

Environmental Product Declaration

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



Galvanized Flat Steel (GZR)
from Tatmetal Çelik Sanayi A.Ş.



PROGRAMME:

The International EPD® System,
www.environdec.com

PROGRAMME OPERATOR:

EPD International AB

LICENSEE:

EPD Türkiye

EPD REGISTRATION NUMBER:

EPD-IES-0022346

VERSION DATE:

2025-05-28

VALIDITY DATE:

2030-05-27

An EPD may be updated or republished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



GENERAL INFORMATION

Programme Information

Programme:	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden www.environdec.com info@environdec.com	Licensee: EPD Türkiye Nef 09 B Blok No:7/15 34415 Kağıthane/İstanbul www.epdturkey.org info@epdturkey.org
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Product Category Rules (PCR)	
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
Product Category Rules (PCR):	Construction product, 2019:14, 1.3.4, Valid Until: 2025.06.20, UN CPC code: 41231
PCR review was conducted by:	The Technical Committee of the International EPD System
Life Cycle Assessment (LCA)	
LCA accountability:	 Greenlife Danışmanlık Müh. Eğt. ve Tas. Hiz. Tic. Ltd. Şti.
Third-party verification	
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Approved by: The International EPD® System	Dr. Hüdayi Kara, Metsims Sustainability Consulting, www.metsims.com Oxford, United Kingdom Email: hudai.kara@metsims.com

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

☐ Yes ☒ No

[Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

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 may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same version number up to the first two digits²⁰) 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 characterization factors); have equivalent content declarations; and be valid at the time of comparison.

Company Information

Owner of the EPD: Tatmetal Çelik San. ve Tic. A.Ş.

Phone: +90 216 574 08 28

Address: Küçükbakkalköy Mah. Merdivenköy Yolu Cad. Rüya Sok. No: 12 Kat: 20 Vogue Business Center PK: 34750 Ataşehir | İstanbul | Türkiye

Contact: Selma Düzlü

Description of the organisation: Tatmetal produces hot rolled pickled, cold rolled, galvanized and painted flat steel under Tatçelik brand as one of Türkiye's leading flat steel producers. Automotive, Durable Goods, Construction, Energy, Storage Systems and HVAC are the leading industries it serves.

Product-related or management system-related certifications: ISO 9001 Quality Management System, TS EN 10130, TS EN 10346, TS EN 822, TS EN 10169, ISO 14001 Environmental Management System, IATF 16949 Automotive Quality Management System, ISO 27001 Information Security Management System, ISO 50001 Energy Management System, ISO 45001 Occupational Health and Safety Management System

Name and location of production site(s): Hamzafakıhlı Mahallesi OSB Yaşar Tetiker Bulvarı No: 1, Karadeniz Ereğli | Zonguldak, Türkiye



About Tatmetal

Tatmetal produces hot rolled pickled, cold rolled, galvanized and painted flat steel under Tatçelik brand as one of Türkiye's leading flat steel producers. Automotive, Durable Goods, Construction, Energy, Storage Systems and HVAC are the leading industries it serves.

With a capacity exceeding 1.5 million tons, Tatmetal produces in many different steel grades such as commercial, deep drawing, extra deep drawing steels, low alloy high strength HSLA steels, medium and high strength structural steels and enameling steel.

In addition to its production, it performs cut-to-length, slitting, roll forming processes in the Steel Service Centers in line with the demands and needs of the user.

As a global player in the industry, Tatmetal exports to more than 80 countries on 6 continents. Also, Tatmetal is one of Türkiye's 500 largest industrial companies and 1,000 largest exporting companies.

Tatmetal attaches great importance to renewable energy and has installed a solar energy system on the roofs of its production facility and steel service centers, and even on the porch in the parking lot.

Our Products

“We add value to the future goals
of our business partners...”

**Hot Rolled Pickled
and Oiled Flat Steel**

**Cold Rolled Flat Steel
(Non-annealed)**

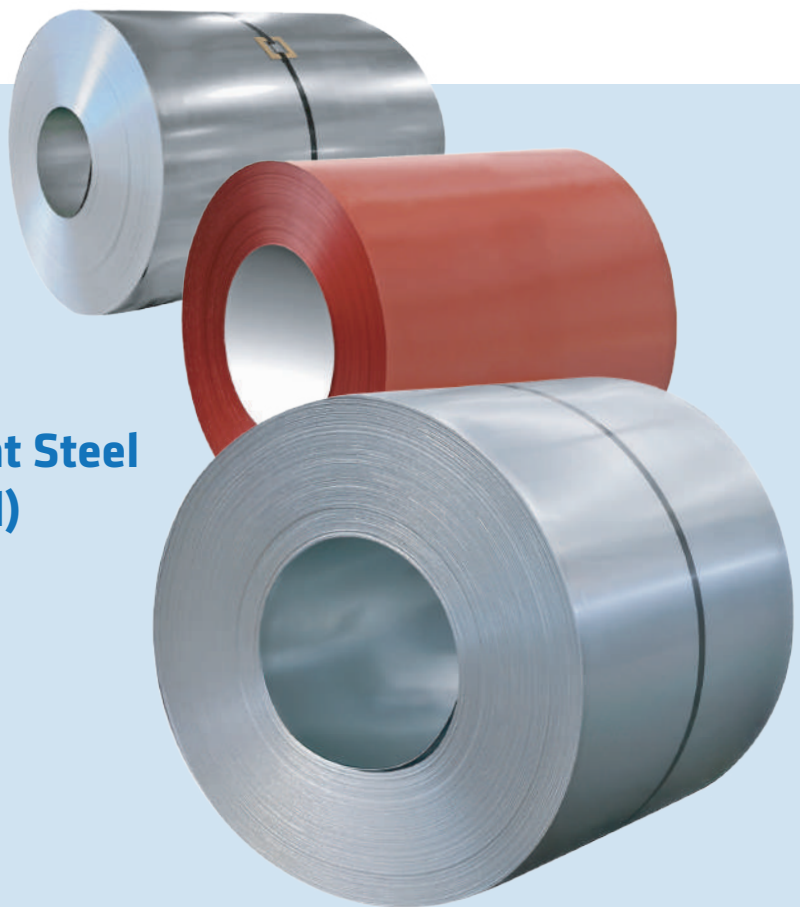
**Cold Rolled Flat
Steel (Annealed)**

Prepainted Flat Steel

Galvanized Flat Steel

**Roll Formed Pre Painted
and Galvanized**

Cut-to-Length Sheet



Slitted Strips

Product Information

Product Name

Galvanized Flat Steel, UN CPC Code: 41231 Flat-rolled products of non-alloy steel, clad, plated, coated or otherwise further worked

Geographical Scope

A1, A2, A4, A5, C and D modules are global and A3 module is Türkiye.

This EPD has been prepared using data for raw material supply (A1), raw material transport (A2), manufacturing (A3) and product transport (A4) for the year 2023.

Product Identification

Galvanized Flat Steel is obtained by passing the Fullhard product, which has been rolled to the final thickness, through the surface cleaning, annealing, galvanizing (zinc) coating, and drying processes, respectively.

Galvanized flat steel, which can optionally be tempered, lubricated, and paved, has advanced corrosion resistance, and can be shaped, welded, and painted according to the required steel structure. Galvanized Flat Steel is preferred in the automotive, white goods, construction, and building sectors.



Product Information

Technical Specifications

Thickness: 0,24 - 4,00 mm

Width: 800 - 1,650 mm

Surface Quality: A, B

Coating Mass: Min. 60 g/m² – Max. 600 g/m²

Surface Type: Bright (BR), Semi-Bright (SB),
Matte (M), Rough (R)

Passivation Type: Chromated,
Non-Chromated

Surface Protection: 0,50 - 3,00 g/m²



Galvanized Flat Steel

Applications

CONSTRUCTION

- Roof and Facade Systems
- Pipe & Profile Busbar
- Heating and Cooling, Air Conditioning Systems
- Ceiling and Floor Systems
- Greenhouse
- Warehouse and Shelf Systems

ENERGY

- Transformer - Power System
- Solar Energy

MACHINE EQUIPMENT

- Sheet Metal Processing Machines
- Miscellaneous Agriculture
- Forestry, Mining and Food Industry Machinery
- Work Machines
- Crane and Work Tools

CONSUMER DURABLES

- White Goods
- Small Home Appliances
- Brown Goods

PACKAGING

- Barrel
- Packaging Circle & Buckle
- Storage Tank

AUTOMOTIVE

- Automobile
- Commercial Vehicle
- Tractor
- Rail Systems

Product Information

Production Process

Galvanized Flat Steel

Galvanized Flat Steel is obtained by surface cleaning, annealing, galvanising (zinc) coating and drying processes of the Fullhard product rolled to the final thickness respectively. Tempering, lubrication and passivation applications are also performed upon request. It has advanced corrosion resistance. Formability, weldability and paintability are other features.



LCA Information

Declared Unit:

1 tonne of Galvanized Flat Steel

Reference Service Life:

N/A

Time Representativeness:

Data is representative for 2023 production year.

Primary production data for the year 2023 was used in the LCA.

Database(s) and LCA Software Used:

SimaPro Software 9.6.01 and Ecoinvent 3.10

Description of System Boundaries and Scope of Declaration:

Cradle to gate with options, modules C1–C4, module D and with optional modules A4 and A5.

Characterisation Factor:

EN 15804 method based on EF 3.1 normalization and weight values, published in July 2022.

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

	Product Stage			Const. Process Stages		Use Stage							End of Life Stage				Resource Recovery Stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	GLO	GLO	TR	GLO	GLO	MND	MND	MND	MND	MND	MND	MND	GLO	GLO	GLO	GLO	GLO
Specific data used	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	0%					-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

X: Module declared

MND: Module Not Declared

System Boundaries

A1 - Raw Materials Supply

The raw material steel is Cold Rolled Non Annealed Flat Steel and Hot Rolled Pickled & Oiled Flat Steel which is produced in Tatmetal facility. Other than Cold Rolled Non Annealed Flat Steel and Hot Rolled Pickled & Oiled Flat Steel consumption of auxiliary raw materials used in the production line was used to calculate the environmental impact of the product due to raw material supply.

A2 - Raw Material Transport

Raw material and packaging transport data. The environmental impact was calculated using the weighted average of transport of raw materials purchased in 2023 by road and maritime transport.

A3 - Manufacturing

Details of electricity data used in LCA model

Country: Türkiye

Source Type: 97% Grid, 3% Renewable energy from solar panels

Electricity Data from the Grid: Residual mix is calculated by excluding renewable energy generation:

Coal: 62.7% • Oil: 0.7% • Natural gas: 36.6%.

Electricity Emission Factor: 0.78 kg CO₂ eq/kWh.

A4 - Product Transport

The shipment of the final products to the customer, the environmental impact was calculated with the weight average values of the shipments made in 2023. The products are transported via sea transportation and road transportation. 44% of the products were transported via road transportation and 56% of the products were transported via sea transportation.

A5 - Installation

Environmental impacts due to the packaging materials that leaves the system in construction stage were declared in this module. Energy requirement for construction and deconstruction assumed to be the same. Therefore, according to the JRC Technical Reports (Gervasio & Dimova, 2018) energy requirement for construction of steel products is assumed to be 0.239. MJ/kg electrical energy.



System Boundaries

C1 - Deconstruction

Covers the sources of energy used in steel deconstruction/demolition and evaluates the environmental impacts associated with energy consumption. According to the JRC Technical Reports (Gervasio & Dimova, 2018) for deconstruction of steel products 0.239 MJ/kg of energy is assumed to be consumed.

C2 - Waste Transportation

For the disposal of the product as waste after use, the distance to the waste site is assumed to be 100 km.

C3 - Waste Processing

According to the World Steel, 85% of steel products assumed to be collected for recycling. Environmental impacts due to the treatment of waste steel were shared in C3 module.

C4 - Disposal

Remaining 15% of waste steel goes to landfill according to the World Steel.

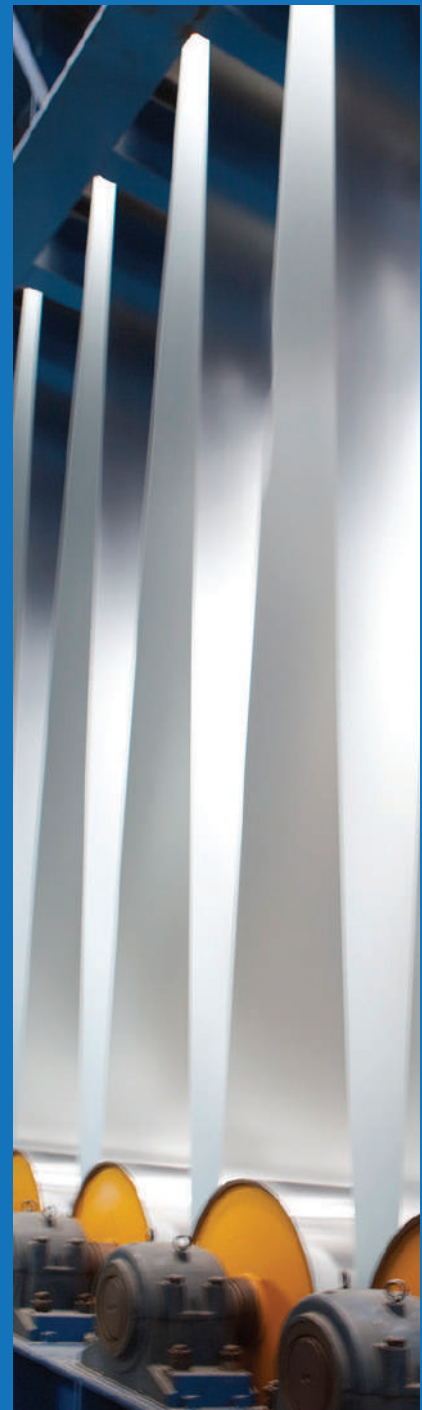
D - Reuse-Recovery-Recycling Potential

The benefits and loads of the recycled iron have been considered in module D. Module D covers the benefits and loads of the recycled steel in module C3. In other words, the scenario mentioned in module C3 for the recycled steel is taken into account to calculate the loads and benefits of related to recovery applications in the next life.

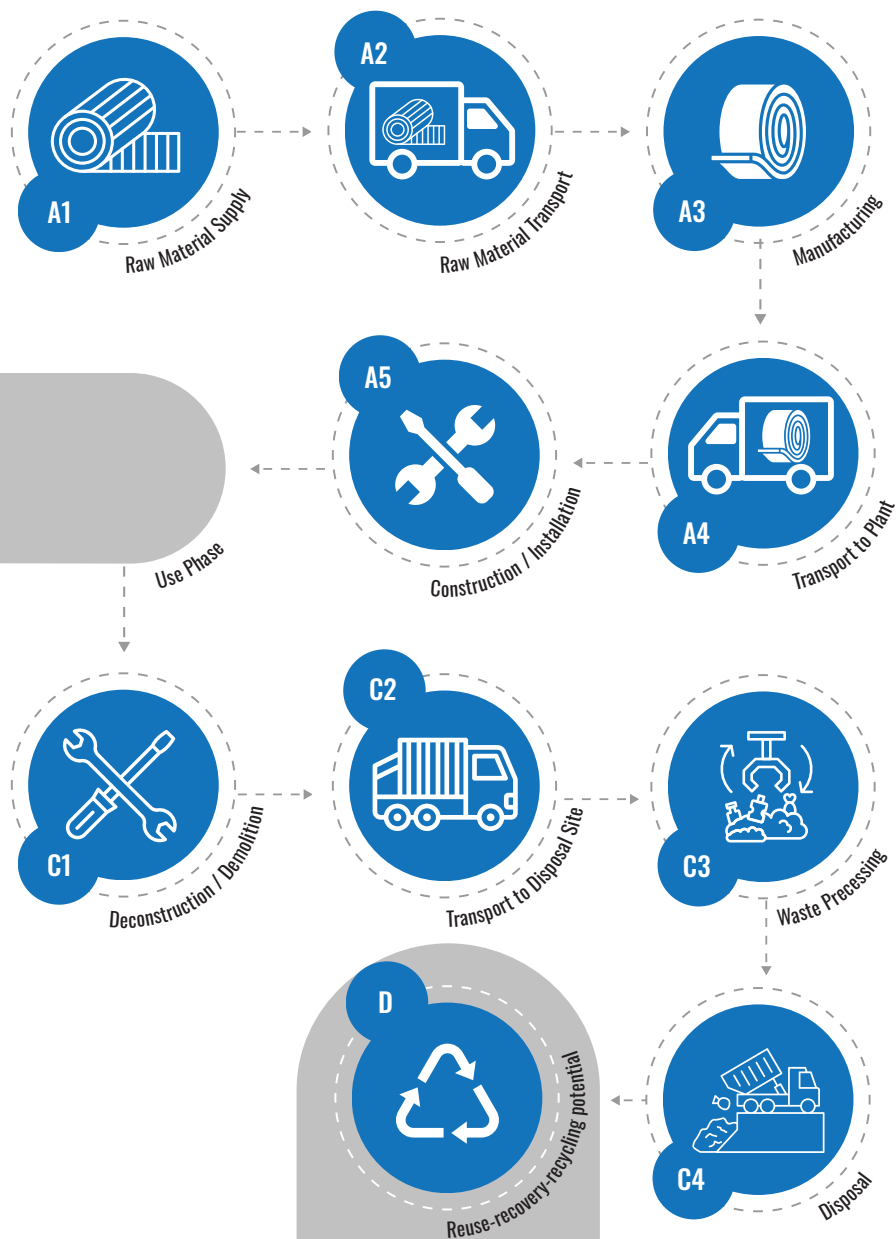
Potential environmental benefits are accounted for the net steel scrap generated at the end of a final product's lifecycle.

Net scrap = Amount of iron recycled at end-of-life – Scrap input from previous product life cycles

The amount of iron for avoided production is calculated by the difference between recycled scrap (850 kg) and scrap input to production (380 kg).



System Boundary



- A1-A3, A4, A5 and C modules are included in the system boundary. Also, module D is declared.

Content Information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
GZR	1000	37%	0
TOTAL	1000	37%	0
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Logo printed wrapping paper	0.11	0.01	0.42
Nylon	0.14	0.01	0
Metal	4.00	0.40	0
Plastic	0.27	0.03	0
Inner Corner	0.33	0.03	0
Wooden Pallet	2.71	0.27	0.42
TOTAL	7.56	0.76	0.84

LCA Information

Mandatory impact category indicators according to EN 15804+A2

Results for 1 Tonne of Galvanized Flat Steel									
Impact Indicators	Unit	 A1-A3	 A4	 A5	 C1	 C2	 C3	 C4	 D
GWP - Total	kg CO ₂ eq	1.91E+03	1.96E+01	4.29E+01	5.08E+01	1.04E+01	5.24E+01	9.91E-01	-8.41E+02
GWP - Fossil	kg CO ₂ eq	1.91E+03	1.96E+01	3.93E+01	5.02E+01	1.04E+01	5.23E+01	9.91E-01	-8.40E+02
GWP - Biogenic	kg CO ₂ eq	-3.04E+00	0.00E+00	3.04E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP - Luluc	kg CO ₂ eq	2.11E+00	7.71E-03	5.29E-01	5.37E-01	3.67E-03	1.16E-01	5.08E-04	-7.58E-01
ODP	kg CFC11 eq	1.40E-05	3.78E-07	2.39E-07	3.00E-07	2.16E-07	6.27E-07	2.81E-08	-5.97E-06
AP	mol H ⁺ eq	1.03E+01	1.72E-01	2.82E-01	3.28E-01	2.45E-02	3.47E-01	6.95E-03	-4.52E+00
EP - Freshwater	kg P eq	9.09E-01	1.19E-03	4.65E-02	5.05E-02	7.29E-04	1.12E-02	1.09E-04	-3.98E-01
EP - Marine	kg N eq	2.33E+00	4.34E-02	4.71E-02	5.79E-02	6.42E-03	1.37E-01	3.14E-03	-1.03E+00
EP - Terrestrial	mol N eq	2.51E+01	4.80E-01	4.19E-01	5.30E-01	6.94E-02	1.22E+00	2.88E-02	-1.11E+01
POCP	kg NMVOC eq	7.93E+00	1.64E-01	1.19E-01	1.57E-01	4.25E-02	3.90E-01	1.04E-02	-3.49E+00
ADP Minerals & Metals*	kg Sb eq	4.86E-02	4.60E-05	-1.52E-05	5.61E-05	2.89E-05	4.41E-04	1.55E-06	-2.20E-02
ADP Fossil*	MJ	2.19E+04	2.81E+02	8.00E+02	9.19E+02	1.55E+02	6.21E+02	2.39E+01	-9.44E+03
WDP*	m ³	2.55E+01	1.19E+00	2.32E+01	2.56E+01	7.40E-01	5.01E+00	9.89E-01	-1.28E+01
Acronyms	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.

LCA Information

Additional mandatory and voluntary impact category indicators

Results for 1 Tonne of Galvanized Flat Steel									
Indicator	Unit	 A1-A3	 A4	 A5	 C1	 C2	 C3	 C4	 D
GWP - GHG ¹	kg CO ₂ eq	1.92E+03	1.97E+01	4.00E+01	5.09E+01	1.04E+01	7.94E+01	1.18E+00	-8.43E+02

Resource use indicators

Results for 1 Tonne of Galvanized Flat Steel									
Indicator	Unit	 A1-A3	 A4	 A5	 C1	 C2	 C3	 C4	 D
PERE	MJ	2.34E+03	3.84E+00	-6.07+01	0.00E+00	2.39E+00	2.69E+01	2.18E-01	-1.05E+03
PERM	MJ	5.50E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.39E+03	3.84E+00	-6.07+01	0.00E+00	2.39E+00	2.69E+01	2.18E-01	-1.05E+03
PENRE	MJ	2.19E+04	2.81E+02	8.00E+02	9.19E+02	1.55E+02	6.21E+02	2.39E+01	-9.44E+03
PENRM	MJ	1.97E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	2.20E+04	2.81E+02	8.00E+02	9.19E+02	1.55E+02	6.21E+02	2.39E+01	-9.44E+03
SM	kg	3.80E+02	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	m3	2.60E+01	1.20E+00	2.33E+01	2.59E+01	7.41E-01	5.07E+00	9.90E-01	-1.30E+01
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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

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

LCA Information

Waste indicators

Results for 1 Tonne of Galvanized Flat Steel									
Indicator	Unit	 A1-A3	 A4	 A5	 C1	 C2	 C3	 C4	 D
Hazardous Waste Disposed	kg	1.87E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous Waste Disposed	kg	1.51E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E+02	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	0.00E+00	0.00E+00

Output flow indicators

Results for 1 Tonne of Galvanized Flat Steel									
Indicator	Unit	 A1-A3	 A4	 A5	 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	0.00E+00	0.00E+00
Material for Recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.50E+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	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	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	0.00E+00	0.00E+00

References

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

EN ISO 14001 / Environmental Management Systems - Requirements

ISO 14020:2000 / Environmental Labels and Declarations - General Principles

EN 15804:2012+A2:2019 / AC: 2021 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 The International EPD System, 2019:14 Version 1.3.4.

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.ecoinvent.org

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

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 TATÇELİK

