ENVIRONMENTAL PRODUCT DECLARATION

EN

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

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

FREE CUTTING STEEL BARS DRAWN, PEELED OR GROUND

by

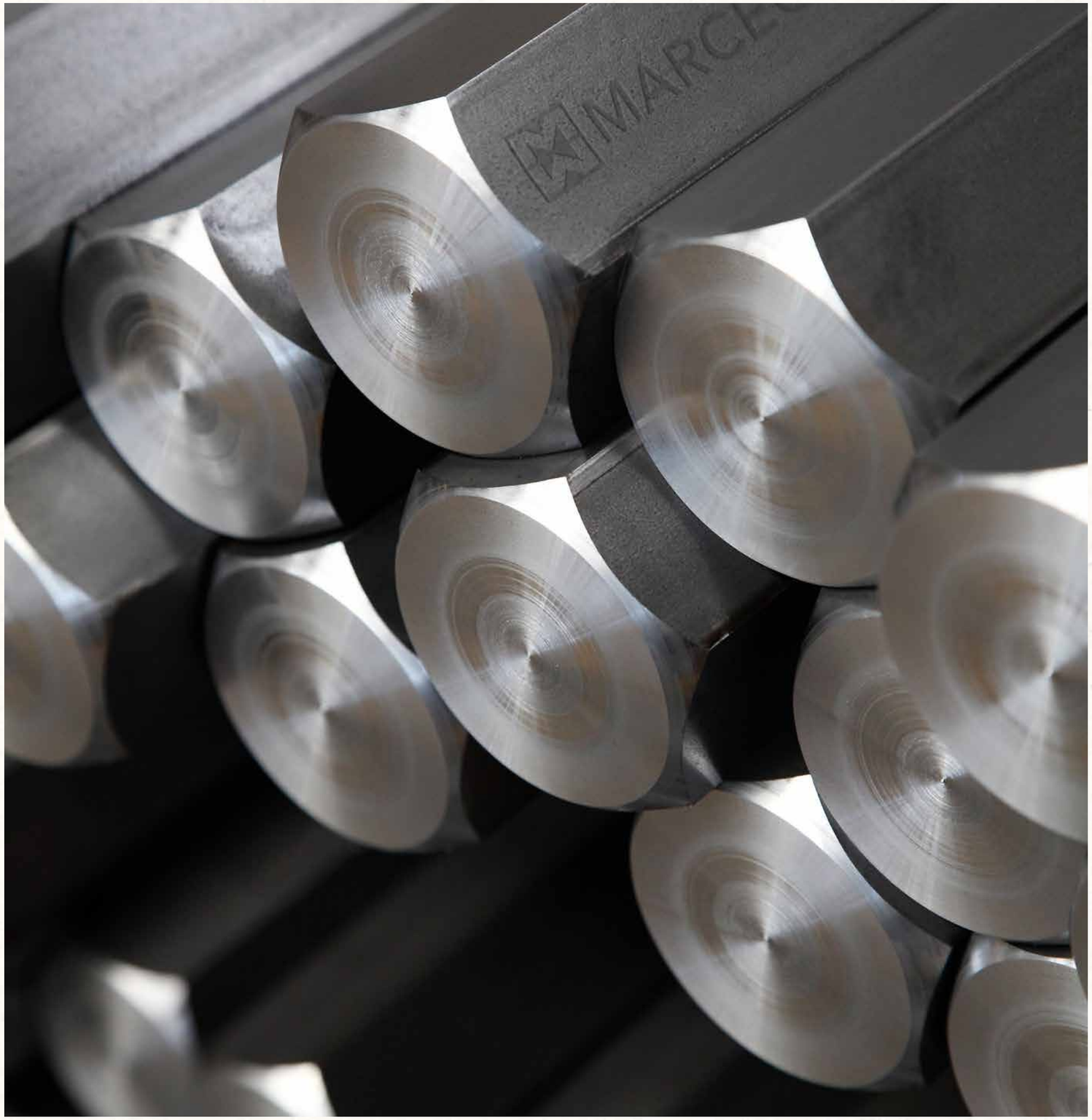
Marcegaglia Specialties S.p.A.

Average data of the various products

MARCEGAGLIA SPECIALTIES

ECO PLATFORM EPD VERIFIED

EPD®
THE INTERNATIONAL EPD® SYSTEM



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 (EN 15804:A2), 2019:14, UN CPC 54, version 1.3.1

The review of the PCR 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 audit of the declaration and the data, according to UNI EN ISO 14025:2010:

☐ EPD process certification ☒ EPD audit

Third party auditor:
Bureau Veritas Italia S.p.A.

In the event of individual auditors:
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 owner of the EPD has the exclusive ownership and legal and moral responsibility of the EPD.

EPDs within the same product category but from different programs may not be comparable. EPDs for construction products may not be comparable unless they comply with UNI EN 15804. For further information on comparability, see EN 15804 and ISO 14025.

INFORMATION ON THE COMPANY

Owner of the EPD:
Marcegaglia Specialties S.p.A.
www.specialties.marcegaglia.com

Contacts:
For more information on this product declaration and/or its configurations, the following references are available:

Sales Office
Mail: *italo.baroni@marcegaglia.com*
Tel.: *+39 0376 685269 / +39 335 6323409*

Description of the organisation:
Marcegaglia Specialties S.p.A. is one of the most important players worldwide in the field of stainless steel products thanks to its various production plants both in Italy and abroad.

It manufactures and trades hot and cold rolled flat products, long hot and cold rolled products, welded piping and drawn and peeled bars.

At the Contino plant, it produces drawn bars in stainless steel, as well as cold-drawn and peeled bars in carbon steel and special steel bars for mechanical, automotive and precision applications, as well as for hydraulic applications for industrial vehicles and for design creations.

Certification relating to the product and/or the management system:

- Quality Management System by UNI EN ISO 9001:2015 (n° 32906/15/S by RINA Services S.p.A.);
- Environmental Management System UNI EN ISO 14001:2015 (n° EMS-262/S by RINA Services S.p.A.);
- Health & Safety Management System UNI ISO 45001:2018 (n° OHS-260 by RINA Services S.p.A.);
- Energy Management System UNI EN ISO 50001:2018 (n° MS-137 by RINA Services S.p.A.);
- Ethics Management System SA8000:2014 (n° SA-2040 by RINA Services S.p.A.);
- CFP Systematic Approach ISO 14067:2018 (n° IT330357 by Bureau Veritas S.p.A.).

Name and location of the production site:
Via Aido 3 - 46049 Località Contino di Volta Mantovana (MN).

INFORMATION ON THE PRODUCT

Product name:
Free cutting steel bars

Product identification:
Special steel bars

Product content:

Product content	Weight, kg	Post-consumer material, weight
Free cutting steel	1,0000	67,1%

The steel comes both from blast furnace (with a recycled content of 20.0%) and from electric arc furnace (with an average recycled content of 80.0%).

Product description:
A wide range of free cutting steel bars in different diameters and shapes for high speed working.

In detail, the products manufactured in the plant are:

- Drawn square bars;
- Drawn hexagonal bars;
- Drawn cylindrical bars;
- Drawn and ground cylindrical bars;
- Peeled cylindrical bars;
- Peeled and ground cylindrical bars.

From the company website, you can download the product catalogues within which the technical characteristics of same are described in detail, and the reference regulations for the various applications.

Special steel bars for high speed mechanical processing

Product	Diameter [mm]
Free cutting steel square bar	15
	16
	17
	18
	19
	20
	25
	30
	35
	40
	45
	50
	55
	60
	70
	80

Product	Diameter [mm]
Free cutting steel hexagonal bar	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18
	19
	20
	21
	22
	23
	24
	25
	26
	27
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	32
	34
	35
	36
	38
	40
	41
	43
	45
	46
	48
	50
	55
	60
	65

Product	Diameter [mm]
Free cutting steel round bar	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18
	19
	20
	21
	22
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	36
	38
	40
	42
	45
	46
	48
	50
	52
	55
	56
	65
	70
	75
	80
	85
	90
	95
	100
	110
	120
	130
	140
	150

INFORMATION ON THE LCA

Functional unit:
The functional unit of the system considered is the bar ton.

Service life (reference service life – RSL):
The products in this study present an estimated useful life of 50 years [Ref.: Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR)].

Time representativeness:
The data used are representative of the year 2023.

Data quality;
The primary data used in the study are provided by the company. The secondary data used in the study are from the Ecoinvent database.

Database and software used:
Ecoinvent database v.3.10, May 2024 / Software used SimaPro rel. 9.6

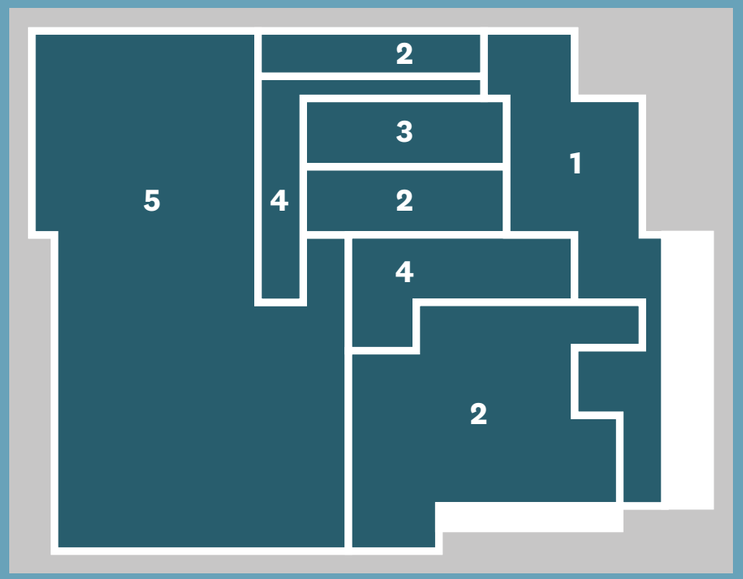
Description of the system boundaries:
The study is “from cradle to gate with options (A1-A3 + C1-C4 + D)”, as outlined in the following table (reference: PCR 2019:14 “Construction products” version 1.3.1).

The modules A1-A3 include the procurement processes of the materials (raw materials and auxiliary materials), as well as those of production.

The modules C1-C4 consider transport, processing as well as disposal of the bars at end of life. These operations are not directly controllable by the company: in this regard, literature relating to the construction sector is used, considering an average distance of 50 km to transport the bars from the place where it was decommissioned to the recovery centre.

Module D considers the steel deriving from the demolition process of the bars after their use and destined for recycling: the calculation of the environmental benefits deriving from the recovery of the steel is based on the instructions provided in the document “Product Category Rules for Type III environmental product declaration of construction products to EN 15804:2021 - Par. 6.3.5.6. Benefits and loads beyond the product system boundary, information Module D”.

LAYOUT



① **Raw material warehouse**
Magazzino materia prima

② **Drawing**
Trafile

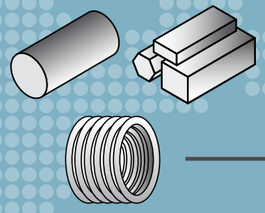
③ **Peeling**
Pelatura

④ **Grinding**
Rettifiche

⑤ **Final product warehouse**
Magazzino prodotto finito

FLOW CHART OF THE PRODUCTION PROCESS OF THE BARS

DRAWING / TRAFILATURA



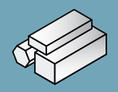
HOT ROLLED BARS

Pre-Straightening

Sand blasting

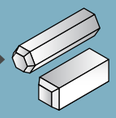
Drawing

Straightening



CARBON AND STAINLESS STEEL SQUARE, FLAT, HEXAGONAL DRAWN BARS

Edge beveling and/or milling



CARBON AND STAINLESS STEEL SQUARE AND HEXAGONAL DRAWN BARS WITH BEVELED/MILLED EDGES

Rolling

CARBON AND STAINLESS STEEL ROLLED DRAWN ROUNDS

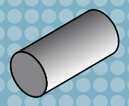
Edge beveling and/or milling

CARBON AND STAINLESS STEEL GROUND ROUNDS

Grinding

CARBON AND STAINLESS STEEL GROUND ROUNDS WITH BEVELED/MILLED EDGES

PEELING / PELATURA



HOT ROLLED BARS

Peeling

Rolling

CARBON AND STAINLESS STEEL PEELED ROUND

CARBON AND STAINLESS STEEL PEELED ROUNDS WITH BEVELED/MILLED EDGES

Grinding

CARBON AND STAINLESS STEEL GROUND ROUNDS

Edge beveling and/or milling

Grinding

CARBON AND STAINLESS STEEL GROUND ROUNDS WITH BEVELED/MILLED EDGES

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.

Other information

DESCRIPTION OF THE MAIN ACTIVITIES

The Contino plant in Marcegaglia Specialties S.p.A. manufactures a wide range of special steel bars in different diameters and shapes for high speed mechanical processing.

The production cycle begins with the arrival of the raw materials by road at the plant, but the journey between the original steelworks and the plant in Contino can take place via intermodal transport using trains for raw materials arriving from Spain and Germany, and finally the last journey is made by road only because of the geographical location of the site. The raw materials consist of:

- Bars and wire rods arriving from Italian steelworks via road,
- Bars and wire rods arriving from German steelworks by rail to Piadena station and finally by road to the plant.

In detail, the processing cycle is performed in the phases described below.

Shot blasting
Surface processing of steel that allows the mechanical removal of iron oxides by launching manganese steel balls against the surface being processed. The operation is necessary to render the material drawable, since the presence of metallic oxides, which are particularly hard, would prevent the subsequent cold drawing operation. It is carried out in special booths equipped with an intake system with emission into the authorised atmosphere.

Drawing
Bars or wire rods must undergo a drawing process which consists in the cold deformation of round, hexagonal or square section bars with resulting reduction of their section and elongation by traction. Processing, being conducted at ambient temperature, does not produce emissions.

Peeling
Hot rolled bars undergo a peeling process that consists in the removal of the external material of the bars by turning them. There are two peeling systems, each equipped with an extraction system with authorised air emissions.

Beveling
Process which consists in chamfering the sharp edges at the two ends of the tube via mechanical removal (turning). The operation aims at facilitating subsequent processing.

Grinding
Round section, drawn or peeled bars can undergo a grinding operation that consists in the removal of surface material with grinding wheels. The operation aims to improve dimensional and shape tolerance, as well as reduce surface roughness. It is therefore emphasised that grinding is a “second” process, because the material is first peeled or drawn, and only then ground.

ALLOCATION RULES

Mass-based allocation took place for energy consumption, air emissions, waste and water drains.

MODULES DECLARED

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

	Product stage			Construction process stage		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	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

Environmental information

The environmental performance indicators refer to a 1 t bar in special steel.

ENVIRONMENTAL IMPACTS

Impact category	Abbreviation	U.m.
Global warming - total	GWP - t	kg CO_2 eq
Depletion of ozone layer	ODP	kg CFC11 eq
Global warming - fossil resources	GWP - fossil	kg CO_2 eq
Global warming - biogenic	GWP - biogenic	kg CO_2 eq
Global warming – land use	GWP - luluc	kg CO_2 eq
Global warming - greenhouse effect gas	GWP - GHG	kg CO_2 eq.
Photochemical ozone creation	POCP	kg NMVOC eq
Acidification	AP	mol H+ eq
Eutrophication	EP - freshwater	kg P eq
	EP - marine	kg N eq
	EP - terrestrial	mol N eq
Net water use	WDP	m^3 depriv.
Abiotic depletion of resources (fossil)	ADP - F	MJ
Abiotic depletion of resources (non-fossil)	ADP - MM	kg Sb eq

CONSUMPTION OF RESOURCES

Impact category	Abbreviation	U.m.
Renewable energy resources (excluding raw materials)	PERE	MJ
Renewable energy resources (with raw materials)	PERM	MJ
Total renewable energy resources	PERT	MJ
Non-renewable energy resources (excluding raw materials)	PENRE	MJ
Non-renewable energy resources (with raw materials)	PENRM	MJ
Total non-renewable energy resources	PENRT	MJ
Secondary resources	SM	kg
Renewable secondary fuel	RSF	MJ
Non-renewable secondary combustibles	NRSF	MJ
Net freshwater use	FW	m^3

WASTE PRODUCTION

Impact category	Abbreviation	U.m.
Hazardous waste	HW	kg
Non-hazardous waste	NHW	kg
Radioactive waste	RW	kg

OUTPUT FLOW

Impact category	Abbreviation	U.m.
Reuse components	REUSE	kg
Materials for recycle	RECYCLE	kg
Materials for energy recovery	EN-REC	kg
Exported energy-electrical energy	EE-E	MJ
Exported energy-electrical energy	EE-T	MJ

SPECIAL STEEL BAR

Abbreviation	U.m.	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	1.41E+03	1.09E+01	9.10E+00	1.09E+01	2.09E+00	-9.36E+02
GWP - fossil	kg CO_2 eq	1.41E+03	1.09E+01	9.09E+00	1.09E+01	2.09E+00	-9.35E+02
GWP - biogenic	kg CO_2 eq	3.83E+00	5.32E-02	4.69E-03	5.32E-02	9.38E-04	-8.22E-01
GWP - luluc	kg CO_2 eq	1.55E+00	8.46E-04	3.11E-03	8.46E-04	8.37E-04	-4.53E-01
GWP - GHG	kg CO_2 eq	1.32E+03	1.00E+01	8.33E+00	1.00E+01	1.89E+00	-8.61E+02
ODP	kg CFC-11 eq	2.32E-05	1.87E-07	1.83E-07	1.87E-07	4.84E-08	-4.49E-06
POCP	kg NMVOC eq	5.13E+00	2.88E-02	4.78E-02	2.88E-02	1.71E-02	-3.05E+00
AP	mol H+ eq	5.85E+00	3.75E-02	2.93E-02	3.75E-02	1.13E-02	-3.92E+00
EP - freshwater	kg P eq	4.56E-01	1.88E-03	6.18E-04	1.88E-03	1.62E-04	-3.83E-01
EP - marine	kg N eq	1.37E+00	6.83E-03	9.97E-03	6.83E-03	4.37E-03	-8.85E-01
EP - terrestrial	mol N eq	1.44E+01	7.20E-02	1.08E-01	7.20E-02	4.76E-02	-9.11E+00
WDP	m^3 depriv.	5.34E+02	6.73E-01	6.27E-01	6.73E-01	8.60E-01	-1.76E+02
ADP - F	MJ	1.75E+04	1.51E+02	1.32E+02	1.51E+02	3.73E+01	-9.54E+03
ADP - MM	kg Sb eq	7.42E-03	1.04E-05	2.45E-05	1.04E-05	5.38E-06	-6.30E-03
PERE	MJ	1.48E+03	4.35E+00	2.15E+00	0.00E+00	0.00E+00	0.00E+00
PERM	MJ	0.00E+00	0.00E+00	1.00E+00	2.00E+00	3.00E+00	0.00E+00
PERT	MJ	1.48E+03	4.35E+00	3.15E+00	2.00E+00	3.00E+00	0.00E+00
PENRE	MJ	1.32E+04	4.82E+01	6.22E+02	0.00E+00	1.25E+01	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	1.00E+00	2.00E+00	3.00E+00	0.00E+00
PENRT	MJ	1.32E+04	4.82E+01	6.23E+02	2.00E+00	1.55E+01	0.00E+00
SM	kg	3.95E+02	1.44E-02	5.38E-02	1.44E-02	-3.27E-01	-1.62E+02
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	7.04E+00	3.44E-02	2.50E-02	4.52E-04	2.77E-04	-2.72E-01
HW	kg	8.74E+00	9.58E-03	2.50E-02	9.58E-03	5.95E-03	-6.13E+00
NHW	kg	9.87E-01	5.02E-04	1.38E-03	5.02E-04	4.15E-04	-6.39E-01
RW	kg	2.56E-01	1.42E-03	4.26E-04	1.42E-03	9.88E-05	-7.16E-02
REUSE	kg	0.00E+00	0.00E+00	1.00E+00	2.00E+00	3.00E+00	0.00E+00
RECYCLE	kg	5.37E+00	2.21E-02	6.18E-02	2.21E-02	1.62E-02	-4.44E+02
EN-REC	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-E	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE-T	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional information

It should be noted that the deviations between the various indicators of the free cutting steel bars produced by drawing, peeling, with or without grinding, is less than 10%.

The raw material's impact corresponds to 88.3% of the total impacts for drawn and ground bales, and to 94.9% of the total impacts for peeled bars.

Given the identical raw material base, what differentiates the various products is the type of processing carried out (peeling or drawing) and if they have subsequently been ground.

SUSTAINABILITY

Note that steel products are ideally completely recyclable an infinite number of times.

Considering the structural use and the possible combined use with other materials that can make recovery and recycling complicated, as a precaution we refer to what is indicated in the "Special Waste Report" of ISPRA - No. 385/2024: the amount of steel for recycling is 89.1%;

The products made are characterised by a recycled content of 67.1%, this percentage is calculated as a weighted average of the same value associated with the raw material inflow and resulting both from environmental declarations Type III as well as self-declarations in accordance with UNI EN ISO 14021.

All emissions generated by the processes are conveyed into the atmosphere and where necessary are equipped with appropriate abatement systems before they are released into the environment.

The materials used for packaging the end products consist of metal straps, polyester ties and plastic spacers.

The quantities of such packaging in relation to one ton of end product are less than 1%. The products contain lead (hazardous substance in the SVHC Candidate List for Authorisation) in quantities between 0.1% and 0.35%.

MANAGEMENT SYSTEM

With reference to the management systems used by the company, the presence of an environmental management system (certified according to UNI EN ISO 14001:2015), of safety (certified according to UNI ISO 45001:2018), of energy (certified according to UNI EN ISO 50001:2018) and social responsibility (SA8000:2014) testifies to the company's commitment to pursue the continuous improvement of its environmental, energy, social and safety performance. Within the environmental management system, there is also a special data management procedure to study the life cycle of products. From year to year, the company plans new improvement targets aimed at increasing its performance.

As part of the energy management system, the company carries out annual energy analysis and develops action plans and interventions to reduce consumption and increase the efficiency of the significant energy usage of the plant.

VARIATION COMPARED TO THE PREVIOUS VERSION OF THE EPD

Compared to the previous version of this EPD, the raw material and process data were updated with the data relating to 2023, which led to an increase in the percentage of post-consumer recycled material compared to the previous year with the consequent improvement of all the indicators of the A1-A3 form. In addition, the database used (shifted to Ecoinvent 3.10) and the residual mix of the various countries were updated, of which the update relating to 2023 was used.

References

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

PCR 2019:14 - Version 1.3.1 “CONSTRUCTION PRODUCTS”;

BRE Global Product Category Rules (PCR) for Type III EPD of construction products to EN 15804+A2;

Ecoinvent database v.3.10 - May 2024;

http://unstats.un.org/unsd/default.htm;

UNI EN ISO 14025: 2010 “Environmental labels and declarations - Type III environmental declarations - Principles and procedures”;

UNI EN ISO 14040: 2021 “Environmental management - Life cycle assessment - Principles and framework”;

UNI EN ISO 14044:2021 “Environmental management - Life cycle assessment - Requirements and guidelines”;

UNI EN ISO 15804:2021 “Sustainability of construction - Environmental product declarations - Core rules for development of the product category;

European Residual Mixes 2023 Association of Issuing Bodies “European Residual Mixes Results of the calculation of Residual Mixes for the calendar year 2023,” 2024-06-05;

ISPRA “Special Waste Report” - No. 389/2023.

MS Contino REACH and SVHC Declaration_ITA-edition June 2023

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