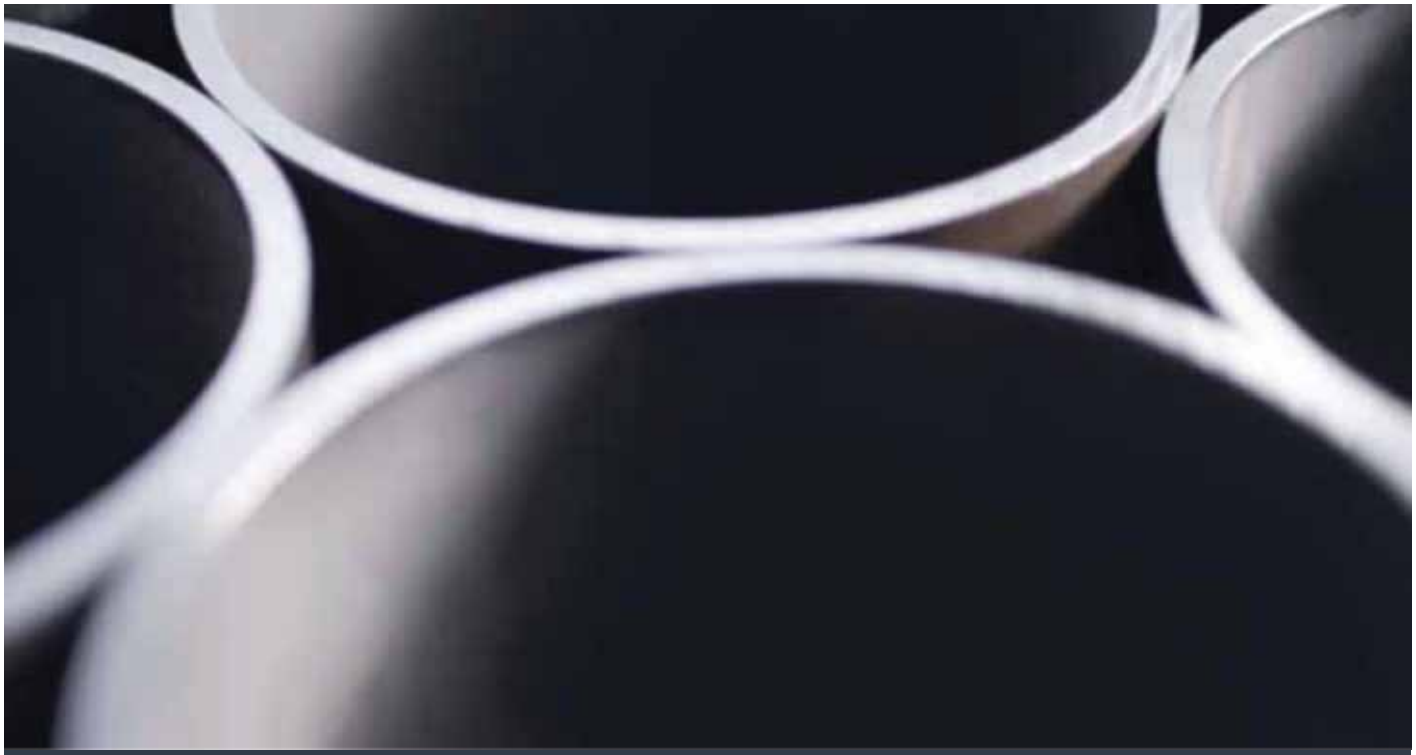


Environmental Product Declaration

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

TUBE SECTIONS FROM HOT AND COLD STRIPS, HEAT TREATED AND DRAWN

Marcegaglia Carbon Steel S.p.A.

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

Programme operator: **EPD International AB**
EPD registration number: **EPD-IES-0007027:005 (S-P-07027)**
Publication date: **2022-10-10**
Revision date: **2025-05-15**
Valid until: **2027-09-20**

MARCEGAGLIA CARBON STEEL

ECO PLATFORM EPD VERIFIED

EPD INTERNATIONAL EPD SYSTEM

Tube sections from hot and cold strips
heat treated and drawn

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

The standard EN 15804 serves as the core product category rules (PCR)

Product Category Rules (PCR):
Construction products, 2019:14, version 1.11, CPC 412

PCR review was conducted by: The Technical Committee of the International EPDR System.
Review chair: Claudia A. Pena - Contact via 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 Spa 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.

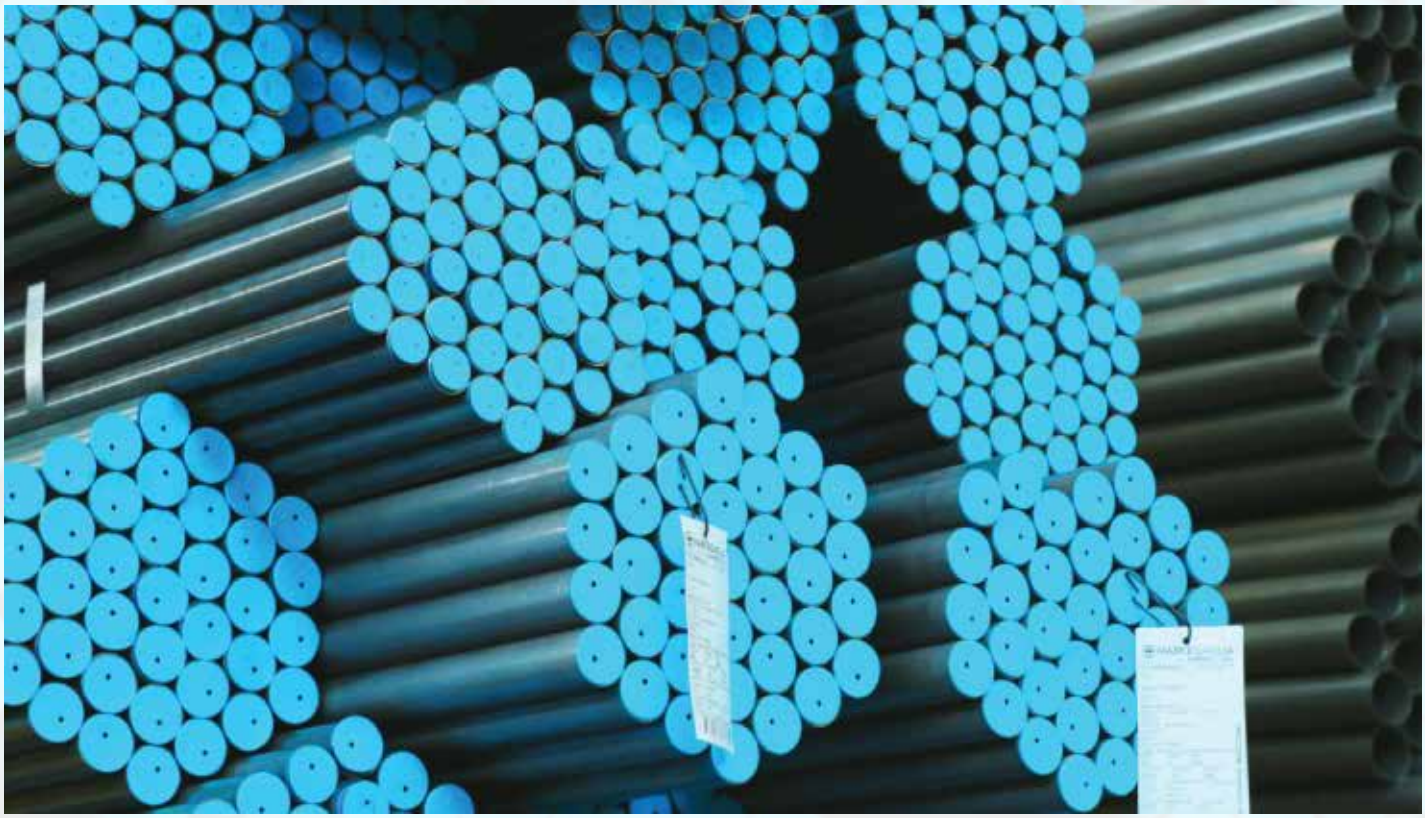
Contact:
To obtain more information about this product declaration and / or its configurations, the following references are available.

Mail: info.carbonsteel@marcegaglia.com - Tel +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 tubes. 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

Production site's Name and localization:
Boltiere plant: Marcegaglia street, 2 – 24040 -Boltiere (BG) ;
Casalmaggiore plant: Vanoni street, 25 – 26041 Casalmaggiore (CR);
Dusino San Michele plant: Corso Industria street, 20 – 14010 - Dusino San Michele (AT);
Gazoldo degli Ippoliti plant: Bresciani street, 16 – 46040 - Gazoldo Degli Ippoliti (MN);
Lomagna plant: Milano street, 41 – 23871 – Lomagna (LC);
Rivoli plant: Acqui street, 68 – 10098 - Rivoli (TO).



PRODUCT INFORMATION

Product name:
Tubes sections from hot and cold strips, heat treated and drawn

Product identification:
Tubes sections from hot and cold strips, heat treated and drawn

Product description:
From the very first stage of processing, and as part of its fully integrated production cycle, Marcegaglia Carbon Steel manufactures the world's most extensive range of carbon steel welded tubes. These tubes, produced from hot-rolled, cold-rolled, and galvanized strips, are designed for a broad spectrum of applications, ensuring excellent suitability for further processing.
Thanks to exceptional versatility and adaptability, Marcegaglia's precision tubes are engineered to meet the specific requirements of numerous sectors, including radiators, roller systems, greenhouses, doors and windows, fencing, furniture, sports equipment, automotive, mechanical engineering, and many others. Marcegaglia offers the most comprehensive range globally of welded and cold-drawn precision steel tubes, catering to the unique demands of every market segment.
The product range includes round, square, rectangular, oval, elliptical, triangular, and semi-oval tubes, complemented by a wide selection of customized special profiles tailored to customer specifications.
Marcegaglia also supplies an extensive portfolio of cold-formed welded tubes for structural applications, compliant with CE certification, as well as hollow sections made from unalloyed and fine-grain steels, available in hot-finished or cold-formed variants with heat treatment for demanding structural applications.
Lastly, Marcegaglia Carbon Steel offers a comprehensive range of precision cold-drawn tubes, both welded and seamless, available in all standard grades of carbon and low-alloy steels, ideal for use in automotive, hydraulic, and mechanical systems.
Detailed technical specifications for all products can be found in the product catalogs available on the company's website.

UN CPC CODE:
4128 Tubes, pipes and hollow profiles, of steel

Geographical scope:
Global

LCA INFORMATION

Functional unit:
The functional unit of the system considered is 1 ton of tube 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:
All the data used for this LCA analysis are referred to the year 2024.

Data Quality:
The primary data come from the company and the secondary data come from Ecoinvent database.

Database e software:
Ecoinvent database v.3.11, march 2025 / Software used SimaPro rel. 10.2.0.0.

Description of 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).

The modules A1-A3 describe the raw materials, the transport until the production's site and the production's process.

The modules C1-C4 describe the transport, the demolition process and the end of life of the products. These operations aren't under the company's control. In this regard, literature relating to the construction sector is used. It is considered:

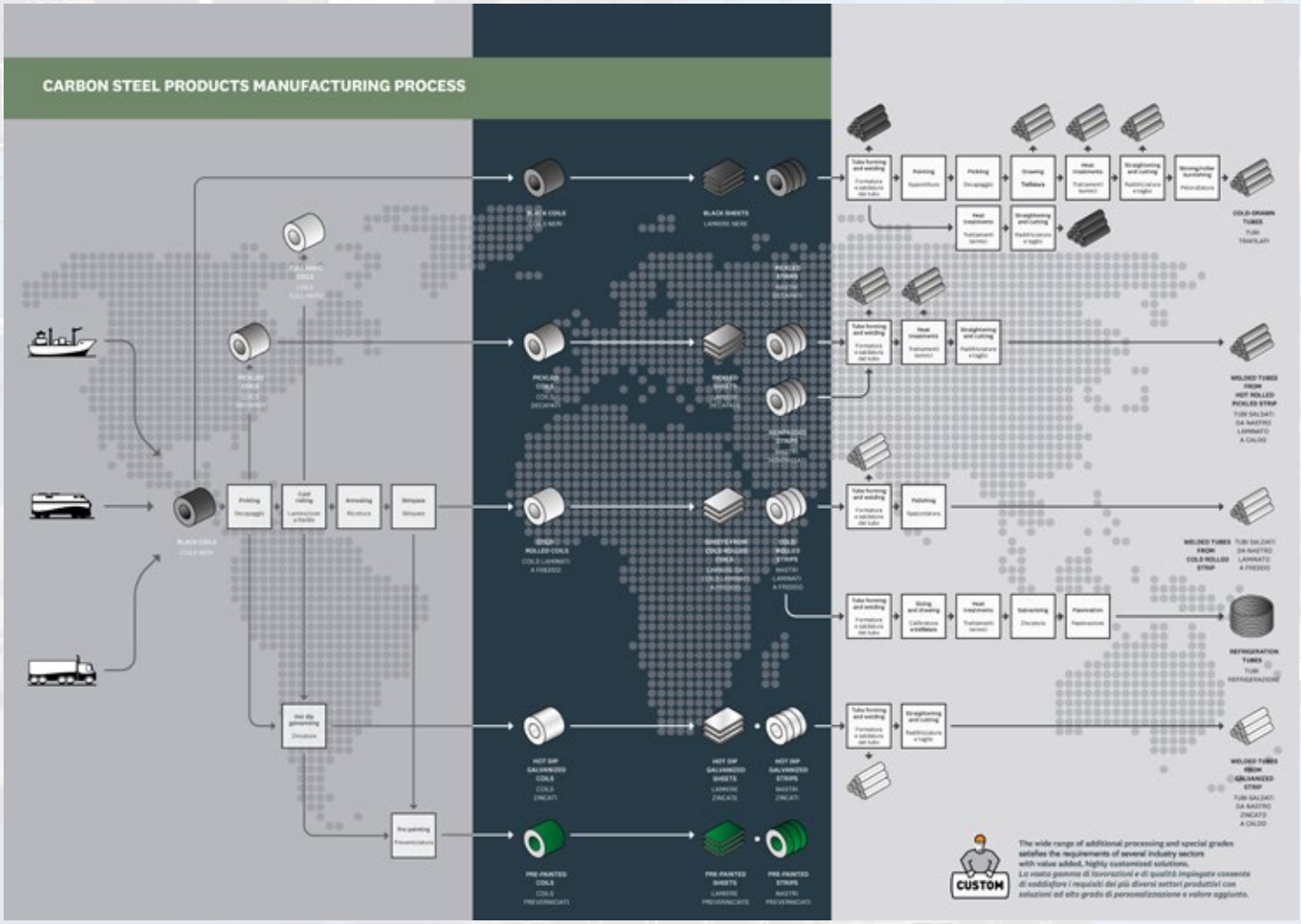
- an average diesel consumption equivalent to 46 MJ for each ton of material demolished;
- an average distance of 80 km to transport the material to the recovery center;
- an average electricity consumption of 28 kWh for each ton of material sorted.

Module D considers the 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 instructions 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".

Environmental Product Declaration

Tube sections from hot and cold strips heat treated and drawn

DESCRIPTION OF MAIN ACTIVITIES



DESCRIPTION OF MAIN ACTIVITIES

Beginning with carbon steel strips—primarily sourced from the Marcegaglia Carbon Steel S.p.A. facilities in Ravenna and Gazoldo degli Ippoliti—the tubes are manufactured at the production sites in Gazoldo degli Ippoliti, Casalmaggiore, Lomagna, and Dusino. This is done using specialized equipment known as "tubifici," designed for the induction welding of steel profiles. These systems are typically divided into three main sections: inlet, central, and outlet. In particular, the strips, suitably sheared, are processed by profiling machines composed of operating heads equipped with steel rollers to obtain the tubes welded in line.

Operationally, the following steps are carried out:

INPUT SECTION: consists of a feeding zone and a strip accumulation area;

CENTRAL SECTION: is the portion of the system dedicated to the creation of the profile. It consists of:

- Forming - Finishing;
- Welding;
- Calibration;
- Cutting;

OUTPUT SECTION: is the portion of the system dedicated to the evacuation and unloading of the profile.

The production cycle of hot tubes and cold tubes is essentially the same: the difference consists in the type of rolling of the incoming strip, which can have been hot or cold rolled.

The Boltiere and Rivoli plants specialized in drawing steel tubes, where the tubes are the raw material. Before processing, carbon steel tubes require surface pre-treatment. This cleaning process is performed chemically through degreasing and acid pickling. To enable the subsequent drawing process, the tubes must first be pointed—a procedure that can be carried out either before or after pickling.

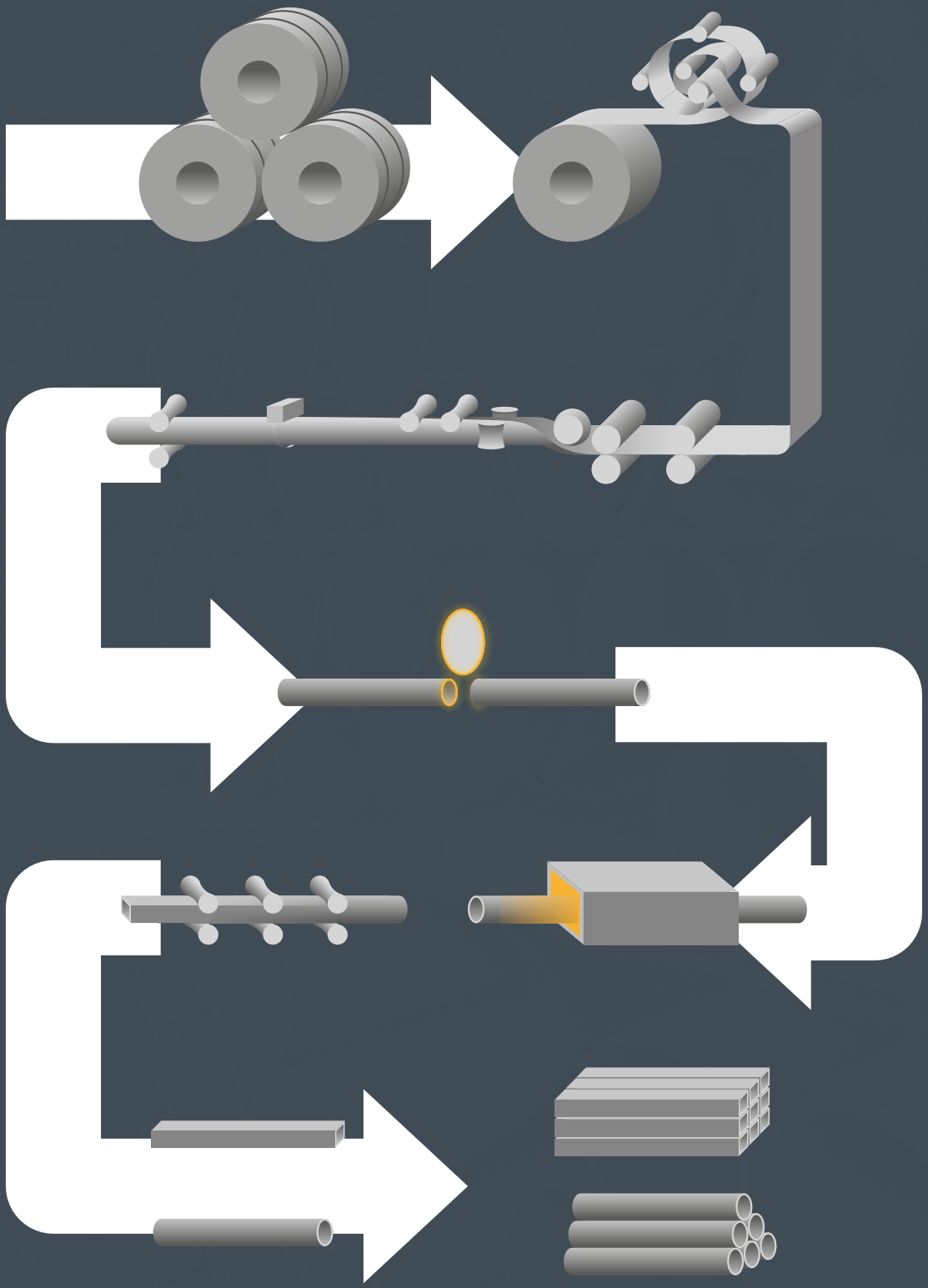
The drawing process consists in the cold elongation of the tubes and the consequent reduction of their thickness by traction. The drawn tubes can then follow two paths:

- be used in succession for straightening, cutting and shipping;
- be destined for heat treatment and then undergo a second pickling treatment and subsequently the steps referred to in the previous point.

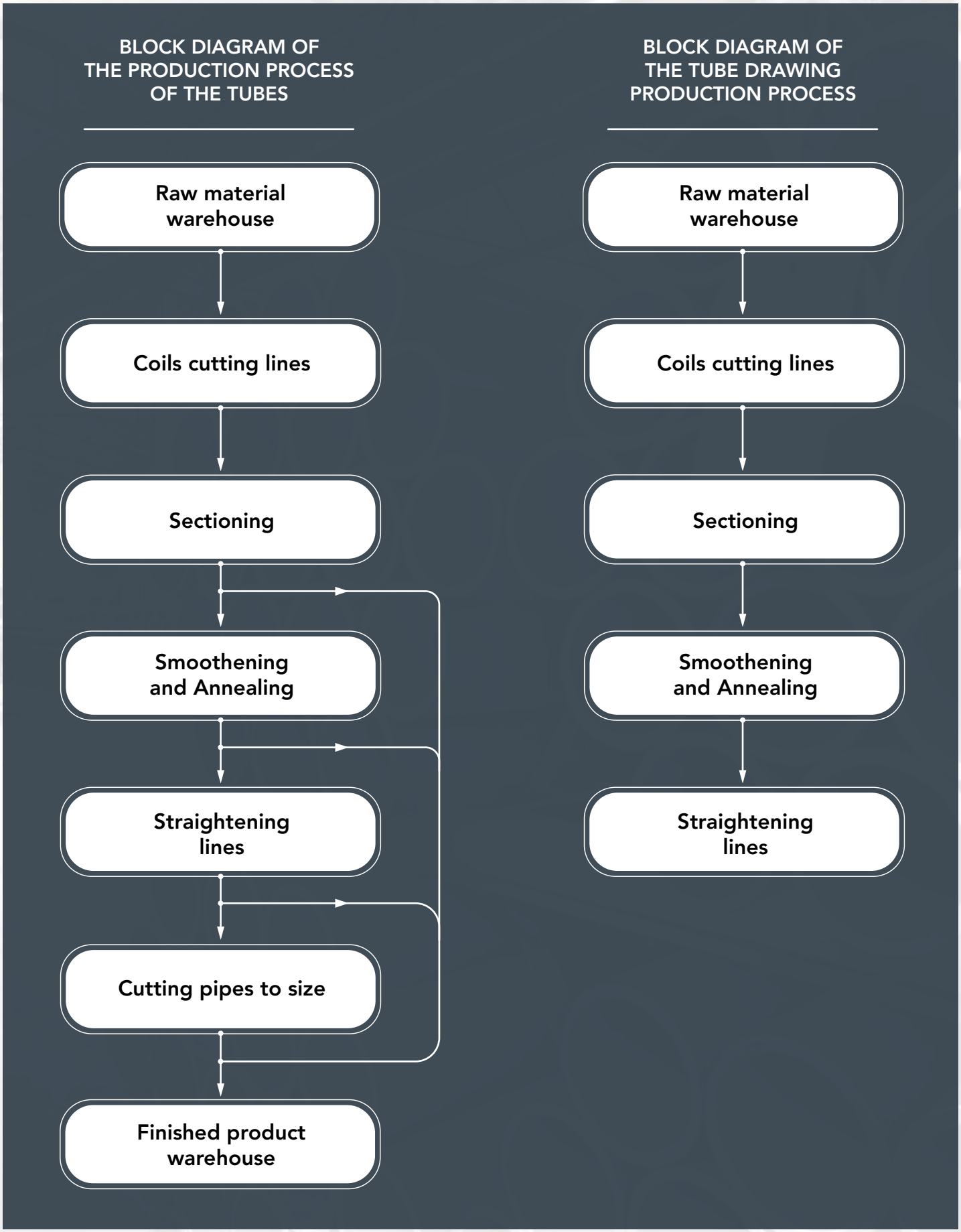
To restore the raw material, recover the metal's structure altered by the drawing process, and ensure thorough cleaning of the tubes, the products may undergo a heat treatment process.

DESCRIPTION OF MAIN ACTIVITIES

DIAGRAM OF THE PRODUCTION PROCESS OF THE TUBES



DESCRIPTION OF MAIN ACTIVITIES



CONTENT INFORMATION:

Product content	Weight, [t]	Post-consumer material weight, %	Biogenic material weight, % and kg C/kg
Steel	1,000	17.8%	0

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%.

Allocation's 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							End of life stage				C1-C4 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	ITA
Specific data used	> 85%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variations product	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variations site	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

ENVIRONMENTAL INFORMATION

The environmental performance indicators refer to 1 ton of tube product.

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 CO2 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	SRF	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 components	REUSE	kg
Materials for recycle	RECYCLE	kg
Materials for energy recovery	EN-REC	kg
Exported energy-electrical energy	EE-E	MJ
Exported energy-thermal energy	EE-T	MJ

TUBE PROFILED BY HOT ROLLED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.565E+03	4.643E+00	1.357E+01	1.237E+01	7.285E-01	-1.224E+03
GWP - fossil	kg CO_2 eq	2.569E+03	4.642E+00	1.356E+01	1.238E+01	7.277E-01	-1.221E+03
GWP - biogenic	kg CO_2 eq	-5.421E+00	9.400E-04	9.144E-03	-5.303E-03	3.562E-04	-1.914E+00
GWP - luluc	kg CO_2 eq	1.912E+00	4.749E-04	4.550E-03	1.208E-03	4.136E-04	-7.762E-01
GWP - GHG	kg CO_2 eq	2.573E+03	4.643E+00	1.357E+01	1.238E+01	7.283E-01	-1.223E+03
ODP	kg CFC-11 eq	1.248E-05	6.895E-08	2.960E-07	2.621E-07	2.029E-08	-6.004E-06
POCP	kg NMVOC eq	8.226E+00	6.326E-02	6.682E-02	3.456E-02	7.713E-03	-4.119E+00
AP	mol H+ eq	1.032E+01	4.149E-02	4.375E-02	4.828E-02	5.097E-03	-5.286E+00
EP - freshwater	kg P eq	1.149E+00	1.496E-04	9.307E-04	2.838E-03	6.373E-05	-7.195E-01
EP - marine	kg N eq	2.461E+00	1.931E-02	1.475E-02	8.664E-03	1.956E-03	-1.200E+00
EP - terrestrial	mol N eq	2.549E+01	2.114E-01	1.605E-01	9.129E-02	2.137E-02	-1.232E+01
WDP	m^3 depriv.	6.929E+02	1.292E-01	7.702E-01	9.579E-01	7.769E-01	-2.658E+02
ADP - F	MJ	2.765E+04	6.045E+01	1.933E+02	1.754E+02	1.782E+01	-1.293E+04
ADP - MM	kg Sb eq	1.244E-02	1.656E-06	4.454E-05	8.386E-06	1.065E-06	-9.281E-03
PERE	MJ	2.478E+03	3.702E-01	3.021E+00	8.845E+00	1.604E-01	-1.255E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	2.478E+03	3.702E-01	3.021E+00	8.845E+00	1.604E-01	-1.255E+03
PENRE	MJ	2.766E+04	1.355E-02	1.933E+02	1.754E+02	1.783E+01	-1.294E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	2.766E+04	6.045E+01	1.933E+02	1.754E+02	1.783E+01	-1.294E+04
SM	kg	2.850E+02	6.393E-03	0.000E+00	2.062E-02	4.392E-03	-2.201E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	1.876E+01	4.339E-03	2.941E-02	3.734E-02	1.851E-02	-1.405E+01
HW	Kg	1.074E+00	5.659E-04	4.981E-03	2.288E-03	2.605E-04	-4.010E-01
NHW	Kg	2.256E+02	4.079E-02	1.044E+01	1.825E-01	1.163E+02	-1.416E+02
RW	kg	2.696E-02	6.325E-06	5.626E-05	7.765E-05	2.600E-06	-9.642E-03
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	7.192E+00	1.052E-02	0.000E+00	2.736E-02	7.136E-03	-6.039E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

HOT ROLLED AND PICKLED STRIP PROFILED TUBE

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.581E+03	4.743E+00	1.206E+01	1.216E+01	1.112E+00	-1.191E+03
GWP - fossil	kg CO_2 eq	2.585E+03	4.742E+00	1.205E+01	1.189E+01	1.111E+00	-1.188E+03
GWP - biogenic	kg CO_2 eq	-5.802E+00	9.602E-04	7.936E-03	2.707E-01	5.938E-04	-1.862E+00
GWP - luluc	kg CO_2 eq	2.061E+00	4.851E-04	4.113E-03	1.173E-03	5.502E-04	-7.551E-01
GWP - GHG	kg CO_2 eq	2.588E+03	4.743E+00	1.205E+01	1.190E+01	1.111E+00	-1.190E+03
ODP	kg CFC-11 eq	1.351E-05	7.044E-08	2.631E-07	2.514E-07	2.879E-08	-5.840E-06
POCP	kg NMVOC eq	1.192E+01	6.462E-02	6.032E-02	3.326E-02	1.042E-02	-4.007E+00
AP	mol H+ eq	1.011E+01	4.238E-02	3.911E-02	4.576E-02	6.897E-03	-5.142E+00
EP - freshwater	kg P eq	1.033E+00	1.529E-04	8.327E-04	2.659E-03	9.338E-05	-6.999E-01
EP - marine	kg N eq	2.439E+00	1.972E-02	1.321E-02	8.284E-03	2.661E-03	-1.168E+00
EP - terrestrial	mol N eq	2.520E+01	2.160E-01	1.438E-01	8.763E-02	2.905E-02	-1.198E+01
WDP	m^3 depriv.	6.929E+02	1.319E-01	7.134E-01	2.110E+00	8.157E-01	-2.585E+02
ADP - F	MJ	2.772E+04	6.175E+01	1.728E+02	1.688E+02	2.350E+01	-1.258E+04
ADP - MM	kg Sb eq	1.102E-02	1.692E-06	3.815E-05	7.813E-06	2.290E-06	-9.028E-03
PERE	MJ	1.992E+03	3.781E-01	2.672E+00	1.981E+01	2.496E-01	-1.221E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	1.992E+03	3.781E-01	2.672E+00	1.981E+01	2.496E-01	-1.221E+03
PENRE	MJ	2.773E+04	1.639E+01	1.728E+02	1.688E+02	2.351E+01	-1.258E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	2.773E+04	6.175E+01	1.728E+02	1.688E+02	2.351E+01	-1.258E+04
SM	kg	2.932E+02	1.321E-02	1.326E-02	1.866E-02	-8.599E-02	-2.139E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	1.484E+01	4.443E-03	2.764E-02	3.605E-02	1.975E-02	-1.374E+01
HW	Kg	8.436E-01	5.781E-04	4.575E-03	2.280E-03	1.297E-01	-3.901E-01
NHW	Kg	1.826E+02	4.167E-02	1.075E+01	2.143E-01	1.189E+02	-1.378E+02
RW	kg	2.190E-02	6.462E-06	4.961E-05	7.853E-05	4.275E-06	-9.379E-03
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	5.405E+00	1.056E-02	2.089E-05	1.887E-02	5.373E-03	-3.741E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

TUBE PROFILED BY COLD-ROLLED STRIP (FULL HARD)

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.792E+03	5.032E+00	9.176E+00	1.417E+01	2.260E+00	-1.730E+03
GWP - fossil	kg CO_2 eq	2.803E+03	5.031E+00	9.168E+00	1.307E+01	2.257E+00	-1.726E+03
GWP - biogenic	kg CO_2 eq	-1.323E+01	1.019E-03	5.604E-03	1.101E+00	1.306E-03	-2.705E+00
GWP - luluc	kg CO_2 eq	2.137E+00	5.146E-04	3.292E-03	1.324E-03	9.589E-04	-1.097E+00
GWP - GHG	kg CO_2 eq	2.805E+03	5.031E+00	9.173E+00	1.312E+01	2.259E+00	-1.728E+03
ODP	kg CFC-11 eq	1.267E-05	7.472E-08	2.006E-07	3.088E-07	5.423E-08	-8.484E-06
POCP	kg NMVOC eq	2.518E+01	6.856E-02	4.808E-02	3.629E-02	1.851E-02	-5.822E+00
AP	mol H+ eq	1.111E+01	4.496E-02	3.033E-02	4.381E-02	1.228E-02	-7.470E+00
EP - freshwater	kg P eq	1.143E+00	1.622E-04	6.468E-04	2.030E-03	1.822E-04	-1.017E+00
EP - marine	kg N eq	2.722E+00	2.093E-02	1.030E-02	8.239E-03	4.769E-03	-1.696E+00
EP - terrestrial	mol N eq	2.790E+01	2.291E-01	1.121E-01	8.936E-02	5.205E-02	-1.741E+01
WDP	m^3 depriv.	6.189E+02	1.400E-01	6.096E-01	5.837E+00	9.302E-01	-3.756E+02
ADP - F	MJ	2.975E+04	6.551E+01	1.341E+02	1.876E+02	4.050E+01	-1.828E+04
ADP - MM	kg Sb eq	1.207E-02	1.795E-06	2.576E-05	7.566E-06	5.961E-06	-1.312E-02
PERE	MJ	4.155E+02	4.012E-01	2.007E+00	5.636E+01	5.166E-01	-1.773E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	4.155E+02	4.012E-01	2.007E+00	5.636E+01	5.166E-01	-1.773E+03
PENRE	MJ	2.975E+04	6.551E+01	1.341E+02	1.876E+02	4.050E+01	-1.828E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	2.975E+04	6.551E+01	1.341E+02	1.876E+02	4.050E+01	-1.828E+04
SM	kg	7.598E-01	2.726E-02	5.304E-02	1.769E-02	-3.572E-01	-3.102E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	5.995E-01	4.516E-03	2.319E-02	3.825E-02	2.331E-02	-1.987E+01
HW	Kg	2.434E-01	6.133E-04	3.826E-03	2.901E-03	5.181E-01	-5.667E-01
NHW	Kg	3.736E+01	4.421E-02	1.156E+01	3.360E-01	1.265E+02	-2.002E+02
RW	kg	2.766E-03	6.855E-06	3.690E-05	2.071E-05	9.291E-06	-1.363E-02
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	1.298E-02	3.201E-04	3.085E-03	4.592E-04	6.031E-04	-1.248E-02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

TUBE PROFILED BY GALVANISED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	3.052E+03	4.706E+00	1.312E+01	1.311E+01	9.834E-01	-1.393E+03
GWP - fossil	kg CO_2 eq	3.055E+03	4.705E+00	1.310E+01	1.293E+01	9.824E-01	-1.390E+03
GWP - biogenic	kg CO_2 eq	-5.009E+00	9.527E-04	8.770E-03	1.794E-01	5.143E-04	-2.179E+00
GWP - luluc	kg CO_2 eq	2.367E+00	4.813E-04	4.422E-03	1.269E-03	5.043E-04	-8.836E-01
GWP - GHG	kg CO_2 eq	3.059E+03	4.705E+00	1.311E+01	1.294E+01	9.831E-01	-1.392E+03
ODP	kg CFC-11 eq	1.965E-05	6.988E-08	2.861E-07	2.847E-07	2.594E-08	-6.834E-06
POCP	kg NMVOC eq	1.281E+01	6.411E-02	6.491E-02	3.600E-02	9.509E-03	-4.689E+00
AP	mol H+ eq	1.233E+01	4.205E-02	4.236E-02	4.847E-02	6.293E-03	-6.017E+00
EP - freshwater	kg P eq	1.283E+00	1.517E-04	9.015E-04	2.688E-03	8.344E-05	-8.190E-01
EP - marine	kg N eq	3.025E+00	1.957E-02	1.429E-02	8.775E-03	2.424E-03	-1.366E+00
EP - terrestrial	mol N eq	3.090E+01	2.143E-01	1.555E-01	9.309E-02	2.647E-02	-1.402E+01
WDP	m^3 depriv.	7.787E+02	1.309E-01	7.546E-01	1.816E+00	8.021E-01	-3.025E+02
ADP - F	MJ	3.349E+04	6.127E+01	1.872E+02	1.838E+02	2.160E+01	-1.472E+04
ADP - MM	kg Sb eq	6.850E-02	1.679E-06	4.254E-05	8.494E-06	1.881E-06	-1.056E-02
PERE	MJ	2.332E+03	3.752E-01	2.915E+00	1.737E+01	2.197E-01	-1.428E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	2.332E+03	3.752E-01	2.915E+00	1.737E+01	2.197E-01	-1.428E+03
PENRE	MJ	3.350E+04	4.107E+01	1.872E+02	1.838E+02	2.160E+01	-1.472E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	3.350E+04	6.127E+01	1.872E+02	1.838E+02	2.160E+01	-1.472E+04
SM	kg	1.959E+02	8.805E-03	8.840E-03	2.095E-02	-5.587E-02	-2.504E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	2.852E+01	4.430E-03	2.912E-02	3.913E-02	1.934E-02	-1.610E+01
HW	Kg	2.495E+00	5.736E-04	4.866E-03	2.498E-03	8.656E-02	-4.565E-01
NHW	Kg	2.151E+02	4.134E-02	1.061E+01	2.125E-01	1.179E+02	-1.612E+02
RW	kg	2.712E-02	6.411E-06	5.423E-05	5.809E-05	3.714E-06	-1.098E-02
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	6.614E+00	7.040E-03	2.397E-04	2.394E-02	5.991E-03	-5.451E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

TUBE PROFILED BY COLD STRIP (strip subjected to cold rolling, annealing and skin-passing)

	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	3.007E+03	4.732E+00	1.202E+01	1.106E+01	1.110E+00	-1.413E+03
GWP - fossil	kg CO_2 eq	3.016E+03	4.730E+00	1.201E+01	1.078E+01	1.109E+00	-1.410E+03
GWP - biogenic	kg CO_2 eq	-1.095E+01	9.579E-04	7.909E-03	2.735E-01	5.929E-04	-2.211E+00
GWP - luluc	kg CO_2 eq	2.076E+00	4.839E-04	4.100E-03	1.062E-03	5.492E-04	-8.965E-01
GWP - GHG	kg CO_2 eq	3.020E+03	4.731E+00	1.202E+01	1.080E+01	1.110E+00	-1.412E+03
ODP	kg CFC-11 eq	1.748E-05	7.026E-08	2.623E-07	2.529E-07	2.874E-08	-6.933E-06
POCP	kg NMVOC eq	1.364E+01	6.446E-02	6.013E-02	2.982E-02	1.040E-02	-4.757E+00
AP	mol H+ eq	1.175E+01	4.228E-02	3.899E-02	3.792E-02	6.884E-03	-6.105E+00
EP - freshwater	kg P eq	1.208E+00	1.525E-04	8.301E-04	1.882E-03	9.321E-05	-8.310E-01
EP - marine	kg N eq	2.879E+00	1.968E-02	1.317E-02	6.942E-03	2.656E-03	-1.386E+00
EP - terrestrial	mol N eq	2.940E+01	2.154E-01	1.433E-01	7.438E-02	2.900E-02	-1.423E+01
WDP	m^3 depriv.	7.125E+02	1.316E-01	7.113E-01	2.074E+00	8.138E-01	-3.069E+02
ADP - F	MJ	3.255E+04	6.160E+01	1.723E+02	1.540E+02	2.346E+01	-1.494E+04
ADP - MM	kg Sb eq	1.275E-02	1.688E-06	3.802E-05	6.823E-06	2.287E-06	-1.072E-02
PERE	MJ	2.074E+03	3.772E-01	2.664E+00	2.034E+01	2.492E-01	-1.449E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	2.074E+03	3.772E-01	2.664E+00	2.034E+01	2.492E-01	-1.449E+03
PENRE	MJ	3.256E+04	3.146E+01	1.723E+02	1.540E+02	2.346E+01	-1.494E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	3.256E+04	6.160E+01	1.723E+02	1.540E+02	2.346E+01	-1.494E+04
SM	kg	1.828E+02	6.814E-03	1.326E-02	1.719E-02	-8.601E-02	-2.540E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	1.858E+01	4.432E-03	2.756E-02	3.223E-02	1.971E-02	-1.632E+01
HW	Kg	1.115E+00	5.767E-04	4.562E-03	2.193E-03	1.297E-01	-4.631E-01
NHW	Kg	1.993E+02	4.157E-02	1.072E+01	1.885E-01	1.186E+02	-1.636E+02
RW	kg	2.146E-02	6.446E-06	4.945E-05	1.384E-05	4.268E-06	-1.114E-02
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	6.004E+00	3.387E-05	2.089E-05	1.701E-02	5.355E-03	-4.840E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

TUBE PROFILED AND HEAT TREATED BY HOT-ROLLED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.607E+03	4.631E+00	8.446E+00	1.923E-02	7.266E-01	-1.272E+03
GWP - fossil	kg CO_2 eq	2.607E+03	4.630E+00	8.438E+00	1.925E-02	7.259E-01	-1.270E+03
GWP - biogenic	kg CO_2 eq	-3.596E+00	9.376E-04	5.158E-03	-1.458E-05	3.553E-04	-1.990E+00
GWP - luluc	kg CO_2 eq	3.551E+00	4.737E-04	3.030E-03	1.887E-06	4.126E-04	-8.069E-01
GWP - GHG	kg CO_2 eq	2.613E+03	4.631E+00	8.442E+00	1.925E-02	7.265E-01	-1.271E+03
ODP	kg CFC-11 eq	1.659E-05	6.878E-08	1.846E-07	3.419E-10	2.024E-08	-6.241E-06
POCP	kg NMVOC eq	8.445E+00	6.310E-02	4.425E-02	5.468E-05	7.693E-03	-4.282E+00
AP	mol H+ eq	1.052E+01	4.138E-02	2.792E-02	8.442E-05	5.084E-03	-5.495E+00
EP - freshwater	kg P eq	1.154E+00	1.493E-04	5.953E-04	5.795E-06	6.357E-05	-7.480E-01
EP - marine	kg N eq	2.559E+00	1.926E-02	9.482E-03	1.497E-05	1.951E-03	-1.248E+00
EP - terrestrial	mol N eq	2.644E+01	2.109E-01	1.032E-01	1.554E-04	2.132E-02	-1.281E+01
WDP	m^3 depriv.	7.804E+02	1.288E-01	5.611E-01	1.361E-03	7.749E-01	-2.763E+02
ADP - F	MJ	2.926E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.345E+04
ADP - MM	kg Sb eq	1.245E-02	1.652E-06	2.370E-05	1.368E-08	1.062E-06	-9.648E-03
PERE	MJ	2.629E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.304E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	2.629E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.304E+03
PENRE	MJ	2.927E+04	1.262E-02	1.234E+02	2.706E-01	1.778E+01	-1.345E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	2.927E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.345E+04
SM	kg	2.598E+02	0.000E+00	0.000E+00	3.109E-05	4.381E-03	-2.288E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	2.175E+01	4.404E-03	2.287E-02	5.999E-05	1.851E-02	-1.472E+01
HW	Kg	1.100E+00	5.645E-04	3.522E-03	3.248E-06	2.599E-04	-4.169E-01
NHW	Kg	2.226E+02	4.069E-02	1.064E+01	3.088E-04	1.160E+02	-1.472E+02
RW	kg	2.946E-02	6.309E-06	3.396E-05	2.732E-07	2.594E-06	-1.002E-02
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	7.301E+00	0.000E+00	0.000E+00	4.102E-05	7.118E-03	-6.277E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

PROFILED TUBE, HEAT TREATED AND STRAIGHTENED BY HOT ROLLED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.671E+03	4.631E+00	8.446E+00	1.923E-02	7.266E-01	-1.262E+03
GWP - fossil	kg CO_2 eq	2.671E+03	4.630E+00	8.438E+00	1.925E-02	7.259E-01	-1.259E+03
GWP - biogenic	kg CO_2 eq	-3.466E+00	9.376E-04	5.158E-03	-1.458E-05	3.553E-04	-1.974E+00
GWP - luluc	kg CO_2 eq	3.919E+00	4.737E-04	3.030E-03	1.887E-06	4.126E-04	-8.005E-01
GWP - GHG	kg CO_2 eq	2.677E+03	4.631E+00	8.442E+00	1.925E-02	7.265E-01	-1.261E+03
ODP	kg CFC-11 eq	1.705E-05	6.878E-08	1.846E-07	3.419E-10	2.024E-08	-6.191E-06
POCP	kg NMVOC eq	8.650E+00	6.310E-02	4.425E-02	5.468E-05	7.693E-03	-4.248E+00
AP	mol H+ eq	1.077E+01	4.138E-02	2.792E-02	8.442E-05	5.084E-03	-5.451E+00
EP - freshwater	kg P eq	1.191E+00	1.493E-04	5.953E-04	5.795E-06	6.357E-05	-7.420E-01
EP - marine	kg N eq	2.622E+00	1.926E-02	9.482E-03	1.497E-05	1.951E-03	-1.238E+00
EP - terrestrial	mol N eq	2.708E+01	2.109E-01	1.032E-01	1.554E-04	2.132E-02	-1.270E+01
WDP	m^3 depriv.	7.988E+02	1.288E-01	5.611E-01	1.361E-03	7.749E-01	-2.741E+02
ADP - F	MJ	3.001E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.334E+04
ADP - MM	kg Sb eq	1.273E-02	1.652E-06	2.370E-05	1.368E-08	1.062E-06	-9.571E-03
PERE	MJ	2.731E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.294E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	2.731E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.294E+03
PENRE	MJ	3.002E+04	1.289E-02	1.234E+02	2.706E-01	1.778E+01	-1.334E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	3.002E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.334E+04
SM	kg	2.655E+02	0.000E+00	0.000E+00	3.109E-05	4.381E-03	-2.269E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	2.225E+01	4.404E-03	2.287E-02	5.999E-05	1.851E-02	-1.461E+01
HW	Kg	1.120E+00	5.645E-04	3.522E-03	3.248E-06	2.599E-04	-4.135E-01
NHW	Kg	2.285E+02	4.069E-02	1.064E+01	3.088E-04	1.160E+02	-1.461E+02
RW	kg	3.082E-02	6.309E-06	3.396E-05	2.732E-07	2.594E-06	-9.943E-03
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	7.483E+00	0.000E+00	0.000E+00	4.102E-05	7.118E-03	-6.227E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

PROFILED TUBE, HEAT TREATED, STRAIGHTENED AND CUT FROM HOT ROLLED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.786E+03	4.631E+00	8.446E+00	1.923E-02	7.266E-01	-1.250E+03
GWP - fossil	kg CO_2 eq	2.783E+03	4.630E+00	8.438E+00	1.925E-02	7.259E-01	-1.247E+03
GWP - biogenic	kg CO_2 eq	-2.691E+00	9.376E-04	5.158E-03	-1.458E-05	3.553E-04	-1.955E+00
GWP - luluc	kg CO_2 eq	5.773E+00	4.737E-04	3.030E-03	1.887E-06	4.126E-04	-7.927E-01
GWP - GHG	kg CO_2 eq	2.791E+03	4.631E+00	8.442E+00	1.925E-02	7.265E-01	-1.249E+03
ODP	kg CFC-11 eq	1.951E-05	6.878E-08	1.846E-07	3.419E-10	2.024E-08	-6.131E-06
POCP	kg NMVOC eq	9.283E+00	6.310E-02	4.425E-02	5.468E-05	7.693E-03	-4.207E+00
AP	mol H+ eq	1.124E+01	4.138E-02	2.792E-02	8.442E-05	5.084E-03	-5.398E+00
EP - freshwater	kg P eq	1.236E+00	1.493E-04	5.953E-04	5.795E-06	6.357E-05	-7.348E-01
EP - marine	kg N eq	2.725E+00	1.926E-02	9.482E-03	1.497E-05	1.951E-03	-1.226E+00
EP - terrestrial	mol N eq	2.813E+01	2.109E-01	1.032E-01	1.554E-04	2.132E-02	-1.258E+01
WDP	m^3 depriv.	8.291E+02	1.288E-01	5.611E-01	1.361E-03	7.749E-01	-2.714E+02
ADP - F	MJ	3.210E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.321E+04
ADP - MM	kg Sb eq	1.334E-02	1.652E-06	2.370E-05	1.368E-08	1.062E-06	-9.478E-03
PERE	MJ	3.107E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.281E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	3.107E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.281E+03
PENRE	MJ	3.210E+04	1.318E-02	1.234E+02	2.706E-01	1.778E+01	-1.321E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	3.210E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.321E+04
SM	kg	2.714E+02	0.000E+00	0.000E+00	3.109E-05	4.381E-03	-2.247E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	2.308E+01	4.404E-03	2.287E-02	5.999E-05	1.851E-02	-1.447E+01
HW	Kg	1.179E+00	5.645E-04	3.522E-03	3.248E-06	2.599E-04	-4.095E-01
NHW	Kg	2.385E+02	4.069E-02	1.064E+01	3.088E-04	1.160E+02	-1.447E+02
RW	kg	3.689E-02	6.309E-06	3.396E-05	2.732E-07	2.594E-06	-9.847E-03
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	7.844E+00	0.000E+00	0.000E+00	4.102E-05	7.118E-03	-6.167E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

TUBE PROFILED AND HEAT TREATED BY HOT ROLLED AND PICKLED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.649E+03	4.631E+00	8.446E+00	1.923E-02	7.266E-01	-1.125E+03
GWP - fossil	kg CO_2 eq	2.649E+03	4.630E+00	8.438E+00	1.925E-02	7.259E-01	-1.123E+03
GWP - biogenic	kg CO_2 eq	-3.854E+00	9.376E-04	5.158E-03	-1.458E-05	3.553E-04	-1.760E+00
GWP - luluc	kg CO_2 eq	3.528E+00	4.737E-04	3.030E-03	1.887E-06	4.126E-04	-7.138E-01
GWP - GHG	kg CO_2 eq	2.655E+03	4.631E+00	8.442E+00	1.925E-02	7.265E-01	-1.125E+03
ODP	kg CFC-11 eq	1.767E-05	6.878E-08	1.846E-07	3.419E-10	2.024E-08	-5.521E-06
POCP	kg NMVOC eq	8.411E+00	6.310E-02	4.425E-02	5.468E-05	7.693E-03	-3.788E+00
AP	mol H+ eq	1.049E+01	4.138E-02	2.792E-02	8.442E-05	5.084E-03	-4.861E+00
EP - freshwater	kg P eq	1.052E+00	1.493E-04	5.953E-04	5.795E-06	6.357E-05	-6.617E-01
EP - marine	kg N eq	2.572E+00	1.926E-02	9.482E-03	1.497E-05	1.951E-03	-1.104E+00
EP - terrestrial	mol N eq	2.650E+01	2.109E-01	1.032E-01	1.554E-04	2.132E-02	-1.133E+01
WDP	m^3 depriv.	7.821E+02	1.288E-01	5.611E-01	1.361E-03	7.749E-01	-2.444E+02
ADP - F	MJ	2.967E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.189E+04
ADP - MM	kg Sb eq	1.258E-02	1.652E-06	2.370E-05	1.368E-08	1.062E-06	-8.535E-03
PERE	MJ	2.697E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.154E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	2.697E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.154E+03
PENRE	MJ	2.967E+04	8.090E-03	1.234E+02	2.706E-01	1.778E+01	-1.190E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	2.967E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.190E+04
SM	kg	3.325E+02	0.000E+00	0.000E+00	3.109E-05	4.381E-03	-2.024E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	2.279E+01	4.404E-03	2.287E-02	5.999E-05	1.851E-02	-1.303E+01
HW	Kg	1.163E+00	5.645E-04	3.522E-03	3.248E-06	2.599E-04	-3.688E-01
NHW	Kg	2.345E+02	4.069E-02	1.064E+01	3.088E-04	1.160E+02	-1.303E+02
RW	kg	3.050E-02	6.309E-06	3.396E-05	2.732E-07	2.594E-06	-8.867E-03
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	7.367E+00	0.000E+00	0.000E+00	4.102E-05	7.118E-03	-5.553E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

PROFILED TUBE, HEAT TREATED AND STRAIGHTENED BY HOT ROLLED AND PICKLED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.714E+03	4.631E+00	8.446E+00	1.923E-02	7.266E-01	-1.109E+03
GWP - fossil	kg CO_2 eq	2.714E+03	4.630E+00	8.438E+00	1.925E-02	7.259E-01	-1.107E+03
GWP - biogenic	kg CO_2 eq	-3.729E+00	9.376E-04	5.158E-03	-1.458E-05	3.553E-04	-1.735E+00
GWP - luluc	kg CO_2 eq	3.896E+00	4.737E-04	3.030E-03	1.887E-06	4.126E-04	-7.035E-01
GWP - GHG	kg CO_2 eq	2.720E+03	4.631E+00	8.442E+00	1.925E-02	7.265E-01	-1.108E+03
ODP	kg CFC-11 eq	1.816E-05	6.878E-08	1.846E-07	3.419E-10	2.024E-08	-5.441E-06
POCP	kg NMVOC eq	8.616E+00	6.310E-02	4.425E-02	5.468E-05	7.693E-03	-3.733E+00
AP	mol H+ eq	1.074E+01	4.138E-02	2.792E-02	8.442E-05	5.084E-03	-4.791E+00
EP - freshwater	kg P eq	1.086E+00	1.493E-04	5.953E-04	5.795E-06	6.357E-05	-6.521E-01
EP - marine	kg N eq	2.635E+00	1.926E-02	9.482E-03	1.497E-05	1.951E-03	-1.088E+00
EP - terrestrial	mol N eq	2.714E+01	2.109E-01	1.032E-01	1.554E-04	2.132E-02	-1.117E+01
WDP	m^3 depriv.	8.006E+02	1.288E-01	5.611E-01	1.361E-03	7.749E-01	-2.409E+02
ADP - F	MJ	3.043E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.172E+04
ADP - MM	kg Sb eq	1.287E-02	1.652E-06	2.370E-05	1.368E-08	1.062E-06	-8.411E-03
PERE	MJ	2.801E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.137E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	2.801E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.137E+03
PENRE	MJ	3.043E+04	8.267E-03	1.234E+02	2.706E-01	1.778E+01	-1.172E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	3.043E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.172E+04
SM	kg	3.397E+02	0.000E+00	0.000E+00	3.109E-05	4.381E-03	-1.995E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	2.332E+01	4.404E-03	2.287E-02	5.999E-05	1.851E-02	-1.284E+01
HW	Kg	1.184E+00	5.645E-04	3.522E-03	3.248E-06	2.599E-04	-3.634E-01
NHW	Kg	2.406E+02	4.069E-02	1.064E+01	3.088E-04	1.160E+02	-1.284E+02
RW	kg	3.188E-02	6.309E-06	3.396E-05	2.732E-07	2.594E-06	-8.738E-03
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	7.550E+00	0.000E+00	0.000E+00	4.102E-05	7.118E-03	-5.473E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

PROFILED TUBE, HEAT TREATED, STRAIGHTENED AND CUT FROM HOT ROLLED AND PICKLED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	2.829E+03	4.631E+00	8.446E+00	1.923E-02	7.266E-01	-1.095E+03
GWP - fossil	kg CO_2 eq	2.827E+03	4.630E+00	8.438E+00	1.925E-02	7.259E-01	-1.093E+03
GWP - biogenic	kg CO_2 eq	-2.960E+00	9.376E-04	5.158E-03	-1.458E-05	3.553E-04	-1.712E+00
GWP - luluc	kg CO_2 eq	5.750E+00	4.737E-04	3.030E-03	1.887E-06	4.126E-04	-6.944E-01
GWP - GHG	kg CO_2 eq	2.835E+03	4.631E+00	8.442E+00	1.925E-02	7.265E-01	-1.094E+03
ODP	kg CFC-11 eq	2.064E-05	6.878E-08	1.846E-07	3.419E-10	2.024E-08	-5.371E-06
POCP	kg NMVOC eq	9.248E+00	6.310E-02	4.425E-02	5.468E-05	7.693E-03	-3.685E+00
AP	mol H+ eq	1.121E+01	4.138E-02	2.792E-02	8.442E-05	5.084E-03	-4.729E+00
EP - freshwater	kg P eq	1.129E+00	1.493E-04	5.953E-04	5.795E-06	6.357E-05	-6.437E-01
EP - marine	kg N eq	2.738E+00	1.926E-02	9.482E-03	1.497E-05	1.951E-03	-1.074E+00
EP - terrestrial	mol N eq	2.819E+01	2.109E-01	1.032E-01	1.554E-04	2.132E-02	-1.102E+01
WDP	m^3 depriv.	8.309E+02	1.288E-01	5.611E-01	1.361E-03	7.749E-01	-2.378E+02
ADP - F	MJ	3.252E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.157E+04
ADP - MM	kg Sb eq	1.348E-02	1.652E-06	2.370E-05	1.368E-08	1.062E-06	-8.303E-03
PERE	MJ	3.179E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.123E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	3.179E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.123E+03
PENRE	MJ	3.252E+04	8.449E-03	1.234E+02	2.706E-01	1.778E+01	-1.157E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	3.252E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.157E+04
SM	kg	3.473E+02	0.000E+00	0.000E+00	3.109E-05	4.381E-03	-1.969E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	2.417E+01	4.404E-03	2.287E-02	5.999E-05	1.851E-02	-1.267E+01
HW	Kg	1.244E+00	5.645E-04	3.522E-03	3.248E-06	2.599E-04	-3.588E-01
NHW	Kg	2.509E+02	4.069E-02	1.064E+01	3.088E-04	1.160E+02	-1.267E+02
RW	kg	3.797E-02	6.309E-06	3.396E-05	2.732E-07	2.594E-06	-8.626E-03
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	7.913E+00	0.000E+00	0.000E+00	4.102E-05	7.118E-03	-5.402E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

TUBE PROFILED AND HEAT TREATED BY GALVANISED STRIP

Abb.	Unit	A1-A3	C1	C2	C3	C4	D
GWP - t	kg CO_2 eq	3.060E+03	4.631E+00	8.446E+00	1.923E-02	7.266E-01	-1.315E+03
GWP - fossil	kg CO_2 eq	3.058E+03	4.630E+00	8.438E+00	1.925E-02	7.259E-01	-1.312E+03
GWP - biogenic	kg CO_2 eq	-1.991E+00	9.376E-04	5.158E-03	-1.458E-05	3.553E-04	-2.057E+00
GWP - luluc	kg CO_2 eq	4.030E+00	4.737E-04	3.030E-03	1.887E-06	4.126E-04	-8.341E-01
GWP - GHG	kg CO_2 eq	3.065E+03	4.631E+00	8.442E+00	1.925E-02	7.265E-01	-1.314E+03
ODP	kg CFC-11 eq	2.449E-05	6.878E-08	1.846E-07	3.419E-10	2.024E-08	-6.451E-06
POCP	kg NMVOC eq	9.957E+00	6.310E-02	4.425E-02	5.468E-05	7.693E-03	-4.426E+00
AP	mol H+ eq	1.241E+01	4.138E-02	2.792E-02	8.442E-05	5.084E-03	-5.680E+00
EP - freshwater	kg P eq	1.281E+00	1.493E-04	5.953E-04	5.795E-06	6.357E-05	-7.732E-01
EP - marine	kg N eq	3.088E+00	1.926E-02	9.482E-03	1.497E-05	1.951E-03	-1.290E+00
EP - terrestrial	mol N eq	3.157E+01	2.109E-01	1.032E-01	1.554E-04	2.132E-02	-1.324E+01
WDP	m^3 depriv.	8.914E+02	1.288E-01	5.611E-01	1.361E-03	7.749E-01	-2.856E+02
ADP - F	MJ	3.493E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.390E+04
ADP - MM	kg Sb eq	6.887E-02	1.652E-06	2.370E-05	1.368E-08	1.062E-06	-9.973E-03
PERE	MJ	2.940E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.348E+03
PERM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PERT	MJ	2.940E+03	3.692E-01	1.847E+00	1.030E-02	1.600E-01	-1.348E+03
PENRE	MJ	3.493E+04	9.895E-03	1.234E+02	2.706E-01	1.778E+01	-1.390E+04
PENRM	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
PENRT	MJ	3.493E+04	6.030E+01	1.234E+02	2.706E-01	1.778E+01	-1.390E+04
SM	kg	2.388E+02	0.000E+00	0.000E+00	3.109E-05	4.381E-03	-2.365E+02
RSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
NRSF	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
FW	m^3	3.657E+01	4.404E-03	2.287E-02	5.999E-05	1.851E-02	-1.522E+01
HW	Kg	2.977E+00	5.645E-04	3.522E-03	3.248E-06	2.599E-04	-4.309E-01
NHW	Kg	2.570E+02	4.069E-02	1.064E+01	3.088E-04	1.160E+02	-1.522E+02
RW	kg	3.533E-02	6.309E-06	3.396E-05	2.732E-07	2.594E-06	-1.036E-02
REUSE	Kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
RECYCLE	Kg	8.035E+00	0.000E+00	0.000E+00	4.102E-05	7.118E-03	-6.489E+02
EN-REC	kg	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-E	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00
EE-T	MJ	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00

ADDITIONAL ENVIRONMENTAL INFORMATION

The steel used has an average recycled content of 17.8%: this percentage is calculated as a weighted average of the incoming raw material (from Type III environmental declarations and from self-declarations compliant with ISO 14021 standard). The steel supplies come from blast furnace (with an average recycled content of 16.5%) or from an electric arc furnace (with an average recycled content of 79.2%).

Regardless of the type of product considered, the element that most affects the final result is the steel purchased which represents the entrance to the various company sites, destined for the subsequent production of the semi-finished product. Among the processes within the company, those that have the greatest impact are heat treatment of the tube and profiling activity.

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 88.4% in line with what is indicated in the "Special waste report" of ISPRA - No. 402/2024.

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

The impacts of energy consumption in the processes within the company boundaries are marginal compared to the impact associated with the supply of raw materials.

DIFFERENCE FROM PREVIOUS VERSION

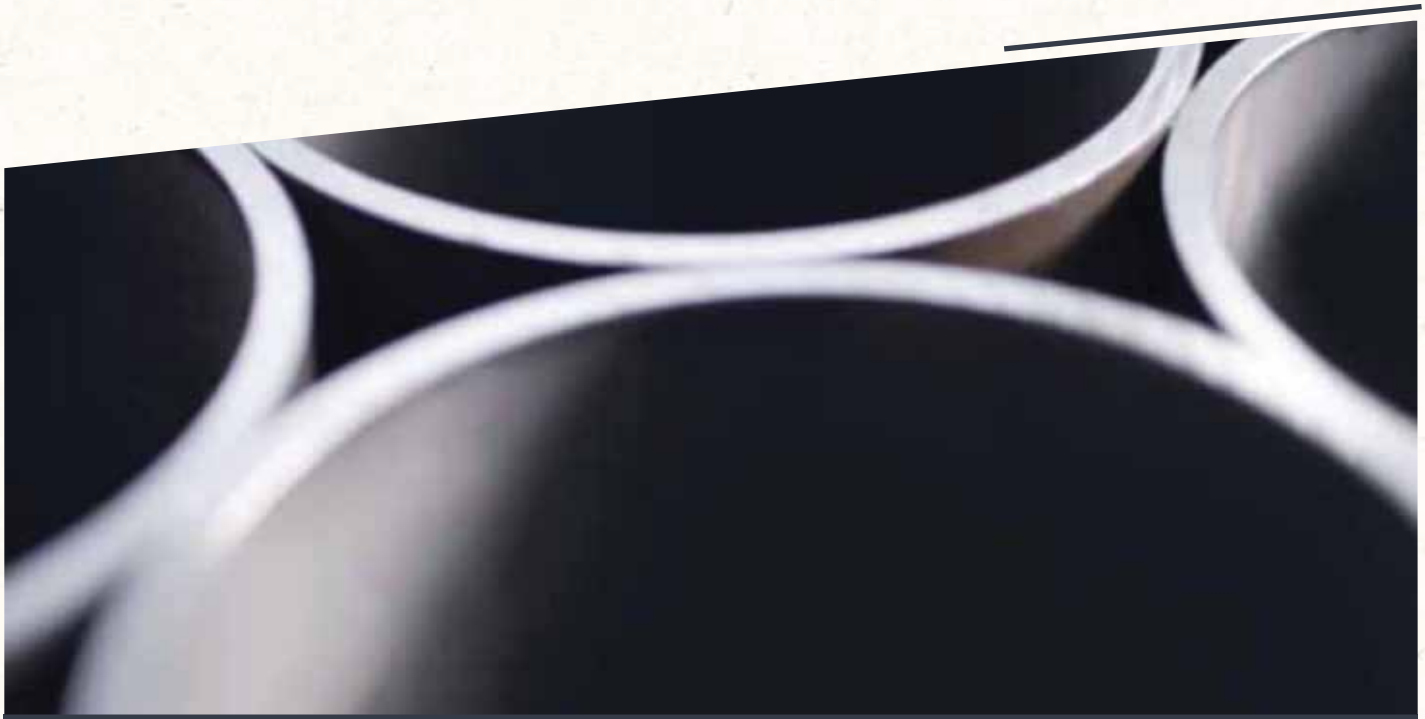
Compared to the previous version of the EPD Declaration (revision on 2024-05-03), the main changes made to the data analyzed are listed below:

- Site-specific data were collected and used (for modules A1, A2 and A3) in relation to all environmental matrices in reference to the year 2024, above all a part of electric energy supply from renewable sources and the subsequent Guarantees of Origin (GO) cancellation;
- The reference database updated to the latest available version was used as well as the new version of the software (all processes refer to Ecoinvent 3.11 – March 2025 and the software SimaPro is in version 10.2.0.0)

Tube sections from hot and cold strips heat treated and drawn

REFERENCES

- General Programme Instructions of the International EPD® System. Version 3.01;
- PCR 2019:14 - Version 1.11 "CONSTRUCTION PRODUCTS";
- Product Category Rules for Type III environmental product declaration of construction products to EN 15804;
- Ecoinvent database v.3.11– March 2025;
- 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 buildings - Environmental product declarations - Development framework rules by 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" - version 1.0, 2024-05-30;
- ISPRA " Special waste report" – n° 402/2024 – Ed. 2024;
- 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.



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