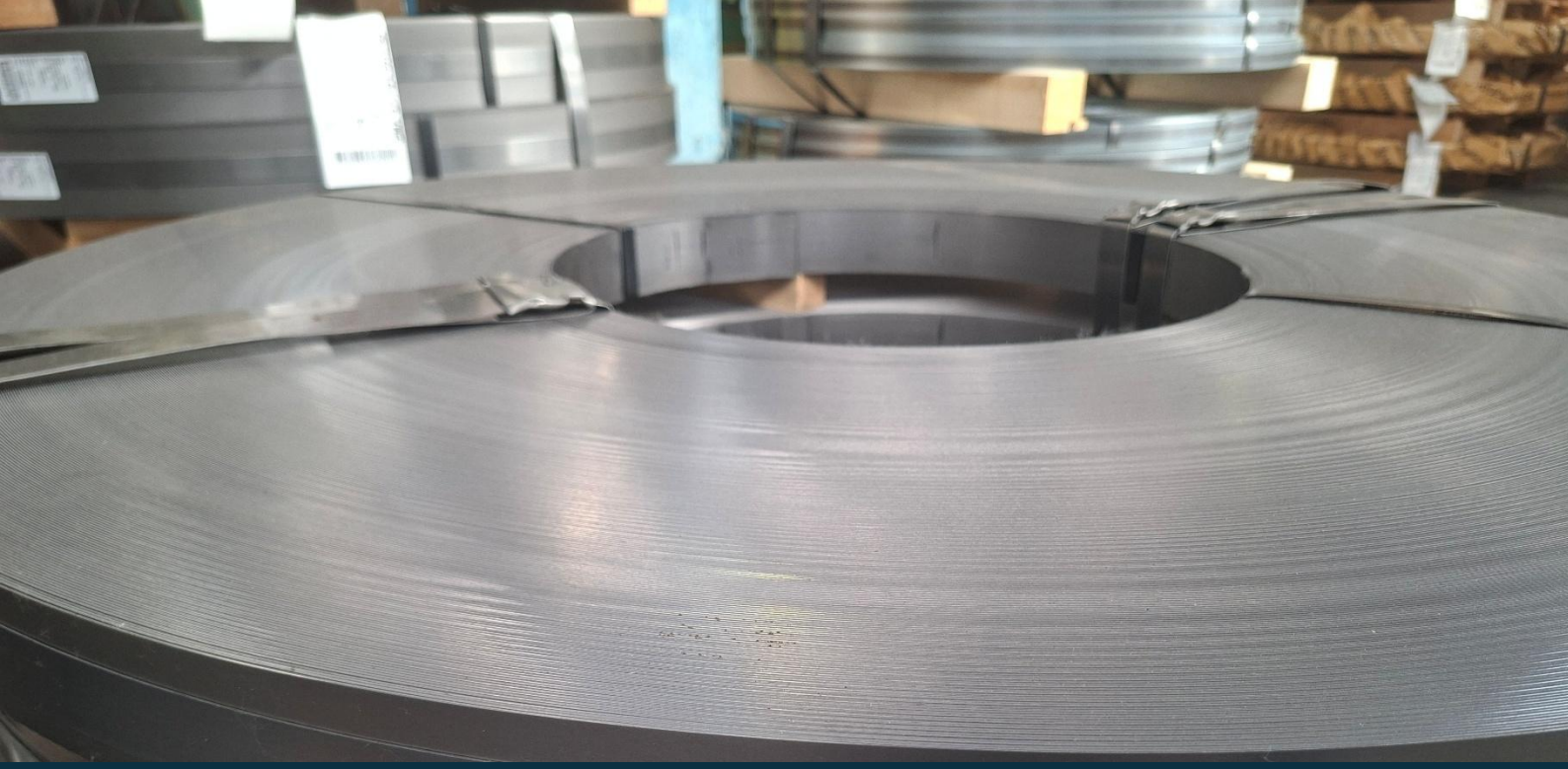


# Environmental Product Declaration

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

## LOW $CO_2$ EMISSION CARBON STEEL FLAT PRODUCTS FROM COLD ROLLED COILS

## Products not yet on the market

## Marcegaglia Carbon Steel S.p.A

This EPD covers multiple products, based on the average results of the product group


Programme: **The International EPD® System, www.environdec.com**

Programme operator: EPD International AB
Licensee: **EPD International**
EPD registration number: EPD-IES-0035099

Type of EPD: **EPD of multiple products, based in the average results of the product group**
Version date: 2026-10-21
Validity date: 2031-10-20


*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*

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# PROGRAMME INFORMATION

| | |
|---|---|
| **Programme:** | The International EPD® System |
| **Address:** | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| **Website:** | www.environdec.com |
| **E-mail:** | info@environdec.com |

Standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR):
Construction products, 2019:14, version 2.0.1., CPC 41231

PCR review was conducted by:
The Technical Committee of the International EPD System.
Review chair: Rob Rouwette (chair), Noa Meron (co-chair) – Contact through the secretariat
www.environdec.com/contact

Life Cycle Assessment (LCA)
LCA accountability: Made HSE S.r.l.

Third-party verifier:
Independent third-party verification of the declaration and data, according to ISO 14025, via:
☒ EPD verification by accredited certification body

Third-party verification: *Bureau Veritas Italia S.p.A.* is an approved certification body accountable for the third- party verification
The certification body is accredited by: *Accredia*

Procedure for follow-up of data during EPD validity involves third party verifier:
☒ Yes ☐ No

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:**
Marcegaglia Carbon Steel S.p.A
**Contact:**
For more information on this product declaration and/or its configurations, the following references are available:
Mail: info.carbonsteel@marcegaglia.com Phone: +39 0376 6851
**Company description:**
Marcegaglia Carbon Steel S.p.A. is the company of the Marcegaglia Group that transforms and markets flat products (coils, strips, and sheets) in carbon and pre-painted steel (PPGI) and carbon steel pipes. The company, thanks to advanced production technology and the most modern automation systems, enters the market for the creation of any type of finish on components and accessories, allowing it to satisfy the most demanding and customized requests.
**Product/system certifications:**

- Quality management system ISO 9001
- Environmental management system ISO 14001
- Health and safety management system ISO 45001
- Energy management system ISO 50001
- Social responsibility management system SA 8000
- Carbon Footprint Product systematic approach ISO 14067
- Carbon Footprint Organization ISO 14064

**Production site's name and localization:**

- Baiona street, 141 – 48123 – Ravenna (RA).

# PRODUCTS INFORMATION

**Product name:** Low $CO_2$ emission carbon steel flat products from cold rolled carbon steel coils

**Product identification:** Low $CO_2$ emission carbon steel flat products from cold rolled carbon steel coils

The products covered by this EPD are carbon steel flat products, characterized by a reduced $CO_2$ emission intensity. These products are not yet commercially available on the market. They are manufactured from low $CO_2$ emission carbon steel coils, which constitute the main raw material for their production.

**Product description:**
Starting with carbon steel coils processed entirely within its integrated and controlled production chain, Marcegaglia Carbon Steel manufactures a wide range of flat products, including pickled, cold-rolled, and galvanized coils; pickled, cold-rolled, and galvanized strips; as well as checkered and rusticated sheets.

Produced with high versatility and flexibility at the Ravenna (RA) facility, Marcegaglia's precision flat products benefit from static annealing and skin-pass lines integrated with cold rolling operations.

These processes ensure maximum consistency in mechanical and magnetic properties while also enhancing surface quality to meet specific application requirements.

The company's hot-rolled, cold-rolled, and galvanized coils serve a broad spectrum of industries, including mechanical engineering, packaging, construction, furniture manufacturing, home appliances, and plumbing and heating systems.

The specialized strip range includes grades for deep drawing, semi-processed magnetic steels, and galvanized materials with bright, smooth surfaces tailored for demanding applications such as fine blanking.

Marcegaglia Carbon Steel's flattened sheets are used across various sectors, including construction, urban infrastructure, storage systems, home appliances, mechanical components, and the automotive industry.

Detailed technical specifications for all products are available through the product catalogs on the company's website.

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

**Geographical scope**: Global

# LCA INFORMATION

**Declared unit:**
The declared unit of the system considered is the ton of flat products.

**Reference service life – RSL:**

For the products under study it is not possible to quantify the exact useful life as much also depends on their future use. However, it is emphasized that even when the deadline is reached, the product can be recycled and reused again to generate other raw materials.

**Time representativeness:**
The data used is representative of the year 2025.

**Database e software:**
Ecoinvent database v.3.11, April 2025 / Software used SimaPro rel. 10.5.0.1

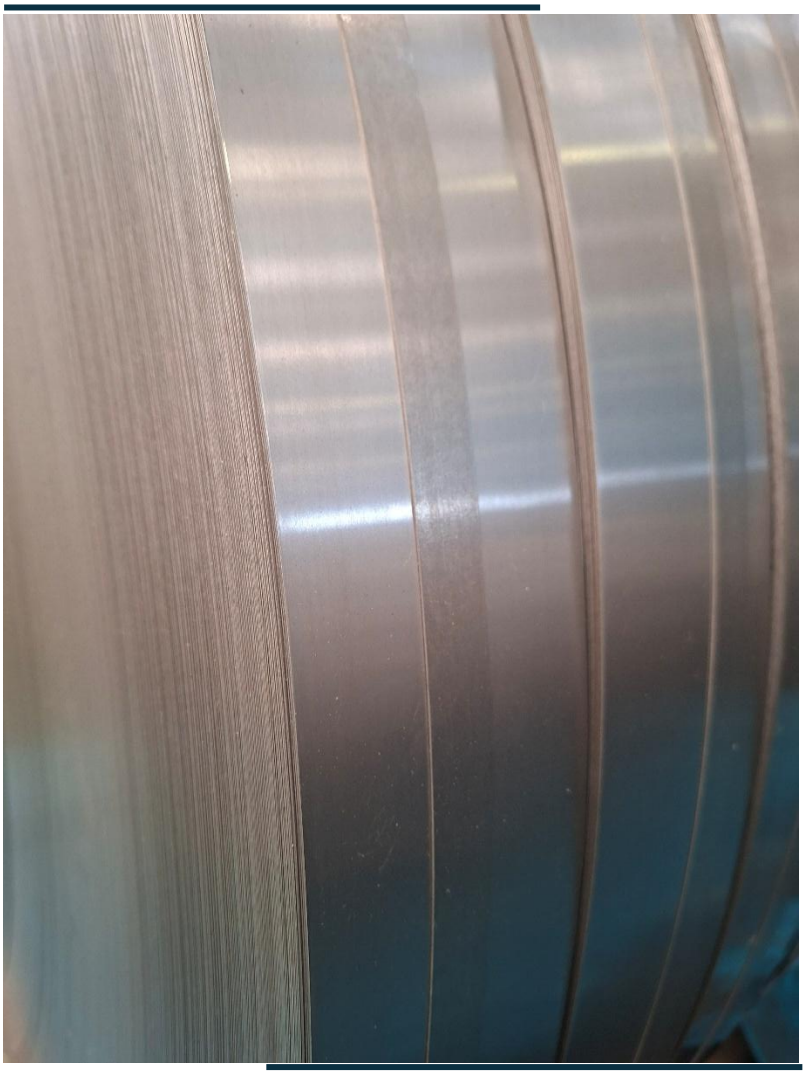
**Description of system boundaries:**
The study is entitled "Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)"

Modules A1-A3 cover material procurement processes (raw and auxiliary materials) as well as production processes.

Modules C1-C4 consider the uninstallation, transport, sorting and disposal of components resulting from end-of-life operations of the product. These operations are not directly controlled by the company: in this regard, data from the construction sector are therefore used:

- an average diesel consumption equivalent to 46 MJ for each ton of material demolished;
- an average distance of 80 km to transport the material to the recovery center;
- an average electricity consumption of 28 kWh for each ton of material sorted.

Module D considers the potential for recovery and recycling of steel from end-of-life processes: the calculation of the environmental benefits of steel recovery is based on the guidelines provided in the document "Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012 – Par. 6.3.4.6. Benefits and loads beyond the product system boundary, information Module D".



# DESCRIPTION OF MAIN ACTIVITIES

**COIL PRODUCTION**

The raw material arriving at the Marcegaglia Carbon Steel plant in Ravenna consists of carbon steel coils (almost entirely supplied from the dock on the site) and auxiliary materials.

Auxiliary materials are substances such as hydraulic oils, protective oils, lubricants, paints, pickling products and detergents, which enter as raw materials.

The range of semi-finished and finished products (sheets and strips) is derived from cold coils (pickled, cold rolled, annealed and skin-passed).

Pickling

During the pickling process, a treatment is performed on Black Coils which involves immersion of the strip in a hydrochloric acid solution at 18 ÷ 22% at a temperature of about 80 ° C in order to eliminate the surface layer and its impurities.

The treatment is carried out on a special automatic system that involves the unwinding of the strip, the induction welding of the tail of the strip during the treatment phase with the head of the next coil/strip, an accumulation floop to guarantee the continuous feeding of the line, the passage to the inside the tanks containing the acid solution and the rewinding of the pickled coil/strip.

The handling of the coils is carried out by means of bridge cranes.

To eliminate the oxides resulting from the oxidation of the material in the hot rolling phase, which constitute an obstacle to the following treatments and to obtain a better quality material, the strip is subjected to the pickling process which consists in the removal of surface impurities

Rolling

The rolling system carries out a reduction in the thickness of the coils resulting from the pickling process, by means of a pressure system through special cylinders that are constantly lubricated and cooled.

The following two cold rolling systems are also present: reversing rolling with 2 stands – Quarter and reversing rolling mill.

Annealing

Annealing is a heat treatment that consists of heating the rolled steel coils from the rolling lines to a certain temperature, in non-oxidizing environments, in order to eliminate the hardening of the cold rolled strips and to thicken the grain to obtain a "softening" proportional to the degree of hardness required for the strip itself.

Skin-passing

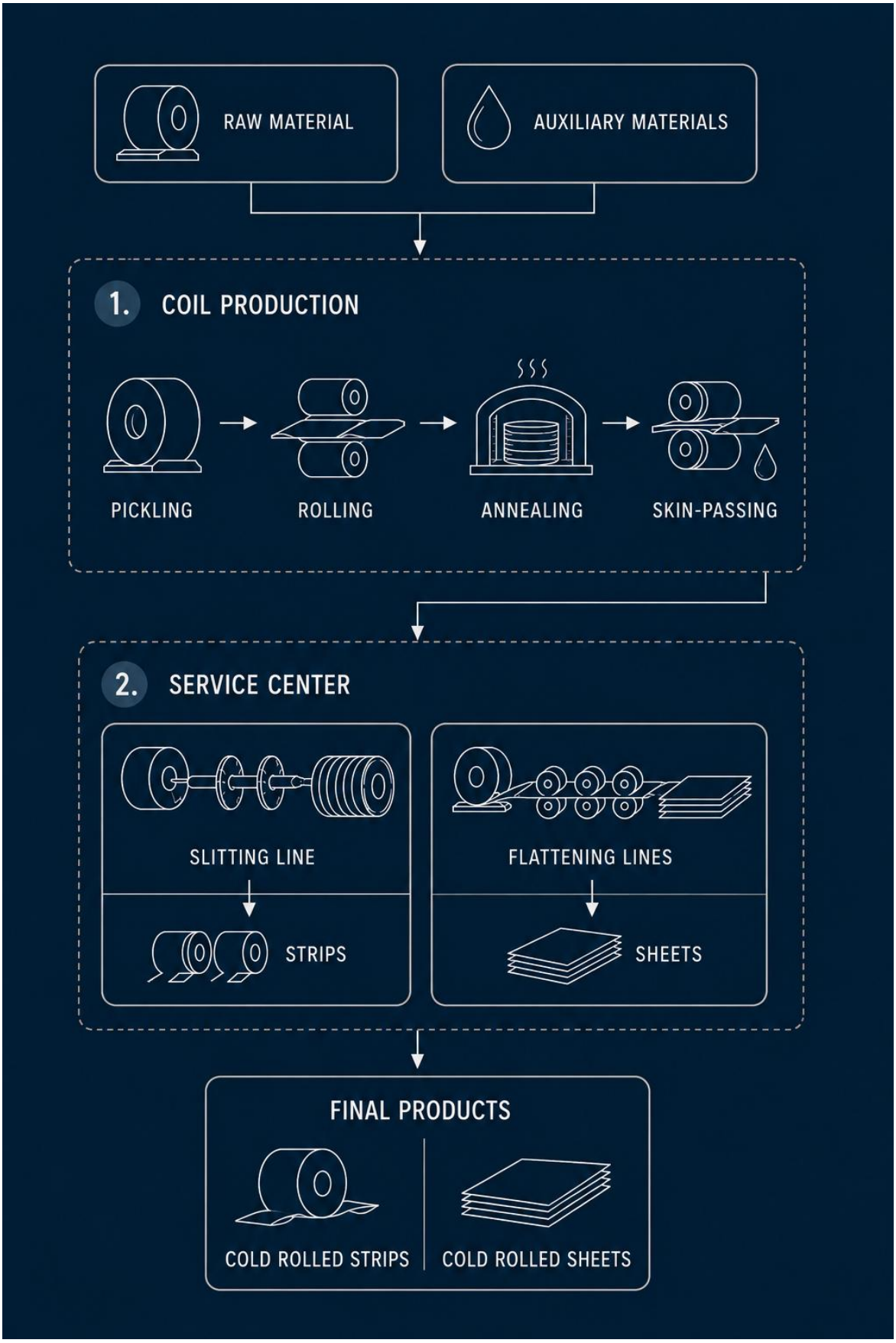
Cold skin-passing of the coils coming from the heat treatment in the annealing furnaces is carried out. The processing essentially consists of two phases: skin-passing of the strip (percentage elongation) and subsequent application of a protective oil film.

**STRIPS AND SHEET PRODUCTION**

Service center

The coils coming from different phases of the plant's production cycle are processed on the shearing or flattening lines. From the slitting line, strips of various dimensions are obtained (coil unwinding and longitudinal cutting with subsequent rewinding of the strips thus produced) while from the flattening lines flattened sheets are obtained (coil unwinding and flattening with subsequent transverse cutting to the desired length and unloading).

# SYSTEM DIAGRAM



# CONTENT INFORMATION

| Product content | Weight, kg | Pre and Post-consumer recycled content | Biogenic material, weight-% and kg C/kg |
|---|---|---|---|
| Low-Carbon steel | 1,000 | 87% | 0 |

| Packaging materials | Weight, kg | Weight-% (versus the product) | Biogenic material, kg C/product or declared unit |
|---|---|---|---|
| plastic | 0.3 | 0.03% | 0 |
| wood | 6.6 | 0.66% | 5.5 |
| steel | 2.2 | 0.22% | 0 |

The quantities of such packaging in relation to one ton of final product represent less than 1%.

Electricity information

The electricity used in the manufacturing process of module A3 accounts less than 30% of the GWP-GHG results of modules A1-A3. The climate impact of electricity in module A3 amounts to 0.272 kg $CO_2$ eq./kWh. The electricity mix is composed of grid electricity entirely covered by Guarantees of Origin, on-site photovoltaic systems and a cogeneration unit.

Allocation rules

An allocation was made on a mass basis for energy consumption, water discharges, atmospheric emissions and waste.

# MODULES DECLARED

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

| | A1-A3 Product stage | | | A4-A5 Construction process stage | | B1-B7 Use stage | | | | | | | C1-C4 End of life stage | | | | D Benefits and loads beyond the system boundary |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | ND | ND | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | EU | EU | IT | - | - | - | - | - | - | - | - | - | GLO | GLO | GLO | IT | IT |
| Specific data | 68% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variations-product | -1.9% / +3.1% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variations-site | - | | | | | - | - | - | - | - | - | - | - | - | - | - | - |

X = Module considered | ND = Module not declared | GLO = Global | IT = Italy | EU = Europe

# DATA QUALITY

Data quality was assessed in accordance with EN15804+A2 and the General Programme Instructions of the International EPD System (version 5.0.1, Annex A).

Data refer to the same monitoring period (2025) and set of EPD Carbon Steel Flat products from cold rolled coils by Marcegaglia Carbon Steel already publish on EPD International and the data quality requirements are considered to be fulfilled. The products included were designed to be launched on the market in the coming year.

Data have been collected by direct interviews with employers involved in production processes, during specific field-visits in different plant sections or derived from registered company reports. Collected data refer to the monitoring period 2025 calendar year, considered as representative period for all production processes. Secondary representative data refer to the Ecoinvent database v.3.11.

The EPD incorporates both primary data collected directly from the company and secondary data come from Ecoinvent database. The quality of the data assessed in terms of temporal coverage, geographical, and technological representativeness is rated as Very Good.

| Life cycle stage | Data contribution to GWP [%] | Geographical representativeness | Temporal representativeness | Technological representativeness |
|---|---|---|---|---|
| A1 | 68% | Very good | Good | Good |

| Process | Source type | Source | Reference year | Data category | Share of primary data, of GWP-GHG results for A1-A3 |
|---|---|---|---|---|---|
| Manufacturing of product | Collected data | EPD owner | 2025 | Primary data | 10% |
| Generation of electricity used in manufacturing of product | Collected data certificates of origin | EPD owner | 2025 | Primary data | 3% |
| Transport of steel to manufacturing site | Database | Ecoinvent v3.11 | 2007/2015 | Primary data | 18% |
| Production of steel | Environmental Declaration | EPD S-P-11080 | 2021 | Primary data | 68% |
| Production of packaging | Database Collected data | Ecoinvent v3.11 EPD owner | 2018 | Primary data, secondary data | 0.01% |
| Total share of primary data, of GWP-GHG results for A1-A3 | | | | | 99% |

# ENVIRONMENTAL INFORMATION

The environmental performance indicators refer to 1 ton of flat products. The characterization factors used in this assessment are based on EN 15804+A2 - EF 3.1, which provide a method for quantifying the environmental impact.

## Environmental impact

| Impact category | Abb. | Unit |
|---|---|---|
| Climate change - total | GWP - t | kg $CO_2$ eq |
| Climate change - Fossil | GWP - fossil | kg $CO_2$ eq |
| Climate change - Biogenic | GWP - biogenic | kg $CO_2$ eq |
| Climate change - Land use and LU change | GWP - luluc | kg $CO_2$ eq |
| Climate change - Greenhouse Gases | GWP - GHG | kg $CO_2$ eq. |
| Ozone depletion | ODP | kg CFC11 eq |
| Photochemical ozone formation | POCP | kg NMVOC eq |
| Acidification of land and water | AP | mol H+ eq |
| Eutrophication | EP - freshwater | kg P eq |
| | EP - marine | kg N eq |
| | EP - terrestrial | mol N eq |
| Water use * | WDP | $m^3$ depriv. |
| Resource use, fossils * | ADP - F | MJ |
| Resource use, minerals, and metals * | ADP - MM | kg Sb eq |

** The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.*

## Resource use

| Impact category | Abb. | Unit |
|---|---|---|
| Use of renewable primary energy excluding renewable primary energy resources used as raw materials | PERE | MJ |
| Use of renewable primary energy resources used as raw materials | PERM | MJ |
| Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) | PERT | MJ |
| Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | PENRE | MJ |
| Use of non-renewable primary energy resources used as raw materials | PENRM | MJ |
| Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) | PENRT | MJ |
| Use of secondary material | SM | kg |
| Use of renewable secondary fuels | RSF | MJ |
| Use of non-renewable secondary fuels | NRSF | MJ |
| Use of net fresh water | FW | $m^3$ |

## Waste production

| Impact category | Abb. | Unit |
|---|---|---|
| Hazardous waste disposed | HW | kg |
| Non-hazardous waste disposed | NHW | kg |
| Radioactive waste disposed | RW | kg |

## Output flows

| Impact category | Abb. | Unit |
|---|---|---|
| Reuse | REUSE | kg |
| Materials for recycling | RECYCLE | kg |
| Materials for energy recovery | EN-REC | kg |
| Exported energy-electricity | EE-E | MJ |
| Exported energy-thermal energy | EE-T | MJ |

# LOW $CO_2$ EMISSION CARBON STEEL FLAT PRODUCTS FROM COLD ROLLED COILS

| Abb. | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| GWP - t | kg $CO_2$ eq | 9.79E+02 | 4.63E+00 | 8.45E+00 | 9.31E+00 | 7.01E-01 | -1.20E+02 |
| GWP - fossil | kg $CO_2$ eq | 9.83E+02 | 4.63E+00 | 8.44E+00 | 9.22E+00 | 7.01E-01 | -1.19E+02 |
| GWP - biogenic | kg $CO_2$ eq | -4.92E+00 | 9.29E-04 | 4.97E-03 | 9.77E-02 | 4.81E+00 | -1.93E-01 |
| GWP - luluc | kg $CO_2$ eq | 4.01E-01 | 4.74E-04 | 3.04E-03 | 8.85E-04 | 4.01E-04 | -7.62E-02 |
| GWP - GHG | kg $CO_2$ eq | 9.85E+02 | 4.63E+00 | 8.44E+00 | 9.22E+00 | 7.01E-01 | -1.20E+02 |
| ODP | kg CFC-11 eq | 9.71E-06 | 6.87E-08 | 1.84E-07 | 2.33E-07 | 1.95E-08 | -5.76E-07 |
| POCP | kg NMVOC eq | 2.87E+00 | 6.31E-02 | 4.42E-02 | 2.27E-02 | 7.43E-03 | -4.00E-01 |
| AP | mol H+ eq | 2.89E+00 | 4.14E-02 | 2.79E-02 | 2.32E-02 | 4.91E-03 | -5.13E-01 |
| EP - freshwater | kg P eq | 2.14E-02 | 1.49E-04 | 5.95E-04 | 1.51E-03 | 6.13E-05 | -7.04E-02 |
| EP - marine | kg N eq | 7.81E-01 | 1.93E-02 | 9.48E-03 | 5.00E-03 | 1.88E-03 | -1.16E-01 |
| EP - terrestrial | mol N eq | 8.16E+00 | 2.11E-01 | 1.03E-01 | 5.19E-02 | 2.06E-02 | -1.19E+00 |
| WDP | $m^3$ depriv. | 2.54E+02 | 1.74E-01 | 7.01E-01 | 1.17E+00 | 7.62E-01 | -3.70E+01 |
| ADP - F | MJ | 1.21E+04 | 6.03E+01 | 1.23E+02 | 1.49E+02 | 1.72E+01 | -1.26E+03 |
| ADP - MM | kg Sb eq | 1.63E-03 | 1.61E-06 | 2.37E-05 | 8.55E-06 | 1.02E-06 | -8.78E-04 |
| PERE | MJ | 2.94E+03 | 3.78E-01 | 1.90E+00 | 7.18E+00 | 1.60E-01 | -1.26E+02 |
| PERM | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PERT | MJ | 2.94E+03 | 3.78E-01 | 1.90E+00 | 7.18E+00 | 1.60E-01 | -1.26E+02 |
| PENRE | MJ | 1.21E+04 | 6.03E+01 | 1.23E+02 | 1.49E+02 | 1.72E+01 | -1.26E+03 |
| PENRM | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PENRT | MJ | 1.21E+04 | 6.03E+01 | 1.23E+02 | 1.49E+02 | 1.72E+01 | -1.26E+03 |
| SM | kg | 1.13E+03 | 2.49E-02 | 5.21E-02 | 1.89E-02 | 4.27E-03 | -2.15E+01 |
| RSF | MJ | 2.29E+00 | 6.54E-05 | 6.88E-04 | 1.16E-04 | 8.92E-05 | -1.31E-02 |
| NRSF | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| FW | $m^3$ | 1.66E+01 | 4.25E-03 | 1.72E-02 | 2.78E-02 | 1.78E-02 | -9.48E-01 |
| HW | kg | 7.48E+02 | 6.76E-02 | 1.80E-01 | 2.80E-01 | 1.95E-02 | -4.77E+01 |
| NHW | kg | 2.79E+03 | 9.85E-01 | 3.67E+00 | 7.98E+00 | 4.52E-01 | -6.41E+02 |
| RW | kg | 5.55E-02 | 6.30E-06 | 3.40E-05 | 1.88E-04 | 2.50E-06 | -9.39E-04 |
| REUSE | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| RECYCLE | kg | 3.86E+00 | 2.68E-04 | 1.49E-03 | 1.03E-02 | 1.86E-04 | -6.20E-02 |
| EN-REC | kg | 1.26E-03 | 8.57E-07 | 5.45E-06 | 1.96E-06 | 3.30E-07 | -4.92E-04 |
| EE-E | MJ | 8.55E+00 | 2.85E-03 | 2.08E-02 | 7.76E-03 | 1.11E-03 | -3.43E-01 |
| EE-T | MJ | 4.80E+00 | 1.34E-03 | 2.21E-02 | 7.25E-03 | 5.91E-04 | -6.48E-01 |

- Additional impact results for 100% Landfill end-of-life scenarios:

| Abb. | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| GWP - t | kg $CO_2$ eq | 9.79E+02 | 4.63E+00 | 8.45E+00 | 9.31E+00 | 6.26E+00 | 0.00E+00 |
| GWP - fossil | kg $CO_2$ eq | 9.83E+02 | 4.63E+00 | 8.44E+00 | 9.22E+00 | 6.26E+00 | 0.00E+00 |
| GWP - biogenic | kg $CO_2$ eq | -4.92E+00 | 9.29E-04 | 4.97E-03 | 9.77E-02 | 3.01E-03 | 0.00E+00 |
| GWP - luluc | kg $CO_2$ eq | 4.01E-01 | 4.74E-04 | 3.04E-03 | 8.85E-04 | 3.58E-03 | 0.00E+00 |
| GWP - GHG | kg $CO_2$ eq | 9.85E+02 | 4.63E+00 | 8.44E+00 | 9.22E+00 | 6.26E+00 | 0.00E+00 |
| ODP | kg CFC-11 eq | 9.71E-06 | 6.87E-08 | 1.84E-07 | 2.33E-07 | 1.74E-07 | 0.00E+00 |
| POCP | kg NMVOC eq | 2.87E+00 | 6.31E-02 | 4.42E-02 | 2.27E-02 | 6.63E-02 | 0.00E+00 |
| AP | mol H+ eq | 2.89E+00 | 4.14E-02 | 2.79E-02 | 2.32E-02 | 4.38E-02 | 0.00E+00 |
| EP - freshwater | kg P eq | 2.14E-02 | 1.49E-04 | 5.95E-04 | 1.51E-03 | 5.48E-04 | 0.00E+00 |
| EP - marine | kg N eq | 7.81E-01 | 1.93E-02 | 9.48E-03 | 5.00E-03 | 1.68E-02 | 0.00E+00 |
| EP - terrestrial | mol N eq | 8.16E+00 | 2.11E-01 | 1.03E-01 | 5.19E-02 | 1.84E-01 | 0.00E+00 |
| WDP | $m^3$ depriv. | 2.54E+02 | 1.74E-01 | 7.01E-01 | 1.17E+00 | 6.80E+00 | 0.00E+00 |
| ADP - F | MJ | 1.21E+04 | 6.03E+01 | 1.23E+02 | 1.49E+02 | 1.53E+02 | 0.00E+00 |
| ADP - MM | kg Sb eq | 1.63E-03 | 1.61E-06 | 2.37E-05 | 8.55E-06 | 9.11E-06 | 0.00E+00 |

- Additional impact results for 100% Recycling end-of-life scenarios:

| Abb. | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| GWP - t | kg $CO_2$ eq | 9.79E+02 | 4.63E+00 | 8.45E+00 | 9.31E+00 | 0.00E+00 | -1.29E+03 |
| GWP - fossil | kg $CO_2$ eq | 9.83E+02 | 4.63E+00 | 8.44E+00 | 9.22E+00 | 0.00E+00 | -1.28E+03 |
| GWP - biogenic | kg $CO_2$ eq | -4.92E+00 | 9.29E-04 | 4.97E-03 | 9.77E-02 | 0.00E+00 | -2.08E+00 |
| GWP - luluc | kg $CO_2$ eq | 4.01E-01 | 4.74E-04 | 3.04E-03 | 8.85E-04 | 0.00E+00 | -8.19E-01 |
| GWP - GHG | kg $CO_2$ eq | 9.85E+02 | 4.63E+00 | 8.44E+00 | 9.22E+00 | 0.00E+00 | -1.28E+03 |
| ODP | kg CFC-11 eq | 9.71E-06 | 6.87E-08 | 1.84E-07 | 2.33E-07 | 0.00E+00 | -6.19E-06 |
| POCP | kg NMVOC eq | 2.87E+00 | 6.31E-02 | 4.42E-02 | 2.27E-02 | 0.00E+00 | -4.30E+00 |
| AP | mol H+ eq | 2.89E+00 | 4.14E-02 | 2.79E-02 | 2.32E-02 | 0.00E+00 | -5.51E+00 |
| EP - freshwater | kg P eq | 2.14E-02 | 1.49E-04 | 5.95E-04 | 1.51E-03 | 0.00E+00 | -7.56E-01 |
| EP - marine | kg N eq | 7.81E-01 | 1.93E-02 | 9.48E-03 | 5.00E-03 | 0.00E+00 | -1.25E+00 |
| EP - terrestrial | mol N eq | 8.16E+00 | 2.11E-01 | 1.03E-01 | 5.19E-02 | 0.00E+00 | -1.28E+01 |
| WDP | $m^3$ depriv. | 2.54E+02 | 1.74E-01 | 7.01E-01 | 1.17E+00 | 0.00E+00 | -3.98E+02 |
| ADP - F | MJ | 1.21E+04 | 6.03E+01 | 1.23E+02 | 1.49E+02 | 0.00E+00 | -1.36E+04 |
| ADP - MM | kg Sb eq | 1.63E-03 | 1.61E-06 | 2.37E-05 | 8.55E-06 | 0.00E+00 | -9.44E-03 |

# ADDITIONAL LCA RESULTS OF THE PRODUCT

The grouping of these products within a single EPD is considered appropriate, as they belong to the same raw material family. Variations above 10% are therefore justified and transparently reported in the LCA results, in accordance with the applicable EPD requirements.

| LCA result of one declared unit product (A-C) | Unit | Min | Max |
|---|---|---|---|
| GWP - t | kg CO2 eq | -1.9% | 3.1% |
| GWP - fossil | kg CO2 eq | -2.4% | 3.7% |
| GWP - biogenic | kg CO2 eq | -101.4% | 118.4% |
| GWP - luluc | kg CO2 eq | -4.3% | 5.5% |
| GWP - GHG | kg CO2 eq | -2.4% | 3.7% |
| ODP | kg CFC11 eq | -3.1% | 4.9% |
| POCP | kg NMVOC eq | -2.8% | 4.1% |
| AP | mol H+ eq | -2.8% | 4.0% |
| EP - freshwater | kg P eq | -21.0% | 18.1% |
| EP - marine | kg N eq | -3.0% | 4.2% |
| EP - terrestrial | mol N eq | -2.7% | 4.0% |
| WDP | m3 depriv. | -3.1% | 4.2% |
| ADP - F | MJ | -2.5% | 4.0% |
| ADP - MM | kg Sb eq | -4.9% | 5.8% |

# ADDITIONAL ENVIRONMENTAL INFORMATION

The steel used has an average recycled content of 87%: this percentage is calculated as a weighted average of the incoming raw material (from Type III environmental declarations). The steel supplies come from an electric arc furnace.

Regardless of the type of product considered, the element that most affects the final result is the purchased steel. It should be noted that at the end of its useful life, the product is destined for recycling. In particular, the amount of steel destined for recycling is 88.9 % in line with what is indicated in the “Special waste report” of ISPRA – No. 433/2026.

The products do not contain hazardous substances from the SVHC Candidate List for Authorization in quantities greater than 0.1%.

# VERSION HISTORY

This is the original version of EPD according to PCR 2019:14 Construction products (EN 15804+A2) vers. 2.0.1 and General Programme Instructions of the International EPD® System. Version 5.0.1.

# ABBREVIATIONS

| Abbreviation | Definition |
|---|---|
| EN | European Norm (Standard) |
| GPI | General Programme Instructions |
| ISO | International Organization for Standardization |
| CEN | European Committee for Standardization |
| CPC | Central product classification |
| SVHC | Substances of Very High Concern |
| ND | Not Declared |
| D | Declared |

# REFERENCES


- General Programme Instructions of the International EPD® System. Version 5.0.1;
- PCR 2019:14 Construction products (EN 15804+A2) vers. 2.0.1 (2025-06-05) ;
- LCA Study_rev00_data 2025 (20/08/2026);
- Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2012;
- Ecoinvent database v.3.11 – April, 2025;
- ISO 14025: 2010 “Environmental labels and declarations - Type III environmental declarations - Principles and procedures”;
- ISO 14040:2021 “Environmental management - Life cycle assessment - Principles and framework”;
- ISO 14044:2021 “Environmental management - Life cycle assessment - Requirements and guidelines”;
- ISO 15804:2021 “Sustainability of buildings - Environmental product declarations - Development framework rules by product category”;
- CSIRO “Metal recycling: The need for a life cycle approach” – May 2013;
- Environmental engineering "WASTE FROM CONSTRUCTION AND LCA DEMOLITION FROM THE DEMOLITION OF 51 RESIDENTIAL BUILDINGS" - Michele Paleari, Politecnico di Milano – 26-11-2015;
- ISPRA “ Special waste report” – n° 433/2026 – Ed. 2026.




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