



ENVIRONMENTAL PRODUCT DECLARATION

EN

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

COILS, STRIPS AND SHEETS IN CARBON STEEL

From
Marcegaglia Carbon Steel S.p.A.

Programme:

The International EPD® System
www.environdec.com

Programme operator:

EPD International AB

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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



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General information

PROGRAMME INFORMATION

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

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

Product Category Rules (PCR):
Construction products, 2019:14, version 1.11, UN CPC 54, valid until 20-12-2024

PCR review was conducted by:

The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña - Contact via the Secretariat www.environdec.com/contact

Independent third-party verification of the declaration and data, according to ISO 14025:2010, via:
 EPD verification by individual verifier

Third-party verifier: *Guido Croce*

Approved by:
International EPD® System Technical Committee, supported by the Secretariat

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 from different programmes may not be comparable.
EPDs of construction products may not be comparable if they do not comply with UNI EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

COMPANY INFORMATION

Owner of the EPD:

Marcegaglia Carbon Steel S.p.A.
info.carbonsteel@marcegaglia.com

Contact:

To obtain more information about this product declaration and / or its configurations, the following references are available:

Mail: info@marcegaglia.com

Phone: +39 . 0376 6851

Description of the organisation:

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-related or management system-related certifications:

- Quality management system compliant with the requirements of the standard UNI EN ISO 9001:2015

(certificate n° 10233/04/S – valid until 14/01/2025);

- Environmental management system compliant with the requirements of the standard UNI EN ISO 14001:2015 (certificato n° EMS-262/S – valid until 25/07/2025);
- Health and safety management system compliant with the requirements of the standard UNI ISO 45001:2018 (certificate n° OHS-260 – valid until 25/09/2025);
- Energy management system compliant with the requirements of the standard UNI CEI EN ISO 50001:2018 (certificate n° EnergyMS-137 – valid until 14/12/2023);
- Social responsibility management system compliant with the requirements of the standard SA 8000:2014 (certificate n° SA-2040 – valid until 04/04/2025).

Name and location of production site(s):

- Corsico plant: Antonio Canova street, 7/9 – 20094 – Corsico (MI);
- Gazoldo degli Ippoliti plant: Bresciani street, 16 – 46040 – Gazoldo Degli Ippoliti (MN);
- Ravenna plant: Baiona street, 141 – 48123 – Ravenna (RA).

PRODUCT INFORMATION

Product name:

coils, strips and sheets in carbon steel

Product identification:

coils, strips and sheets in carbon steel

Product description:

Starting from the processing as part of its controlled production chain of carbon steel coil, Marcegaglia Carbon Steel obtains the range of flat products that include pickled, cold rolled and galvanized coils, pickled, cold and rolled and galvanized strips and checkered sheets, and rusticated. With great versatility and flexibility, Marcegaglia precision flat products are produced in the plants of Gazoldo degli Ippoliti (MN), Ravenna (RA) and Corsico (MI).

The static annealing and skinpassing plants connected to the cold rolling lines allow to obtain the maximum uniformity of the mechanical and magnetic properties of the machined steels, as well as to improve the surface qualities, according to the intended applications.

Among the many sectors served by the range of hot, cold and galvanized coils are the mechanical and packaging

industry, construction, the production of furniture, household appliances, plumbing and heating systems.

The range of special Marcegaglia Carbon Steel belts includes, in addition to grades for deep drawing, semi-processed magnetic steels and galvanized materials with shiny smooth surfaces for specific industrial applications including fine blanking.

Construction, street furniture, storage systems, household appliances, mechanics and automotive are some of the sectors of use of the Marcegaglia Carbon Steel range of flattened sheets.

From the company website it is possible to consult the product catalogs within which the technical characteristics of the same are described in detail.

UN CPC CODE:

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

Geographical scope:

worldwide

LCA INFORMATION

Functional unit:

The functional unit of the system considered is 1 tonne of flat product.

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 are representative of the year 2021.

Database(s) and LCA software used:

Ecoinvent database v.3.8, November 2021 / Software used SimaPro rel. 9.3.0.3.

Description of the system boundaries:

The study is "Cradle to gate with modules C1 – C4 and module D (A1 – A3 + C + D)" (reference: PCR 2019: 14 vers. 1.11 valid until 31-12-2022).

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

Modules C1-C4 consider the uninstallation, transport, sorting and disposal of components deriving from the end-of-life operations of road barriers. These operations are not directly controllable by the company: in this regard, literature data relating to the construction sector are therefore used. It is considered:

- an average consumption of diesel fuel equivalent to 143.2 MJ as well as 0.013 MWh of electricity for each ton of demolished material;
- an average distance of 80 km to transport the material to the recovery center;
- the same energy consumption already mentioned for the demolition activity also for the waste treatment activity.

Module D considers the recovery and recycling potential of steel deriving from end-of-life processes: the calculation of the environmental benefits deriving from the recovery of steel is based on the indications provided by 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".

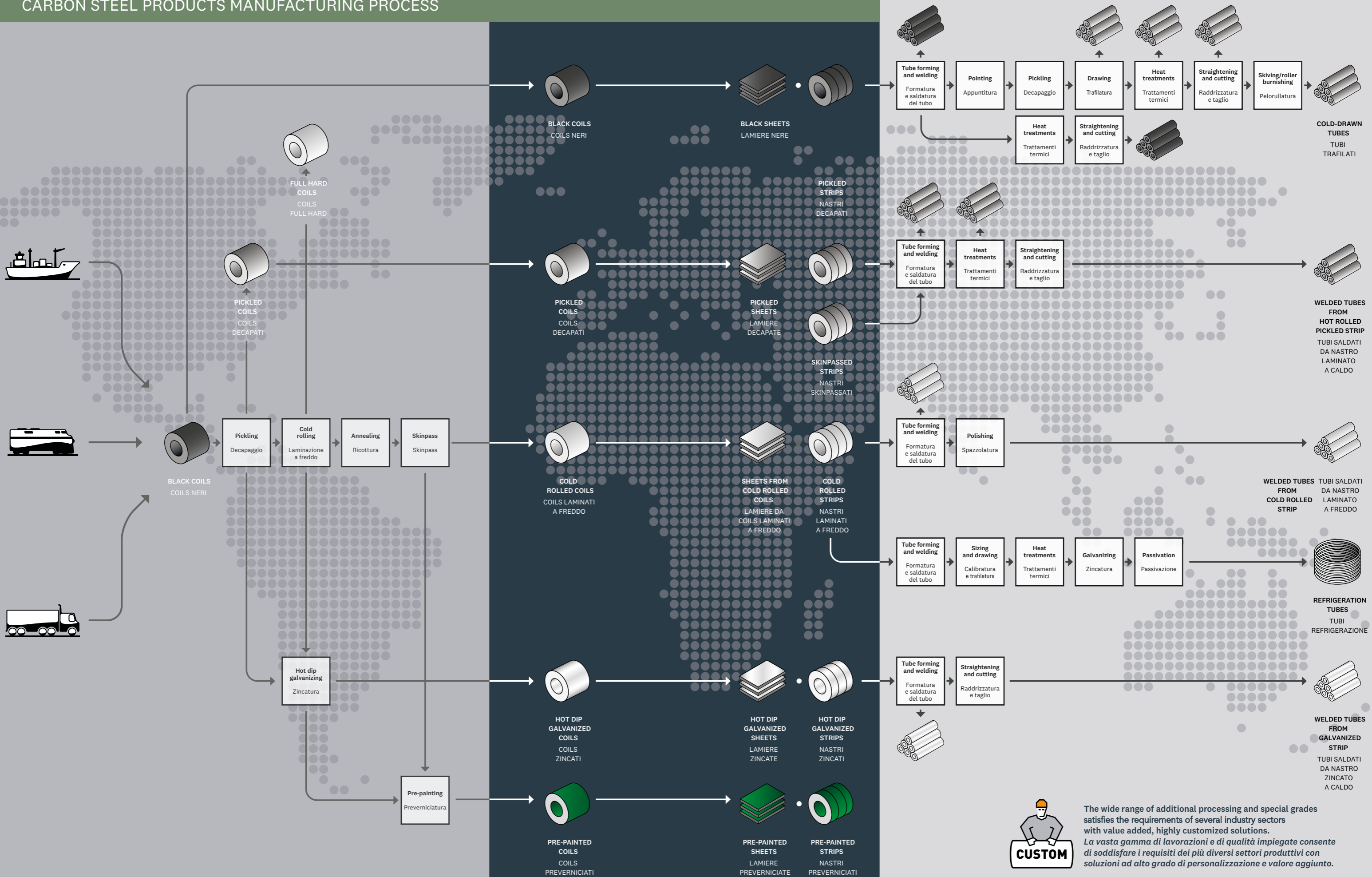
DIFFERENCES VERSUS PREVIOUS VERSIONS

Compared to the previous version (2023-02-10 Version 1), an editorial change was made, specifying in the paragraph "Information on the content" which production

processes the raw material comes from. The results of the environmental impact indicators have not changed.

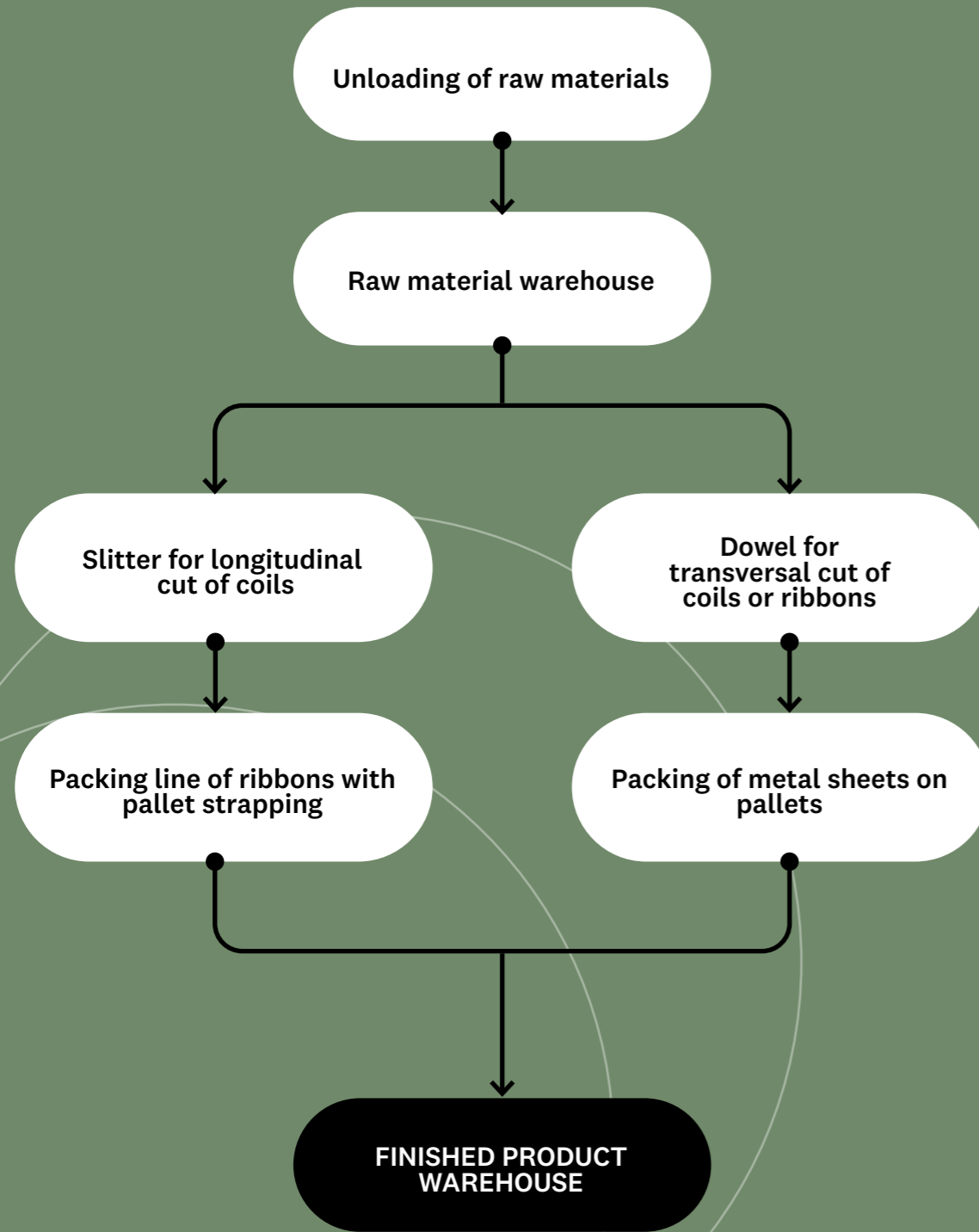
DIAGRAM OF THE PRODUCTION PROCESS OF PRODUCTION OF FLAT PRODUCTS

CARBON STEEL PRODUCTS MANUFACTURING PROCESS



The wide range of additional processing and special grades satisfies the requirements of several industry sectors with value added, highly customized solutions. *La vasta gamma di lavorazioni e di qualità impiegate consente di soddisfare i requisiti dei più diversi settori produttivi con soluzioni ad alto grado di personalizzazione e valore aggiunto.*

BLOCK DIAGRAM OF THE PRODUCTION PROCESS FOR THE PRODUCTION OF FLAT PRODUCTS



Others information:

Description of the main activities

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 steel and pre-painted (PPGI) and carbon steel pipes.

PRODUCTION OF COILS

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

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

The plant configuration includes the following process units: pickling, rolling, annealing, skin-passing, galvanizing, painting, service center.

The range of semi-finished products and output products deriving from the processes described above is represented by coils:

- black;
- pickled;
- cold rolled (full hard);
- galvanized;
- painted;
- cold (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 belt during the treatment phase with the head of the next belt, 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 tape.

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. chemically in an acid medium.

Lamination

The rolling plant reduces the thickness of the coils resulting from the pickling process, by means of a pressure system through special cylinders which are constantly lubricated and cooled.

There are also the following two cold rolling plants: reversible rolling with n. 2 stands - Quarter and reversible rolling mill.

Annealing

Annealing (bell furnaces) is a heat treatment that consists in heating the steel coils rolled 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 enlarge the grain to obtain a "softening" proportional to the degree of printability required of the belt itself.

Skinpassing

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

Galvanizing

The galvanizing process allows to obtain galvanized coils starting from coils deriving from the pickling process or from cold rolled coils (Full Hard).

Pre-Painting

The activity carried out in the pre-painting department consists in the continuous painting of hot-dip galvanized and cold-rolled coil strips with the "coil coating" system and subsequent drying and polymerization in the oven.

Service center

The coils coming from different phases of the production cycle of the plant are processed on the shearing or leveling lines. From the shearing lines with circular knives, strips of various sizes are obtained (unwinding of the coil and longitudinal cutting with subsequent rewinding of the strips thus produced) while flattened sheets are obtained from the leveling lines (unwinding of the coil and leveling with subsequent transversal cut to the desired length and unloading).

PRODUCTION OF STRIP

The production cycle at the Marcegaglia Carbon Steel plant in Gazoldo degli Ippoliti (MN) and Corsico (MI) begins with the arrival at the company of the steel coils transported by road and delivered to the plant. In detail, the processing cycle takes place through the phases described below: pickling, line of (raw material shears), cold rolling, annealing, skinpassing, leveling.

After arriving in the factory, the raw materials are processed by the respective plants to obtain the various components that make up the belts and the accessory component.

The belts leaving the above-mentioned factories are:

- from black coil;
- from pickled coil;
- from cold rolled coil (full hard);
- from galvanized coil;
- from cold coil (cold rolled, annealed and skin-passed).

Pickling

Through 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 related impurities.

Cutting line (raw material shears)

The pickled coils, according to the physical characteristics of the obtainable product, are sent to the cutting lines for raw material.

These machines produce a longitudinal cutting action to obtain strips of various widths that will follow a diversified processing cycle to obtain welded tubes, open profiles, sheets, strips according to the desired production.

Cold rolling

The coils are prepared for the rolling process by the raw material shears at a variable width from a minimum of 320 mm to a maximum of 550 mm and stored in the warehouses at the entrance to the rolling mills. The cold rolling process, which has the purpose of reducing the thickness of the strip, produces an increase in the resistance characteristics and a lowering of those of softening, to a greater extent the higher the degree of reduction. During the rolling phase, in order to reduce the friction between the rolling rolls and the strip, an oily emulsion is used.

The rolled strips are placed in the appropriate warehouse for cooling and the subsequent annealing process.

Annealing

Annealing is a heat treatment that consists in heating the cold-rolled steel coils to a certain temperature in non-oxidizing environments, keeping them “hot” for a shorter or longer period and then always cooling them in non-oxidizing environments. The purpose of annealing is to eliminate the hardening of cold rolled strips and to thicken the grain to obtain a softening proportional to the degree of printability required of the strip itself (recrystallization annealing).

Skinpassing

Slight cold rolling: the strip after annealing requires a slight variable surface reduction, as well as for the various types of laminates, also for the various qualities and surface aspects. The implants are similar to the reversible quarters but with much lower powers as reductions of 1 to 5% are made.



PRODUCTION OF FLAT SHEETS

From the wrapped sheets (coils), flat sheets of numerous formats are obtained by means of machines called leveling machines. The machine is equipped with rollers and counter rollers to obtain perfect flatness. A special cut obtains the required lengths from a minimum of 400 mm to a maximum of 1300 mm. (transportable materials).

The packaging of the sheet metal sheets is carried out in line with a special mechanical stacker.

In this way the following flat sheets product are obtained:

- black;
- from hot rolled strip;

- from cold rolled coil;
- from cold rolled coil (with annealing and skinpassing)
- pickled;
- striated;
- checkered.

Allocation rules

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

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

Module	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
	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	GLO	GLO	IT	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	IT
Specific data	> 90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variations-product	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation-site	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Module considered
ND = Module not declared
GLO = Global
IT = Italy

Additional information

The raw material (black coil) purchased by Marcegaglia Carbon Steel S.p.A. it is characterized by a recycled content of 24,4%: this percentage is calculated as a weighted average of the same value associated with the incoming raw material and deriving both from Type III environmental declarations as well as from self-declarations compliant with the UNI EN ISO standard 14021. The steel comes both from blast furnace (with a recycled content of 17.0%) and from electric arc furnace (with an average recycled content of 82.8%).

The materials used for the packaging of the final products consist of plastic and / or metal straps, wooden saddles and polyester bands. The quantities of these packaging compared to one ton of final product identify a value of less than 1%.

The products do not contain hazardous substances from the SVHC Candidate List for Authorization in quantities greater than 0,1%.

Environmental Information

The environmental performance indicators refer to 1 tonne of flat product.

POTENTIAL ENVIRONMENTAL IMPACTS

Impact category	Abb.	Unit
Climate change - total	GWP - t	kg CO ₂ eq
Ozone depletion	ODP	kg CFC11 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
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

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

BLACK COIL

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,287E+03	4,635E+01	-9,792E+02
GWP - fossil	kg CO ₂ eq	2,282E+03	4,632E+01	-9,764E+02
GWP - biogenic	kg CO ₂ eq	3,080E+00	1,344E-02	-1,809E+00
GWP - luluc	kg CO ₂ eq	1,426E+00	6,606E-03	-7,681E-01
GWP - GHG	kg CO ₂ eq	2,198E+03	4,579E+01	-9,433E+02
ODP	kg CFC-11 eq	6,514E-05	9,279E-06	-4,735E-05
POCP	kg NMVOC eq	8,058E+00	4,329E-01	-4,340E+00
AP	mol H+ eq	9,521E+00	3,622E-01	-4,388E+00
EP - freshwater	kg P eq	6,497E-01	3,368E-03	-4,569E-01
EP - marine	kg N eq	2,252E+00	1,423E-01	-1,050E+00
EP - terrestrial	mol N eq	2,398E+01	1,557E+00	-9,968E+00
WDP	m ³ depriv.	6,768E+02	2,681E+00	-2,413E+02
ADP - F	MJ	2,125E+04	6,697E+02	-1,017E+04
ADP - MM	kg Sb eq	1,229E-02	4,212E-05	-1,246E-02
PERE	MJ	1,868E+03	2,935E+01	-1,151E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	1,868E+03	2,935E+01	-1,151E+03
PENRE	MJ	2,664E+04	6,555E+02	-1,239E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,664E+04	6,555E+02	-1,239E+04
SM	kg	2,759E+02	1,256E-02	-1,795E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,203E+01	1,066E-01	-1,125E+01
HW	kg	1,345E+02	6,912E-02	-5,621E+01
NHW	kg	8,001E+02	3,209E-01	-3,952E+02
RW	kg	6,190E-01	2,282E-03	-3,100E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,298E+00	1,716E-02	-4,928E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

PICKLED COIL

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,302E+03	4,940E+01	-9,650E+02
GWP - fossil	kg CO ₂ eq	2,297E+03	4,937E+01	-9,622E+02
GWP - biogenic	kg CO ₂ eq	4,087E+00	1,558E-02	-1,782E+00
GWP - luluc	kg CO ₂ eq	1,366E+00	7,912E-03	-7,569E-01
GWP - GHG	kg CO ₂ eq	2,214E+03	4,881E+01	-9,296E+02
ODP	kg CFC-11 eq	7,745E-05	9,940E-06	-4,700E-05
POCP	kg NMVOC eq	8,362E+00	4,396E-01	-4,277E+00
AP	mol H+ eq	9,528E+00	3,709E-01	-4,324E+00
EP - freshwater	kg P eq	7,111E-01	3,570E-03	-4,503E-01
EP - marine	kg N eq	2,227E+00	1,441E-01	-1,035E+00
EP - terrestrial	mol N eq	2,371E+01	1,577E+00	-9,824E+00
WDP	m ³ depriv.	6,638E+02	2,788E+00	-2,378E+02
ADP - F	MJ	2,200E+04	7,136E+02	-1,002E+04
ADP - MM	kg Sb eq	1,500E-02	5,690E-05	-1,229E-02
PERE	MJ	2,059E+03	3,026E+01	-1,134E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	2,059E+03	3,026E+01	-1,134E+03
PENRE	MJ	2,726E+04	6,986E+02	-1,221E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,726E+04	6,986E+02	-1,221E+04
SM	kg	2,799E+02	1,256E-02	-1,782E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	1,978E+01	1,125E-01	-1,108E+01
HW	kg	1,293E+02	6,912E-02	-5,539E+01
NHW	kg	7,921E+02	3,209E-01	-3,894E+02
RW	kg	6,168E-01	2,282E-03	-3,055E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,281E+00	1,716E-02	-4,856E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

COLD ROLLED COIL (FULL HARD)

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,422E+03	4,635E+01	-9,621E+02
GWP - fossil	kg CO ₂ eq	2,416E+03	4,632E+01	-9,594E+02
GWP - biogenic	kg CO ₂ eq	3,657E+00	1,344E-02	-1,777E+00
GWP - luluc	kg CO ₂ eq	1,481E+00	6,606E-03	-7,547E-01
GWP - GHG	kg CO ₂ eq	2,329E+03	4,579E+01	-9,268E+02
ODP	kg CFC-11 eq	7,670E-05	9,280E-06	-4,700E-05
POCP	kg NMVOC eq	8,450E+00	4,329E-01	-4,264E+00
AP	mol H+ eq	1,003E+01	3,622E-01	-4,311E+00
EP - freshwater	kg P eq	6,793E-01	3,368E-03	-4,490E-01
EP - marine	kg N eq	2,363E+00	1,423E-01	-1,032E+00
EP - terrestrial	mol N eq	2,516E+01	1,557E+00	-9,795E+00
WDP	m ³ depriv.	7,213E+02	2,681E+00	-2,371E+02
ADP - F	MJ	2,287E+04	6,697E+02	-9,988E+03
ADP - MM	kg Sb eq	1,279E-02	4,210E-05	-1,225E-02
PERE	MJ	2,015E+03	2,935E+01	-1,131E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	2,015E+03	2,935E+01	-1,131E+03
PENRE	MJ	2,843E+04	6,555E+02	-1,217E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,843E+04	6,555E+02	-1,217E+04
SM	kg	2,856E+02	1,256E-02	-1,764E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,330E+01	1,066E-01	-1,105E+01
HW	kg	1,391E+02	6,912E-02	-5,523E+01
NHW	kg	8,275E+02	3,209E-01	-3,883E+02
RW	kg	6,483E-01	2,282E-03	-3,046E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,534E+00	1,716E-02	-4,842E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

GALVANIZED COIL

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,628E+03	4,635E+01	-9,564E+02
GWP - fossil	kg CO ₂ eq	2,619E+03	4,632E+01	-9,537E+02
GWP - biogenic	kg CO ₂ eq	6,417E+00	1,344E-02	-1,766E+00
GWP - luluc	kg CO ₂ eq	1,783E+00	6,606E-03	-7,502E-01
GWP - GHG	kg CO ₂ eq	2,530E+03	4,579E+01	-9,214E+02
ODP	kg CFC-11 eq	9,750E-05	9,280E-06	-4,600E-05
POCP	kg NMVOC eq	9,253E+00	4,329E-01	-4,239E+00
AP	mol H+ eq	1,112E+01	3,622E-01	-4,286E+00
EP - freshwater	kg P eq	7,837E-01	3,368E-03	-4,463E-01
EP - marine	kg N eq	2,645E+00	1,423E-01	-1,026E+00
EP - terrestrial	mol N eq	2,788E+01	1,557E+00	-9,737E+00
WDP	m ³ depriv.	8,218E+02	2,681E+00	-2,357E+02
ADP - F	MJ	2,582E+04	6,697E+02	-9,929E+03
ADP - MM	kg Sb eq	5,550E-02	4,210E-05	-1,217E-02
PERE	MJ	2,282E+03	2,935E+01	-1,124E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	2,282E+03	2,935E+01	-1,124E+03
PENRE	MJ	3,149E+04	6,555E+02	-1,210E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	3,149E+04	6,555E+02	-1,210E+04
SM	kg	2,884E+02	1,256E-02	-1,754E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	3,266E+01	1,066E-01	-1,099E+01
HW	kg	1,411E+02	6,912E-02	-5,490E+01
NHW	kg	8,386E+02	3,209E-01	-3,860E+02
RW	kg	6,720E-01	2,282E-03	-3,028E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,704E+00	1,716E-02	-4,813E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

PAINTED COIL

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,829E+03	4,635E+01	-9,318E+02
GWP - fossil	kg CO ₂ eq	2,817E+03	4,632E+01	-9,291E+02
GWP - biogenic	kg CO ₂ eq	5,827E+00	1,344E-02	-1,721E+00
GWP - luluc	kg CO ₂ eq	5,596E+00	6,606E-03	-7,309E-01
GWP - GHG	kg CO ₂ eq	2,728E+03	4,579E+01	-8,976E+02
ODP	kg CFC-11 eq	1,190E-04	9,280E-06	-4,500E-05
POCP	kg NMVOC eq	9,891E+00	4,329E-01	-4,130E+00
AP	mol H+ eq	1,189E+01	3,622E-01	-4,175E+00
EP - freshwater	kg P eq	8,254E-01	3,368E-03	-4,348E-01
EP - marine	kg N eq	2,844E+00	1,423E-01	-9,993E-01
EP - terrestrial	mol N eq	2,956E+01	1,557E+00	-9,485E+00
WDP	m ³ depriv.	9,090E+02	2,681E+00	-2,296E+02
ADP - F	MJ	2,859E+04	6,697E+02	-9,673E+03
ADP - MM	kg Sb eq	5,735E-02	4,210E-05	-1,186E-02
PERE	MJ	2,590E+03	2,935E+01	-1,095E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	2,590E+03	2,935E+01	-1,095E+03
PENRE	MJ	3,443E+04	6,555E+02	-1,179E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	3,443E+04	6,555E+02	-1,179E+04
SM	kg	3,013E+02	1,256E-02	-1,708E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	3,522E+01	1,066E-01	-1,070E+01
HW	kg	1,463E+02	6,912E-02	-5,349E+01
NHW	kg	8,768E+02	3,209E-01	-3,760E+02
RW	kg	7,091E-01	2,282E-03	-2,950E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,972E+00	1,716E-02	-4,689E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00



COLD COIL (COLD ROLLED, ANNEALED AND SKINPASSED)

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,570E+03	4,940E+01	-9,479E+02
GWP - fossil	kg CO ₂ eq	2,563E+03	4,937E+01	-9,452E+02
GWP - biogenic	kg CO ₂ eq	4,353E+00	1,558E-02	-1,751E+00
GWP - luluc	kg CO ₂ eq	1,616E+00	7,912E-03	-7,435E-01
GWP - GHG	kg CO ₂ eq	2,473E+03	4,881E+01	-9,131E+02
ODP	kg CFC-11 eq	9,135E-05	9,940E-06	-4,600E-05
POCP	kg NMVOC eq	8,830E+00	4,396E-01	-4,201E+00
AP	mol H+ eq	1,051E+01	3,709E-01	-4,248E+00
EP - freshwater	kg P eq	7,124E-01	3,570E-03	-4,423E-01
EP - marine	kg N eq	2,476E+00	1,441E-01	-1,017E+00
EP - terrestrial	mol N eq	2,632E+01	1,577E+00	-9,650E+00
WDP	m ³ depriv.	7,672E+02	2,788E+00	-2,336E+02
ADP - F	MJ	2,490E+04	7,136E+02	-9,840E+03
ADP - MM	kg Sb eq	1,322E-02	5,690E-05	-1,207E-02
PERE	MJ	2,168E+03	3,026E+01	-1,114E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	2,168E+03	3,026E+01	-1,114E+03
PENRE	MJ	3,055E+04	6,986E+02	-1,199E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	3,055E+04	6,986E+02	-1,199E+04
SM	kg	2,927E+02	1,256E-02	-1,738E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,420E+01	1,125E-01	-1,089E+01
HW	kg	1,428E+02	6,912E-02	-5,441E+01
NHW	kg	8,485E+02	3,209E-01	-3,825E+02
RW	kg	6,753E-01	2,282E-03	-3,001E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,733E+00	1,716E-02	-4,770E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

BLACK COIL STRIP

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,228E+03	5,041E+01	-9,552E+02
GWP - fossil	kg CO ₂ eq	2,380E+03	5,039E+01	-9,525E+02
GWP - biogenic	kg CO ₂ eq	-1,543E+02	1,629E-02	-1,764E+00
GWP - luluc	kg CO ₂ eq	1,581E+00	8,347E-03	-7,492E-01
GWP - GHG	kg CO ₂ eq	2,296E+03	4,982E+01	-9,201E+02
ODP	kg CFC-11 eq	8,153E-05	1,016E-05	-4,633E-05
POCP	kg NMVOC eq	8,706E+00	4,418E-01	-4,234E+00
AP	mol H+ eq	9,983E+00	3,738E-01	-4,280E+00
EP - freshwater	kg P eq	7,214E-01	3,637E-03	-4,457E-01
EP - marine	kg N eq	2,352E+00	1,448E-01	-1,024E+00
EP - terrestrial	mol N eq	2,506E+01	1,584E+00	-9,724E+00
WDP	m ³ depriv.	7,093E+02	2,823E+00	-2,354E+02
ADP - F	MJ	2,293E+04	7,283E+02	-9,916E+03
ADP - MM	kg Sb eq	1,476E-02	6,183E-05	-1,216E-02
PERE	MJ	8,265E+03	3,057E+01	-1,123E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	8,265E+03	3,057E+01	-1,123E+03
PENRE	MJ	2,834E+04	7,130E+02	-1,208E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,834E+04	7,130E+02	-1,208E+04
SM	kg	2,886E+02	1,256E-02	-1,751E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,130E+01	1,145E-01	-1,097E+01
HW	kg	1,336E+02	6,912E-02	-5,483E+01
NHW	kg	8,114E+02	3,209E-01	-3,855E+02
RW	kg	6,288E-01	2,282E-03	-3,024E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,382E+00	1,716E-02	-4,807E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

PICKLED COIL STRIP

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,344E+03	7,181E+01	-9,332E+02
GWP - fossil	kg CO ₂ eq	2,458E+03	7,179E+01	-9,305E+02
GWP - biogenic	kg CO ₂ eq	-1,167E+02	2,402E-02	-1,725E+00
GWP - luluc	kg CO ₂ eq	1,610E+00	1,066E-02	-7,320E-01
GWP - GHG	kg CO ₂ eq	2,370E+03	7,112E+01	-8,990E+02
ODP	kg CFC-11 eq	8,508E-05	1,475E-05	-4,525E-05
POCP	kg NMVOC eq	8,805E+00	7,339E-01	-4,135E+00
AP	mol H+ eq	1,025E+01	5,928E-01	-4,182E+00
EP - freshwater	kg P eq	7,147E-01	4,321E-03	-4,355E-01
EP - marine	kg N eq	2,424E+00	2,413E-01	-1,001E+00
EP - terrestrial	mol N eq	2,582E+01	2,640E+00	-9,500E+00
WDP	m ³ depriv.	7,365E+02	3,292E+00	-2,299E+02
ADP - F	MJ	2,367E+04	1,024E+03	-9,688E+03
ADP - MM	kg Sb eq	1,400E-02	7,513E-05	-1,188E-02
PERE	MJ	6,821E+03	3,277E+01	-1,098E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	6,821E+03	3,277E+01	-1,098E+03
PENRE	MJ	2,922E+04	1,002E+03	-1,180E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,922E+04	1,002E+03	-1,180E+04
SM	kg	3,006E+02	1,257E-02	-1,710E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,268E+01	1,461E-01	-1,071E+01
HW	kg	1,387E+02	6,922E-02	-5,358E+01
NHW	kg	8,403E+02	3,212E-01	-3,764E+02
RW	kg	6,493E-01	2,284E-03	-2,955E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,864E+00	1,717E-02	-4,695E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

COLD ROLLED COIL STRIP (FULL HARD)

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,441E+03	9,120E+01	-9,223E+02
GWP - fossil	kg CO ₂ eq	2,434E+03	9,116E+01	-9,197E+02
GWP - biogenic	kg CO ₂ eq	5,135E+00	3,033E-02	-1,703E+00
GWP - luluc	kg CO ₂ eq	1,460E+00	1,208E-02	-7,234E-01
GWP - GHG	kg CO ₂ eq	2,347E+03	9,019E+01	-8,884E+02
ODP	kg CFC-11 eq	8,580E-05	1,885E-05	-4,450E-05
POCP	kg NMVOC eq	8,660E+00	1,019E+00	-4,088E+00
AP	mol H+ eq	1,009E+01	8,051E-01	-4,133E+00
EP - freshwater	kg P eq	7,272E-01	4,864E-03	-4,304E-01
EP - marine	kg N eq	2,353E+00	3,365E-01	-9,892E-01
EP - terrestrial	mol N eq	2,507E+01	3,684E+00	-9,389E+00
WDP	m ³ depriv.	7,229E+02	3,685E+00	-2,273E+02
ADP - F	MJ	2,356E+04	1,287E+03	-9,574E+03
ADP - MM	kg Sb eq	1,450E-02	7,840E-05	-1,174E-02
PERE	MJ	2,201E+03	3,430E+01	-1,084E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	2,201E+03	3,430E+01	-1,084E+03
PENRE	MJ	2,897E+04	1,263E+03	-1,167E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,897E+04	1,263E+03	-1,167E+04
SM	kg	3,096E+02	1,256E-02	-1,691E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,157E+01	1,736E-01	-1,059E+01
HW	kg	1,356E+02	6,912E-02	-5,294E+01
NHW	kg	8,387E+02	3,209E-01	-3,722E+02
RW	kg	6,490E-01	2,282E-03	-2,920E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,519E+00	1,716E-02	-4,642E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

GALVANIZED COIL STRIP

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,661E+03	7,181E+01	-9,284E+02
GWP - fossil	kg CO ₂ eq	2,812E+03	7,179E+01	-9,259E+02
GWP - biogenic	kg CO ₂ eq	-1,537E+02	2,402E-02	-1,715E+00
GWP - luluc	kg CO ₂ eq	2,049E+00	1,066E-02	-7,282E-01
GWP - GHG	kg CO ₂ eq	2,716E+03	7,112E+01	-8,945E+02
ODP	kg CFC-11 eq	1,143E-04	1,475E-05	-4,463E-05
POCP	kg NMVOC eq	1,004E+01	7,339E-01	-4,115E+00
AP	mol H+ eq	1,198E+01	5,928E-01	-4,161E+00
EP - freshwater	kg P eq	8,403E-01	4,321E-03	-4,332E-01
EP - marine	kg N eq	2,865E+00	2,413E-01	-9,959E-01
EP - terrestrial	mol N eq	3,019E+01	2,640E+00	-9,451E+00
WDP	m ³ depriv.	8,937E+02	3,292E+00	-2,288E+02
ADP - F	MJ	2,825E+04	1,024E+03	-9,638E+03
ADP - MM	kg Sb eq	5,832E-02	7,513E-05	-1,183E-02
PERE	MJ	8,749E+03	3,277E+01	-1,092E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	8,749E+03	3,277E+01	-1,092E+03
PENRE	MJ	3,415E+04	1,002E+03	-1,174E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	3,415E+04	1,002E+03	-1,174E+04
SM	kg	3,030E+02	1,257E-02	-1,703E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	3,459E+01	1,461E-01	-1,066E+01
HW	kg	1,476E+02	6,922E-02	-5,329E+01
NHW	kg	8,777E+02	3,215E-01	-3,747E+02
RW	kg	7,040E-01	2,284E-03	-2,940E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	6,293E+00	1,717E-02	-4,673E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

PAINTED COIL STRIP

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,861E+03	4,940E+01	-9,166E+02
GWP - fossil	kg CO ₂ eq	2,929E+03	4,937E+01	-9,140E+02
GWP - biogenic	kg CO ₂ eq	-7,444E+01	1,558E-02	-1,693E+00
GWP - luluc	kg CO ₂ eq	5,835E+00	7,912E-03	-7,190E-01
GWP - GHG	kg CO ₂ eq	2,837E+03	4,881E+01	-8,830E+02
ODP	kg CFC-11 eq	1,280E-04	9,940E-06	-4,450E-05
POCP	kg NMVOC eq	1,034E+01	4,396E-01	-4,062E+00
AP	mol H+ eq	1,240E+01	3,709E-01	-4,107E+00
EP - freshwater	kg P eq	8,583E-01	3,570E-03	-4,277E-01
EP - marine	kg N eq	2,964E+00	1,441E-01	-9,831E-01
EP - terrestrial	mol N eq	3,087E+01	1,577E+00	-9,331E+00
WDP	m ³ depriv.	9,529E+02	2,788E+00	-2,258E+02
ADP - F	MJ	2,997E+04	7,136E+02	-9,515E+03
ADP - MM	kg Sb eq	5,915E-02	5,690E-05	-1,167E-02
PERE	MJ	5,800E+03	3,026E+01	-1,077E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	5,800E+03	3,026E+01	-1,077E+03
PENRE	MJ	3,596E+04	6,986E+02	-1,159E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	3,596E+04	6,986E+02	-1,159E+04
SM	kg	3,092E+02	1,256E-02	-1,681E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	3,657E+01	1,138E-01	-1,066E+01
HW	kg	1,501E+02	6,912E-02	-5,262E+01
NHW	kg	8,964E+02	3,209E-01	-3,699E+02
RW	kg	7,300E-01	2,282E-03	-2,902E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	6,150E+00	1,716E-02	-4,613E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00



COLD COIL STRIP (COLD ROLLED, ANNEALED AND SKINPASSED)

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,570E+03	6,536E+01	-9,239E+02
GWP - fossil	kg CO ₂ eq	2,724E+03	6,533E+01	-9,212E+02
GWP - biogenic	kg CO ₂ eq	-1,553E+02	2,192E-02	-1,707E+00
GWP - luluc	kg CO ₂ eq	1,832E+00	1,018E-02	-7,246E-01
GWP - GHG	kg CO ₂ eq	2,629E+03	6,469E+01	-8,900E+02
ODP	kg CFC-11 eq	1,046E-04	1,336E-05	-4,482E-05
POCP	kg NMVOC eq	9,502E+00	6,380E-01	-4,095E+00
AP	mol H+ eq	1,125E+01	5,218E-01	-4,139E+00
EP - freshwater	kg P eq	5,595E-01	3,196E-03	-3,663E-01
EP - marine	kg N eq	2,628E+00	2,092E-01	-9,800E-01
EP - terrestrial	mol N eq	2,826E+01	2,293E+00	-9,404E+00
WDP	m ³ depriv.	8,290E+02	3,160E+00	-2,276E+02
ADP - F	MJ	2,690E+04	9,350E+02	-9,590E+03
ADP - MM	kg Sb eq	1,412E-02	7,398E-05	-1,175E-02
PERE	MJ	8,541E+03	3,224E+01	-1,085E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	8,541E+03	3,224E+01	-1,085E+03
PENRE	MJ	3,277E+04	9,155E+02	-1,169E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	3,277E+04	9,155E+02	-1,169E+04
SM	kg	3,053E+02	1,256E-02	-1,693E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,554E+01	1,369E-01	-1,062E+01
HW	kg	1,487E+02	6,919E-02	-5,304E+01
NHW	kg	8,842E+02	3,211E-01	-3,728E+02
RW	kg	7,042E-01	2,284E-03	-2,924E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	6,323E+00	1,717E-02	-4,650E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

BLACK SHEET

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,303E+03	4,635E+01	-9,716E+02
GWP - fossil	kg CO ₂ eq	2,306E+03	4,632E+01	-9,689E+02
GWP - biogenic	kg CO ₂ eq	-5,494E+00	1,344E-02	-1,794E+00
GWP - luluc	kg CO ₂ eq	1,451E+00	6,606E-03	-7,621E-01
GWP - GHG	kg CO ₂ eq	2,223E+03	4,579E+01	-9,360E+02
ODP	kg CFC-11 eq	6,756E-05	9,279E-06	-4,699E-05
POCP	kg NMVOC eq	8,150E+00	4,329E-01	-4,306E+00
AP	mol H+ eq	9,631E+00	3,622E-01	-4,354E+00
EP - freshwater	kg P eq	6,584E-01	3,368E-03	-4,534E-01
EP - marine	kg N eq	2,281E+00	1,423E-01	-1,042E+00
EP - terrestrial	mol N eq	2,425E+01	1,557E+00	-9,891E+00
WDP	m ³ depriv.	6,879E+02	2,681E+00	-2,394E+02
ADP - F	MJ	2,158E+04	6,697E+02	-1,009E+04
ADP - MM	kg Sb eq	1,247E-02	4,212E-05	-1,237E-02
PERE	MJ	2,324E+03	2,935E+01	-1,142E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	2,324E+03	2,935E+01	-1,142E+03
PENRE	MJ	2,699E+04	6,555E+02	-1,229E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,699E+04	6,555E+02	-1,229E+04
SM	kg	2,801E+02	1,256E-02	-1,782E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,246E+01	1,066E-01	-1,116E+01
HW	kg	1,349E+02	6,912E-02	-5,578E+01
NHW	kg	8,040E+02	3,209E-01	-3,921E+02
RW	kg	6,216E-01	2,282E-03	-3,076E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,314E+00	1,716E-02	-4,890E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

CHECKERED - STRIATED SHEET

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,220E+03	5,245E+01	-9,545E+02
GWP - fossil	kg CO ₂ eq	2,478E+03	5,242E+01	-9,518E+02
GWP - biogenic	kg CO ₂ eq	-2,611E+02	1,772E-02	-1,763E+00
GWP - luluc	kg CO ₂ eq	1,794E+00	9,217E-03	-7,487E-01
GWP - GHG	kg CO ₂ eq	2,391E+03	5,184E+01	-9,195E+02
ODP	kg CFC-11 eq	8,620E-05	1,060E-05	-4,600E-05
POCP	kg NMVOC eq	8,934E+00	4,463E-01	-4,231E+00
AP	mol H+ eq	1,044E+01	3,796E-01	-4,277E+00
EP - freshwater	kg P eq	7,083E-01	3,772E-03	-4,454E-01
EP - marine	kg N eq	2,493E+00	1,460E-01	-1,024E+00
EP - terrestrial	mol N eq	2,653E+01	1,597E+00	-9,717E+00
WDP	m ³ depriv.	7,614E+02	2,894E+00	-2,352E+02
ADP - F	MJ	2,393E+04	7,576E+02	-9,909E+03
ADP - MM	kg Sb eq	1,345E-02	7,170E-05	-1,215E-02
PERE	MJ	1,240E+04	3,118E+01	-1,122E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	1,240E+04	3,118E+01	-1,122E+03
PENRE	MJ	2,950E+04	7,418E+02	-1,207E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,950E+04	7,418E+02	-1,207E+04
SM	kg	2,895E+02	1,256E-02	-1,750E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,366E+01	1,184E-01	-1,096E+01
HW	kg	1,394E+02	6,912E-02	-5,480E+01
NHW	kg	8,313E+02	3,209E-01	-3,852E+02
RW	kg	6,436E-01	2,282E-03	-3,022E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,497E+00	1,716E-02	-4,804E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

PICKLED SHEET

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,207E+03	5,092E+01	-9,104E+02
GWP - fossil	kg CO ₂ eq	2,401E+03	5,090E+01	-9,078E+02
GWP - biogenic	kg CO ₂ eq	-1,956E+02	1,665E-02	-1,681E+00
GWP - luluc	kg CO ₂ eq	1,608E+00	8,564E-03	-7,141E-01
GWP - GHG	kg CO ₂ eq	2,317E+03	5,033E+01	-8,770E+02
ODP	kg CFC-11 eq	8,936E-05	1,027E-05	-4,418E-05
POCP	kg NMVOC eq	8,887E+00	4,429E-01	-4,035E+00
AP	mol H+ eq	1,004E+01	3,752E-01	-4,080E+00
EP - freshwater	kg P eq	7,580E-01	3,671E-03	-4,248E-01
EP - marine	kg N eq	2,349E+00	1,451E-01	-9,764E-01
EP - terrestrial	mol N eq	2,502E+01	1,587E+00	-9,268E+00
WDP	m ³ depriv.	7,208E+02	2,841E+00	-2,243E+02
ADP - F	MJ	2,359E+04	7,356E+02	-9,451E+03
ADP - MM	kg Sb eq	1,607E-02	6,431E-05	-1,159E-02
PERE	MJ	1,009E+04	3,072E+01	-1,070E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	1,009E+04	3,072E+01	-1,070E+03
PENRE	MJ	2,889E+04	7,202E+02	-1,152E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,889E+04	7,202E+02	-1,152E+04
SM	kg	3,124E+02	1,256E-02	-1,669E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,027E+01	1,155E-01	-1,046E+01
HW	kg	1,309E+02	6,912E-02	-5,226E+01
NHW	kg	8,236E+02	3,209E-01	-3,674E+02
RW	kg	6,309E-01	2,282E-03	-2,883E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,374E+00	1,716E-02	-4,582E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

COLD ROLLED COIL SHEET (FULL HARD)

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,487E+03	1,300E+02	-9,545E+02
GWP - fossil	kg CO ₂ eq	2,482E+03	1,299E+02	-9,518E+02
GWP - biogenic	kg CO ₂ eq	3,733E+00	4,293E-02	-1,763E+00
GWP - luluc	kg CO ₂ eq	1,519E+00	1,495E-02	-7,487E-01
GWP - GHG	kg CO ₂ eq	2,393E+03	1,285E+02	-9,195E+02
ODP	kg CFC-11 eq	7,953E-05	2,714E-05	-4,616E-05
POCP	kg NMVOC eq	8,675E+00	1,592E+00	-4,231E+00
AP	mol H+ eq	1,031E+01	1,231E+00	-4,277E+00
EP - freshwater	kg P eq	6,971E-01	5,956E-03	-4,454E-01
EP - marine	kg N eq	2,427E+00	5,270E-01	-1,024E+00
EP - terrestrial	mol N eq	2,584E+01	5,771E+00	-9,717E+00
WDP	m ³ depriv.	7,401E+02	4,475E+00	-2,352E+02
ADP - F	MJ	2,353E+04	1,816E+03	-9,909E+03
ADP - MM	kg Sb eq	1,311E-02	8,511E-05	-1,215E-02
PERE	MJ	2,074E+03	3,742E+01	-1,122E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	2,074E+03	3,742E+01	-1,122E+03
PENRE	MJ	2,922E+04	1,784E+03	-1,207E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,922E+04	1,784E+03	-1,207E+04
SM	kg	2,927E+02	1,256E-02	-1,750E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	-1,375E+02	2,288E-01	-1,096E+01
HW	kg	1,426E+02	6,912E-02	-5,480E+01
NHW	kg	8,483E+02	3,209E-01	-3,852E+02
RW	kg	6,653E-01	2,282E-03	-3,022E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	5,678E+00	1,716E-02	-4,804E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

COLD COIL SHEET (COLD ROLLED, ANNEALED AND SKIN PASS)

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,609E+03	4,940E+01	-9,118E+02
GWP - fossil	kg CO ₂ eq	2,739E+03	4,937E+01	-9,093E+02
GWP - biogenic	kg CO ₂ eq	-1,325E+02	1,558E-02	-1,684E+00
GWP - luluc	kg CO ₂ eq	1,786E+00	7,912E-03	-7,152E-01
GWP - GHG	kg CO ₂ eq	2,644E+03	4,881E+01	-8,784E+02
ODP	kg CFC-11 eq	1,018E-04	9,940E-06	-4,400E-05
POCP	kg NMVOC eq	9,554E+00	4,396E-01	-4,041E+00
AP	mol H+ eq	1,130E+01	3,709E-01	-4,086E+00
EP - freshwater	kg P eq	7,639E-01	3,570E-03	-4,255E-01
EP - marine	kg N eq	2,673E+00	1,441E-01	-9,780E-01
EP - terrestrial	mol N eq	2,838E+01	1,577E+00	-9,283E+00
WDP	m ³ depriv.	8,349E+02	2,788E+00	-2,247E+02
ADP - F	MJ	2,687E+04	7,136E+02	-9,466E+03
ADP - MM	kg Sb eq	1,427E-02	5,690E-05	-1,161E-02
PERE	MJ	7,697E+03	3,026E+01	-1,072E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	7,697E+03	3,026E+01	-1,072E+03
PENRE	MJ	3,284E+04	6,986E+02	-1,153E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	3,284E+04	6,986E+02	-1,153E+04
SM	kg	3,116E+02	1,256E-02	-1,672E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	2,604E+01	1,125E-01	-1,047E+01
HW	kg	1,509E+02	6,912E-02	-5,234E+01
NHW	kg	8,969E+02	3,209E-01	-3,680E+02
RW	kg	7,133E-01	2,282E-03	-2,887E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	6,049E+00	1,716E-02	-4,589E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

GALVANIZED SHEET

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,610E+03	5,041E+01	-9,128E+02
GWP - fossil	kg CO ₂ eq	2,887E+03	5,039E+01	-9,102E+02
GWP - biogenic	kg CO ₂ eq	-2,804E+02	1,629E-02	-1,686E+00
GWP - luluc	kg CO ₂ eq	2,231E+00	8,347E-03	-7,160E-01
GWP - GHG	kg CO ₂ eq	2,791E+03	4,982E+01	-8,793E+02
ODP	kg CFC-11 eq	1,180E-04	1,016E-05	-4,400E-05
POCP	kg NMVOC eq	1,038E+01	4,418E-01	-4,046E+00
AP	mol H+ eq	1,237E+01	3,738E-01	-4,090E+00
EP - freshwater	kg P eq	8,720E-01	3,637E-03	-4,259E-01
EP - marine	kg N eq	2,959E+00	1,448E-01	-9,790E-01
EP - terrestrial	mol N eq	3,117E+01	1,584E+00	-9,292E+00
WDP	m ³ depriv.	9,384E+02	2,823E+00	-2,249E+02
ADP - F	MJ	2,922E+04	7,283E+02	-9,476E+03
ADP - MM	kg Sb eq	5,954E-02	6,183E-05	-1,162E-02
PERE	MJ	1,370E+04	3,110E+01	-1,076E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	1,370E+04	3,110E+01	-1,076E+03
PENRE	MJ	3,523E+04	7,130E+02	-1,155E+04
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	3,523E+04	7,130E+02	-1,155E+04
SM	kg	3,110E+02	1,256E-02	-1,674E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	3,559E+01	1,145E-01	-1,049E+01
HW	kg	1,499E+02	6,912E-02	-5,240E+01
NHW	kg	8,938E+02	3,209E-01	-3,684E+02
RW	kg	7,169E-01	2,282E-03	-2,890E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	6,072E+00	1,716E-02	-4,594E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

PAINETD SHEET

Abb.	Unit	A1-A3	C1+C4	D
GWP - t	kg CO ₂ eq	2,841E+03	5,041E+01	-9,033E+02
GWP - fossil	kg CO ₂ eq	3,007E+03	5,039E+01	-9,007E+02
GWP - biogenic	kg CO ₂ eq	-1,733E+02	1,629E-02	-1,668E+00
GWP - luluc	kg CO ₂ eq	6,036E+00	8,347E-03	-7,085E-01
GWP - GHG	kg CO ₂ eq	2,914E+03	4,982E+01	-8,702E+02
ODP	kg CFC-11 eq	1,350E-04	1,016E-05	-4,400E-05
POCP	kg NMVOC eq	1,068E+01	4,418E-01	-4,004E+00
AP	mol H+ eq	1,278E+01	3,738E-01	-4,048E+00
EP - freshwater	kg P eq	8,859E-01	3,637E-03	-4,215E-01
EP - marine	kg N eq	3,062E+00	1,448E-01	-9,688E-01
EP - terrestrial	mol N eq	3,185E+01	1,584E+00	-9,196E+00
WDP	m ³ depriv.	9,925E+02	2,823E+00	-2,226E+02
ADP - F	MJ	3,102E+04	7,283E+02	-9,377E+03
ADP - MM	kg Sb eq	6,017E-02	6,183E-05	-1,150E-02
PERE	MJ	7,719E+03	3,096E+01	-1,069E+03
PERM	MJ	0,000E+00	0,000E+00	0,000E+00
PERT	MJ	7,719E+03	3,096E+01	-1,069E+03
PENRE	MJ	2,855E+04	6,879E+02	-8,768E+03
PENRM	MJ	0,000E+00	0,000E+00	0,000E+00
PENRT	MJ	2,855E+04	6,879E+02	-8,768E+03
SM	kg	3,163E+02	1,256E-02	-1,656E+02
RSF	MJ	0,000E+00	0,000E+00	0,000E+00
NRSF	MJ	0,000E+00	0,000E+00	0,000E+00
FW	m ³	3,719E+01	1,145E-01	-1,038E+01
HW	kg	1,523E+02	6,912E-02	-5,185E+01
NHW	kg	9,124E+02	3,209E-01	-3,645E+02
RW	kg	7,419E-01	2,282E-03	-2,860E-01
REUSE	kg	0,000E+00	0,000E+00	0,000E+00
RECYCLE	kg	6,241E+00	1,716E-02	-4,546E+02
EN-REC	kg	0,000E+00	0,000E+00	0,000E+00
EE-E	MJ	0,000E+00	0,000E+00	0,000E+00
EE-T	MJ	0,000E+00	0,000E+00	0,000E+00

Additional information

Regardless of the type of product considered, the element that most affects the final result is the steel purchased which represents the input element to the various company sites, intended for the subsequent production of semi-finished products. Among the processes carried out by the company, those that have the greatest impact are galvanizing and painting. Shearing and leveling

SUSTAINABILITY

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% in line with

MANAGEMENT SYSTEM

With reference to the management systems used by the company, it is emphasized that the presence of an environmental management system (certified pursuant to UNI EN ISO 14001: 2015) and safety (certified pursuant to UNI ISO 45001: 2018) testify to the company's commitment to pursue the continuous improvement of its environmental and safety performance, for example by properly managing the hazardous substances, the waste produced by its business as well as maintaining the pollutants emitted into the atmosphere as well as water discharges. Within the environmental management

activities have a marginal impact on the final result.

The impacts of energy consumption determined by the processes carried out within the company boundaries are often marginal compared to the impact associated with the supply of raw materials.

what is indicated in the "Special waste report" of ISPRA - No. 344/2021.

system there is also a specific data management procedure for the study of the product life cycle. Year after year, the company plans new improvement objectives aimed at increasing its performance.

The company has implemented an energy management system certified in accordance with the UNI CEI EN ISO 50001: 2018 standard to identify the most relevant plants in terms of energy as well as define opportunities for improvement in order to reduce the energy consumption determined by the carrying out its business.



References

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CSIRO "Metal recycling: The need for a life cycle approach" - May 2013;

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