered as galvanized.
UN CPC code	42110
Geographical scope	Global

Hot-dip Galvanized Steel Gantries 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 m2/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**

Declared unit	1 ton of Hot-dip Galvanized Steel Gantries
Time Representativeness	2018
Database(s) and LCA Software Used	TLCID ver. 1.0 (Turkish Lifecycle Inventory Database), Ecoinvent 3.5, SimaPro 9.0

The inventory for the LCA study is based on the 2018 production figures for Hot-dip Galvanized Steel Gantries by Mitaş Industry production plants.



### **Description of System Boundary**

The system boundary covers A1 - A3 product stages and A4 (Transport to customers) construction site.

Upstream		COLE		Downstream									Other Environmental Information			
Raw Materil Supply	Transport	Manufacturing	Transport	Construction Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction, demolition	Transport	Waste Processing	Disposal	Future reuse, recycling or energy recovery potentials
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Х	Х	Х	х	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Description of the system boundary (X = Included in LCA, MND= Module Not Declerated)

#### A1: Raw Material Supply

Production starts with raw materials. Raw material supply includes raw material extraction and pre-treatment processes before production.

#### A2: Transportation

Transport is relevant for delivery of raw materials and other materials to the plant and the transport of materials within the plant.

#### A3: Manufacturing

Manufacturing starts with steel forming and cutting. The materials continue with the preparation for the galvanizing process. Firstly, surface cleaning process is applied and galvanizing process is done. The final products are quality checked and packaged for delivery.

#### A4: Transport From the Gate to the Site

Transport of final product to construction site is taken as the weight average values for transport to customers in 2018.

### **More Information**

Life cycle assessment calculations required for this EPD were done using SimaPro 9.0 life cycle assessment software. Energy calculations were obtained using Cumulative Energy Demand (LHV) v 1.00. Global Warming Potential (GWP), Eutrophication (EP), Abiotic Depletion Fossil Fuels (ADPF), Abiotic Depletion Elements (ADPE), Ozone Leyer Depletion (ODP), Photochemical Oxidation (POCP) and Acidification (AP) were calculated using the CML-IA baseline method and finally, Water Scarcity (WSI) were calculated using AWARE methodology.

Different steel thickness options were allocated based on the production figures in 2018 and weighted averaged of environmental impacts for the Hot-dip Galvanized Steel Gantries were presented.

Accordingly, hazardous and non-hazardous waste amounts were also allocated from 2018 total waste amounts.

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in Hot-dip Galvanized Steel Towers, either above the threshold for registration with the European Chemicals Agency or above 0.1 % (wt/wt).

### **Content Declerations**

Mate	erials	%
	Profile (Angle, Beam, Channel)	76-86
Alloyed Steel	Plate	9-20
	Bolt	4-5
Zinc		4-5



## **Environmental Performance**

	POTENTIAL ENVIRONMENTAL IMPACTS, 1 ton Hot-dip Galvanized Steel Towers								
Paramete	er	Unit	A1	A2	A3	A4	Total		
	Fossil	kg CO <sub>2</sub> eq	1212	41.0	87	87.9	1429		
	Biogenic	kg CO <sub>2</sub> eq	1,54	0.009	0.077	0.006	1.64		
GWP	Land use and land transforma- tion	kg CO <sub>2</sub> eq	1.89	0.028	0.338	0.002	2.26		
	GWP Total	kg CO <sub>2</sub> eq	1216	41.0	88	87.9	1433		
Ozone Layer Depletion (ODP)		kg CFC-11 eq	78.9x10 <sup>-6</sup>	7.29x10 <sup>-6</sup>	6.81x10 <sup>-6</sup>	16.7x10 <sup>-6</sup>	110x10 <sup>-6</sup>		
Acidification Potantial (AP)		kg SO <sub>2</sub> eq	15.3	0.111	0.243	1.05	16.8		
Eutrophication Potantial (EP)		kg PO <sub>4</sub> <sup>3-</sup> eq	4.66	0.026	0.125	0.094	4.90		
Photoche (POCP)	mical oxidation	kg C <sub>2</sub> H <sub>4</sub> eq	0.444	0.008	0.015	0.054	0.521		
Abiotic De Potantial, (ADPE)	epletion elements	kg Sb eq	0.211	449x10 <sup>-9</sup>	4.85x10 <sup>-6</sup>	187x10 <sup>-9</sup>	.211		
Abiotic De Potantial, (ADPF)	pletion fossil fuels	MJ	14652	596	1232	1300	17779		
Water sca (WSI)	ircity	m³ eq	10.4	0.046	0.236	0.073	10.8		



 $CO_2$ 



■A1 ■A2 ■A3 ■A4

	USE OF RES	OURCES, 1 t	on Hot-dip Go	alvanized Ste	eel Towers		
Parameter		Unit	A1	A2	A3	A4	Total
	Use as energy carrier	MJ	992	8,19	178	2,28	1181
Resources - Renewable	Used as raw materials	MJ	0	0	0	0	0
	TOTAL	MJ	992	8.19	178	2.28	1181
	Use as energy carrier	MJ	15970	600	1244	1303	19117
Resources - Non-renewable	Used as raw materials	MJ	0	0	0	0	0
	TOTAL	MJ	15970	600	1244	1303	19117
Secondary Materia	al	kg	968	0	0	0	968
Renewable Secondary Fuels		MJ	0	0	0	0	0
Non-Renewable Secondary Fuels		MJ	0	0	0	0	0
Net Fresh Water U	se	m <sup>3</sup>	10,5	0.046	0.236	0.073	10.8

WASTE GENERATIONS, 1 ton Hot-dip Galvanized Steel Towers								
Parameter	Unit	A1	A2	A3	A4	Total		
Hazardous Waste Disposed	kg	-	-	31.9	_	31.9		
Non-hazardous Waste Disposed	kg	-	-	48.3	_	48.3		
Radioactive Waste Disposed	kg	_	_	0	_	_		

OUTPUT FLOWS, 1 ton Hot-dip Galvanized Steel Towers								
Parameter	Unit	A1	A2	A3	A4	Total		
Components for reuse	kg	0	0	0	0	0		
Materials for Recycling	kg	0	0	60.9	0	0		
Materials for Energy Recover	kg	0	0	0	0	0		
Exported Energy, Electricity	MJ	0	0	0	0	0		
Exported Energy, thermal	MJ	0	0	0	0	0		

### References

/GPI/ General Programme Instructions of the International EPD® System. Version 3.0.

/Gulabi, S. Environmental Engineer, Mitaş Industry, Tel : (+90) 312 296 20 00, E-Mail : info@mitasindustry.com

/ISO 9001:2015/ Quality management systems - Requirements

/ISO 14020:2000/ Environmental labels and declarations — General principles

/EN 15804/ EN 15804:2012+A1:2013, 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

/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)

/PCR for Construction Products and CPC 54 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, 2012:01 Version 2.3, DATE 2018-11-15

/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

/Ecoinvent / Ecoinvent Centre, www.Eco-invent.org

/SimaPro/ SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

/TLCID/ Turkish Life Cycle Inventory Database, Turkish Center for Sustainable Production Research and Design (SURATAM), www.suratam.org

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