

Environmental Product Declaration

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

High frequency induction welded (HFW) carbon steel pipes - EAF

from

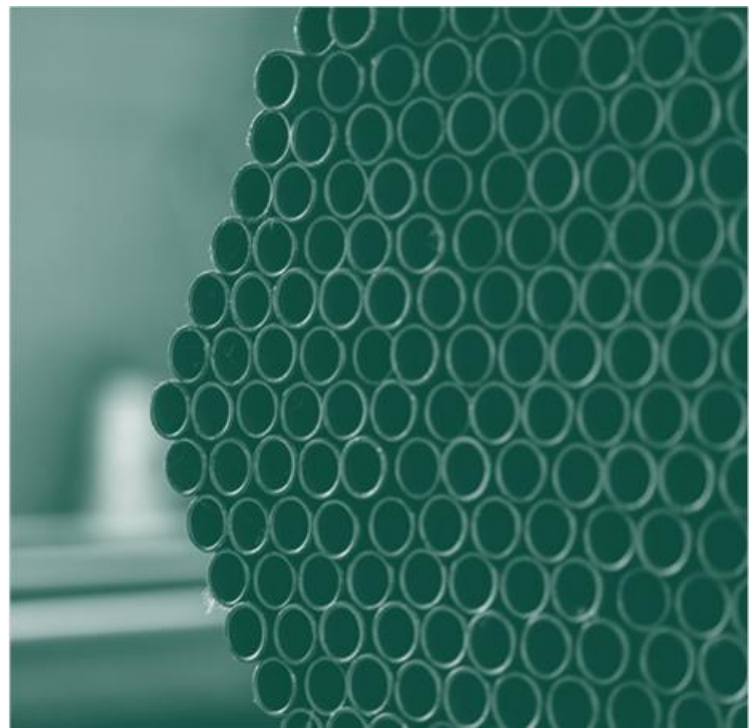
**Amenduni Tubi Acciaio S.r.l. at the Tecnotubi S.p.A.
plant.**



TECNOTUBI

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of product not yet on the market – Results of this EPD shall be used with care as the LCI data is not yet based on 1 year of production which may result in increased uncertainty.
EPD registration number:	EPD-IES-0026889
Version date:	2026-01-28
Validity date:	2031-01-28

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



GENERAL INFORMATION

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

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products. Version 2.0.1, 2025-06-05 UN CPC Code: <ul style="list-style-type: none"> • 41285 - Line pipe of a kind used for oil or gas pipelines, welded, of steel • 41286 - Casing and tubing, of a kind used in the drilling for oil or gas, welded, of steel • 41287 - Other tubes and pipes, of circular cross-section, welded, of steel
PCR review was conducted by: The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com . Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/contact .

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
<input checked="" type="checkbox"/> Individual EPD verification without a pre-verified LCA/EPD tool Third-party verifier: Guido Croce Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier:
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner Amenduni Tubi Acciaio S.r.l. has the sole ownership, liability, and responsibility for the EPD.

Technical support and LCA study development: Studio Fieschi & Soci S.r.l. – www.studiofieschi.it

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Amenduni Tubi Acciaio S.r.l.

Address:

Registered office:

Corso Porta Nuova, 20 - 20121 Milano

P. IVA/ COD. FISC. 06651880962

Operative office:

Via G. Mazzini 240/242

25020 Alfianello BS

Contact: Diego Patella, ata.srl@arubapec.it

Address and contact information of the LCA practitioner commissioned by the EPD owner:

Alba Serafini, Laura Cannatà, Eugenia Bertolino

Studio Fieschi & Soci – Tinexta Innovation Hub

Corso Vittorio Emanuele II, 18 10123 Torino, Italy

Description of the organisation:

Tecnotubi is a partner of major national and European companies in the supply of welded and tested tubes.

The company's strengths are an organisation and process management harmonised and in compliance with the ISO 9001:2015 standard, the predisposition to continuous technical plant improvement with a view to maintaining a high-quality standard of the product, the flexibility that allows production even in derogation to conventional standards, succeeding in satisfying specific customer requests, and the seriousness in respecting contractual commitments.

The EPD product is mainly sold in Europe and to a lesser extent in Italy.

Product-related or management system-related certifications:

- TÜV certification for pressure equipment products, in accordance with AD 2000-Merkblatt W0/W4 and Pressure Equipment Directive 2014/68/EU, Annex I, Section 4.3;
- Reference standards: EN 10217 Parts 1/2/3;
- TÜV certification for Reference standard: EN 10255;
- IGQ certification for hot-finished construction products used in accordance with CPR 305/2011 – CE marking;
- Reference standard: EN 10219;
- FM Approvals Certification for products intended for use in the fire protection sector;
- Reference standards: ASTM A795 – ASTM A53 – ASTM A135 – Schedule 10, 40, 80;
- UL certification for products intended for use in the fire protection sector;
- Reference standards: ASTM A795 – ASTM A53 – ASTM A135 – Schedule 10, 40, 80;
- B Mark certification – Poland for products intended for use under pressure;
- Reference standard: EN 10217-.

PRODUCT INFORMATION

Product name:

High frequency induction welded (HFW) carbon steel pipes - EAF (product not yet on the market)

Product identification:

High frequency induction welded (HFW) carbon steel pipes produced in accordance with the following standard:

- EN 10217 - 1/2/3;
- EN 10219 - 1/2;
- EN 10224;
- EN 10255;
- EN ISO 3183;
- EN 10305 - 3;
- EN 10296 - 1;
- EN 39;
- ASTM A53 / ASME SA53;
- ASTM A795;
- ASTM A135;
- UNI 7683.

The products are manufactured with steel from electric arc furnace and are identified by an "E" in the identification code.

Visual representation (e.g., an image) of the product

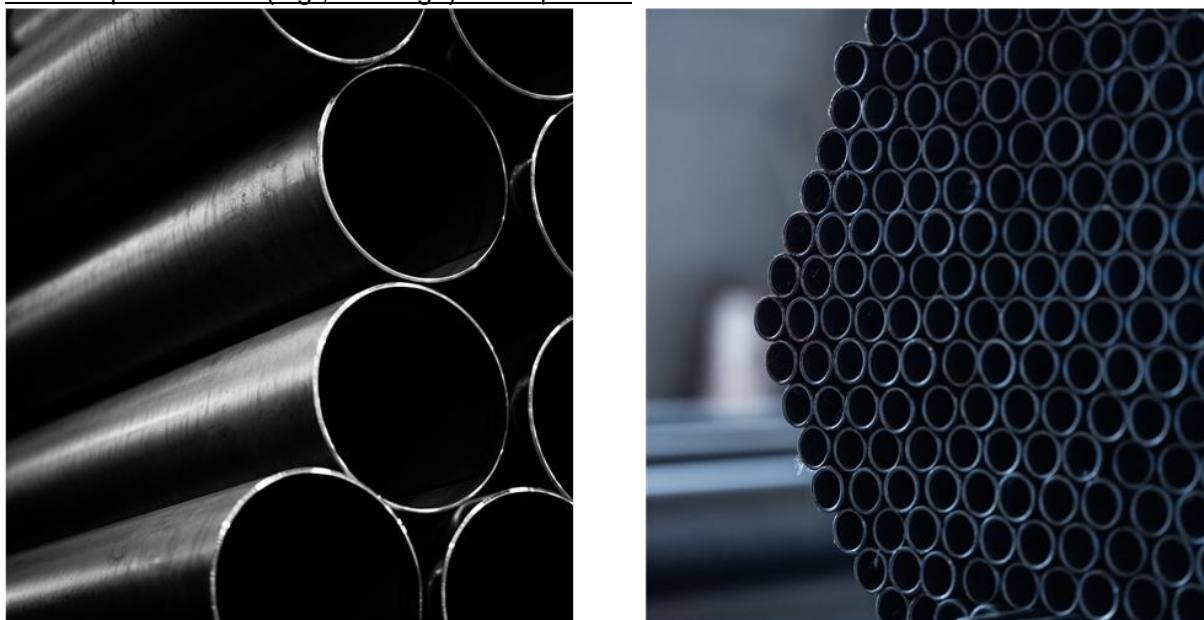


Figure 1: visual representation of the product

UN CPC code:

41285 - Line pipe of a kind used for oil or gas pipelines, welded, of steel

41286 - Casing and tubing, of a kind used in the drilling for oil or gas, welded, of steel

41287 - Other tubes and pipes, of circular cross-section, welded, of steel

Product description:

The steel tubes produced by Tecnotubi according to European EN or American ASTM standards can be used in many sectors and uses such as:

- Pressure applications in many industrial and civil areas;
- Construction of water, gas or oil pipelines;
- Civil and industrial engineering;

- Applications in the mechanical industry;
- Applications in the agricultural sector;
- General uses.

The production process takes place in the following stages:

- Reception of coils;
- Coil cutting in strips;
- Circular strip forming;
- HFW high frequency induction welding;
- In-line heat treatment;
- Control with Eddy Current online;
- Ultrasonic control of welding;
- Final calibration/sizing;
- Head of the ends;
- Hydraulic pressure test;
- Marking;
- Packaging and identification;
- Storage

The product tests to verify the conformity of the mechanical characteristics and chemical analysis required by the reference standards are carried out in the internal laboratory.

The laboratory shall carry out:

- Tensile test on tubes;
- Impact strength test;
- Chemical spectrometric analysis;

Name and location of production site(s): The product is manufactured at the Tecnotubi plant located at Via Mazzini, 210, 25020 Alfianello BS.

Name of manufacturer: Tecnotubi, part of Amenduni Tubi Acciaio S.r.l.

References to any relevant websites for more information or explanatory materials, if applicable:
<https://www.amendunitubi.it>

CONTENT DECLARATION

The product is entirely realized in recycled steel produced through electric arc furnace. The minimum total recycled content (pre- and post-consumer) is 82,6%, calculated as a weighted average across the full mix of steel grades considered in the product's environmental profile.

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Carbon steel	1000	0,9%	0,0%	0,0
TOTAL	1000	0,9%	0,0%	0,0

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Galvanized steel	1,77	0,18%	0,0
Polyester	0,01	0,001%	0,0
TOTAL	1,78	0,18%	0,0

For construction products with EPDs compliant with the EN 15804 standard, the EPD must declare the substances contained in the products that are listed on the "Candidate List of Substances of Very High Concern for Authorization" when their content exceeds the thresholds for registration with the European Chemicals Agency (0.1% by weight/weight).

The product does not contain any substances listed on the SVHC list.

LCA INFORMATION

Declared unit: 1 tonne of packed steel tube, ready for shipment.

Reference service life: NA

Time representativeness: All data related to product composition, manufacturing, and distribution refer to the year 2023, while the steel supply and energy consumption data have been updated to 2025, reflecting the current pool of EAF (Electric Arc Furnace) recycled steel suppliers.

Secondary data represent the most recent information available at the time of the study and cover the period 2019–2024.

Geographical scope: Global for raw material supply, Italy for manufacturing, Europe for end-of-life.

Database(s) and LCA software used: Ecoinvent v.3.10, SimaPro v.9.6.0.1.

EN 15804 method based on EF 3.1 of JRC characterization factors has been used.

Description of system boundaries:

Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D).

Module A5 and modules B1-B7 are excluded.

The system boundaries include:

- **A1 - Raw material supply:** Production of raw materials and steel semi-finished products, as well as other components required for manufacturing the product;
- **A2 - Transport:** Transportation of raw materials (semi-finished products, purchased components) to the company's production site;
- **A3 - Manufacturing:** Manufacturing of the products at the company's production site, including the production and consumption of electricity used in manufacturing processes, and the production and consumption of fossil fuels used for internal product handling and waste management (including packaging waste) generated by the plant. The processing steps included in this module are:
 - Receipt of coils;
 - Cutting coils into strips;

- Roll forming, including:
 - Forming of the strip into a circular profile
 - Welding
 - Final calibration/dimensioning
 - Cutting to length
 - Finishing (only for round tubes and pipelines)
 - Packaging, storage, and loading for shipment.
 - **C1 - Deconstruction, demolition:** Deconstruction or demolition process;
 - **C2 - Transport:** Transport of waste to treatment/disposal facilities;
 - **C3 - Waste processing:** Waste treatment for recovery/recycling preparation,
 - **C4 - Disposal:** Final disposal.

Module D - Reuse, recovery, recycling, potential: Potential benefits and loads from material and energy recovery, reuse, and recycling throughout the product life cycle. This module includes the assessment of benefits and/or impacts associated, for example, with the potential recycling of materials at the end-of-life stage of the studied products.

The modelling of recovery/reuse/recycling benefits is carried out in accordance with the requirements of EN 15804:2012 + A2:2019 § 6.4.3.3.

The system boundaries do not include:

- Modules A4–A5 related to the product distribution and installation phases;
- Impacts related to personnel (e.g., commuting to and from work, office electricity and water consumption, etc.);
- Impacts related to the production and transportation of packaging materials for incoming semi-finished products;
- Infrastructure and capital goods, with exception for electricity and heat in module A3 and electricity/heat for steel production¹, in accordance with the requirements of PCR 2019:14 (§4.3.6).

¹ The exclusion of capital goods and infrastructure is limited to the main processes (foreground processes, directly modeled in the study). Impacts related to these processes may still be included in the background data (e.g., Ecoinvent data).

Process flow diagram:

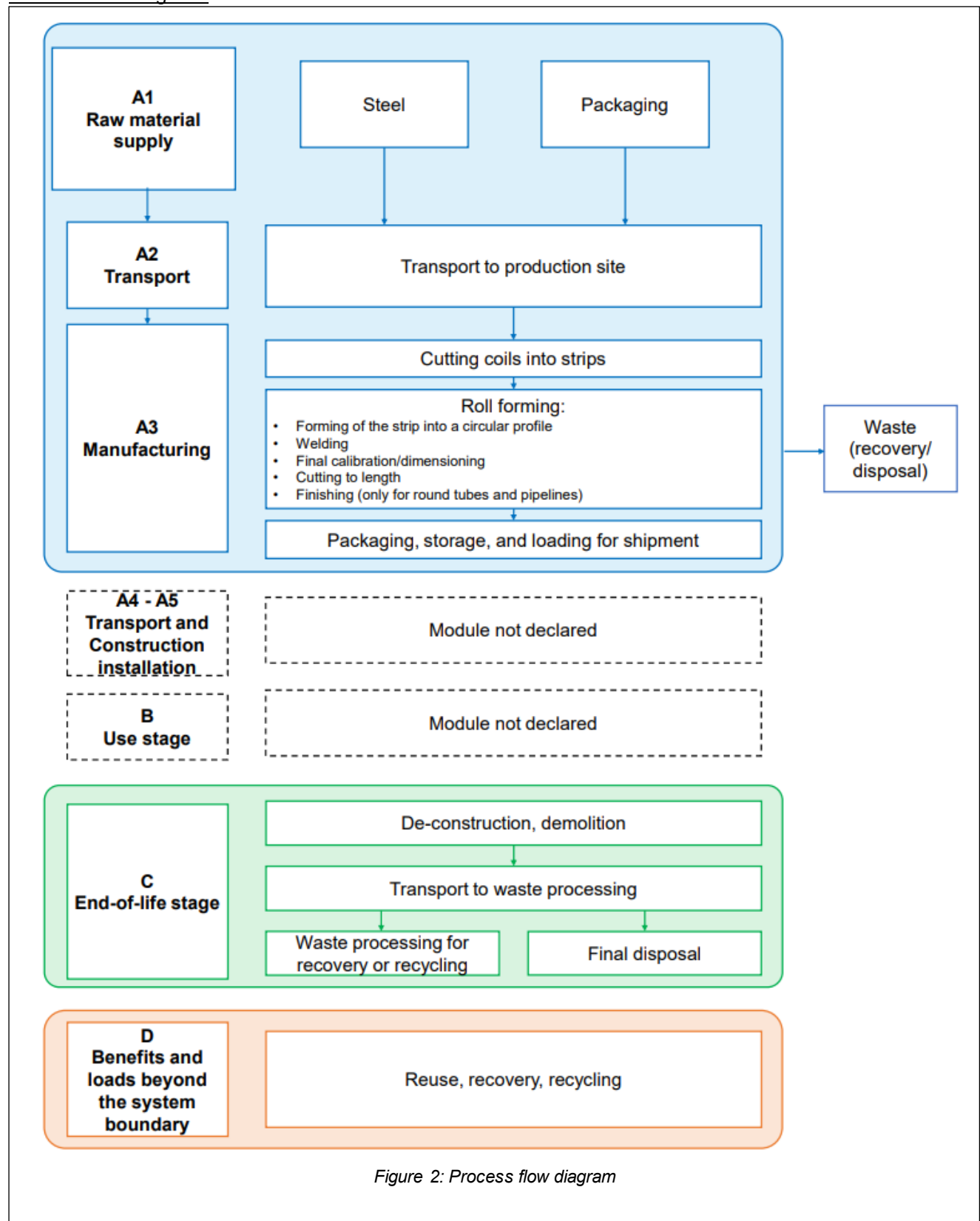


Figure 2: Process flow diagram

More information:

Modules C and D are modelled according to the distribution volumes of the product around the world

Cut-off criteria:

The cut-off rules in EN 15804:2012 + A2:2019 §6.3.6 and PCR 2019:14 §4.4 apply.

As their total contribution was less than 1% of the impacts of the reference module, the following contributions were excluded from the model:

- Supply of process auxiliaries purchased in quantities of less than 10 kg.

Allocation rules:

The system under study produces only one product, so there is no multifunctional situation.

A mass allocation was made to the entire production (in terms of tonnes) for general plant consumption - electricity, fuels, auxiliary materials, water - that could not be attributed to specific product lines; company outputs - waste, emissions - were also allocated to the entire production of the reference year.

Modeling of infrastructure/capital goods:

In accordance with Section 4.3.6 of PCR 2019:14 version 2.0.1, the datasets used for modelling electricity and heat include the impacts associated with the construction of the related infrastructure.

Reuse/Recycle of materials rules:

For the flows leaving the system boundaries, the “polluter pays” principle applies.

According to this principle, the impacts associated with the production of recycling flows are borne by the system that generated them up to the point when they reach the end-of-waste state (PCR 2019:14 §4.5.2). Downstream impacts (e.g. impacts from processes for preparing secondary raw materials) are borne by the system that uses the secondary material.

Therefore, depending on the destination of the material, the following impacts have been assigned:

- Recycling: impacts from transport to the recycling preparation plant and recycling preparation;
- Landfilling: impacts from transport to landfill and disposal.

Consequently, recycled materials enter the system associated with the impact of recycling, but not with that of the recycling preparation phase.

According to EN 15804 §6.3.5.2, waste streams leaving the system and reaching the end-of-waste state within stages A1–A3 must be allocated as co-products. For this EPD, and in accordance with PCR 2019:14 §4.5.1, a precautionary approach has been adopted and no allocation of environmental flows to such co-products is applied; all impacts are instead attributed entirely to the main products.

The recycled steel used for the manufacturing of the pipe has an impact on the GWP-GHG indicator of 869 kg CO₂eq / kg.

Electricity mix:

The electricity purchased from the grid in the production phase was modelled using the Italian residual mix. The GWP-GHG of the electricity mix used by Tecnotubi is 0.559 kg CO₂ eq./kWh.

Assumptions for end-of-life scenarios (modules C1-C4):

Module C1: The demolition process requires energy to operate the excavators and other machinery needed for the process. In accordance with PCR 2019:14 §4.8.4, it is assumed that the energy source used for this purpose is diesel fuel and that the average energy consumption at this stage is 1.1 kWh/ton.

Module C2: For the transport of materials to treatment facilities for recovery or to landfill, a distance of 80 km travelled by land using a 16–32 tonne Euro 5 truck has been assumed, in accordance with PCR 2019:14 §4.8.4. Transport has been modelled on the basis of the geographical reference area, taking into account the typical market distribution of the product.

Module C3-C4: the end-of-life scenario includes all operations necessary to treat the product until the end-of-waste status is reached.

The following considerations apply:

- The product is composed of steel only; specific end-of-life scenarios distinguishing between recycling and landfilling are applied for this material. No energy recovery is foreseen;
- The share of material sent for recycling is derived from the Product Environmental Footprint (PEF);
- The share of material sent for disposal is deduced from the PEF data on recycling; it is assumed that the same breakdown is also applicable to the foreign scenario.
- In accordance with PCR 2019:14 §4.8.4, for Module C3 - Waste Processing, an average diesel consumption is assumed, consisting of 1.8 kWh/ton for Loading and unloading at sorting facility and 7.4 kWh/ton for the Fraggings of steel. An average electricity consumption of 2.2 kWh/ton is also assumed for Mechanical sorting.
- In accordance with PCR 2019:14 §4.8.4, for Module C4 – Disposal, it is assumed an average diesel consumption of 1.6 kWh/ton for Compacting of inert construction waste for landfills (including backfilling).
- Modules C and D have been modelled based on the product's distribution volumes.

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

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	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	-	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Share of primary data	7%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	NA			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Summary of Data Quality Assessment:

As required by section 4.6.5 of the PCR, the following table provides a summary of the data quality assessment (DQA) for the datasets that contribute to at least 80% of the results for each of the declared environmental impact indicators.

Data Quality Aspect	Details / Description
Data Quality Scheme	EN 15804:2012+A2:2019, Annex E, Table E.1
Use of poor/very poor data	-
Use of Fair data with more than 30 % of a core impact	-
Data Collection period for raw data	All data related to the composition, manufacturing, and distribution of the product refer to the year 2023. Data related to steel supply refer to 2024, as the product is not yet on the market and is based on a 100% EAF recycled steel supply.
Geography	Global for raw material supply, Italy for manufacturing, Europe for end-of-life.
Geography and technology	The product is manufactured by Tecnotubi, part of Amenduni Tubi Acciaio S.r.l., at its plant located in Alfianello, Italy. The product is a high-frequency induction welded carbon steel tube, intended for a variety of applications, including pipelines and structural uses across different sectors. The product modeling accounts for the contribution of different steel suppliers. The manufacturing processes are represented comprehensively, from steel coil

	reception and rolling, through intermediate operations such as welding and cutting, to final packaging. The modeling considers all relevant aspects of the production processes, including energy and auxiliary material consumption, as well as the geographical context of the manufacturing activities (Italy).
LCI/LCA database	Ecoinvent v.3.10, SimaPro v.9.6.0.1
EPD used	-
Other informations	The end-of-life scenario has been modelled in accordance with PCR 2019:14 §4.8.4. The modelling includes the energy required for product dismantling, as well as the transport to treatment facilities or landfills, considering the market distribution of the product. Since the product is entirely made of steel, specific end-of-life scenarios distinguishing between recycling and landfilling have been applied, with no energy recovery assumed. The shares of recycled and disposed material are based on Product Environmental Footprint (PEF) data. The modelling also accounts for energy use during waste processing and disposal activities, in line with the assumptions described in PCR 2019:14.

The data quality information presented in this EPD has been prepared and reported in accordance with the requirements set forth in UNI EN 15941:2024 and complies with the data quality criteria specified in EN 15804:2012+A2:2019.

As requested by PCR, the following table provides information on the quality of the data used for processes contributing more than 10% to the overall GWP-GHG indicator value for the product considered.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Generation of electricity used in manufacturing of product	Database	Ecoinvent v3.10, AIB 2025	2024	Primary data	4%
Transport of steel to manufacturing site	Database	Ecoinvent v3.10	2024	Primary data	3%
Production of steel	Database	Ecoinvent v3.10	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3*					7%

* The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

ENVIRONMENTAL PERFORMANCE

LCA results of the product - main environmental performance results

The results presented in the following sections refer to the average results of the different variants of the product analysed.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Inventory indicators relating to the use of renewable and non-renewable secondary fuels, as well as hazardous and non-hazardous waste disposed, have been assumed 0, as these flows are not significant for the products under analysis.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Mandatory impact category indicators according to EN 15804

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	1,03E+03	3,72E-01	1,24E+01	5,45E+00	1,42E+00	-3,92E+01
GWP-fossil	kg CO ₂ eq.	1,02E+03	3,72E-01	1,24E+01	5,44E+00	1,42E+00	-3,92E+01
GWP-biogenic	kg CO ₂ eq.	2,97E+00	1,60E-05	4,68E-04	1,76E-03	2,49E-03	-6,35E-04
GWP-luluc	kg CO ₂ eq.	1,15E+00	1,28E-05	3,05E-04	9,35E-03	1,89E-04	1,03E-03
ODP	kg CFC 11 eq.	1,34E-05	5,85E-09	2,53E-07	8,63E-08	4,62E-08	-1,20E-07
AP	mol H ⁺ eq.	4,58E+00	3,48E-03	3,09E-02	3,90E-02	1,65E-02	-1,47E-01
EP-freshwater	kg P eq.	3,02E-02	3,51E-07	1,04E-05	6,79E-05	4,40E-05	-1,68E-03
EP-marine	kg N eq.	1,01E+00	1,63E-03	1,19E-02	1,69E-02	4,27E-03	-2,99E-02
EP-terrestrial	mol N eq.	1,12E+01	1,79E-02	1,30E-01	1,85E-01	4,60E-02	-3,51E-01
POCP	kg NMVOC eq.	3,95E+00	5,33E-03	5,39E-02	5,56E-02	1,66E-02	-1,21E-01
ADP-minerals&metals*	kg Sb eq.	1,30E-03	1,56E-08	4,10E-07	2,83E-07	3,89E-07	-3,45E-04
ADP-fossil*	MJ	1,26E+04	4,90E+00	1,64E+02	7,82E+01	3,39E+01	-3,51E+02

WDP*	m ³	6,44E+02	3,86E-03	6,97E-02	2,16E-01	0,00E+00	-3,06E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption						

* The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Additional mandatory and voluntary impact category indicators

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG ²	kg CO ₂ eq.	1,03E+03	3,72E-01	1,24E+01	5,45E+00	1,42E+00	-3,92E+01

Additional environmental impact indicators are not declared in this EPD. Detailed results for these indicators are available in the product's LCA Report, referenced in the Bibliography.

Resource use indicators

Results per declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	2,09E+03	1,10E-02	5,80E-01	3,60E+00	5,66E-01	-2,00E+01
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,09E+03	1,10E-02	5,80E-01	3,60E+00	5,66E-01	-2,00E+01
PENRE	MJ	1,26E+04	4,90E+00	1,64E+02	7,82E+01	3,39E+01	-3,51E+02
PENRM	MJ	2,02E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,26E+04	4,90E+00	1,64E+02	7,82E+01	3,39E+01	-3,51E+02
SM	kg	8,92E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

² This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

FW	m ³	1,36E+02	1,04E-03	2,98E-02	1,41E-01	0,00E+00	-1,97E-01
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

Waste indicators

Results per declared unit

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	1,34E-02	2,50E-07	1,54E-05	1,07E-04	9,44E-06	4,21E-04

**Hazardous waste disposed and Non-hazardous waste disposed indicators are set to 0 because all the relevant waste treatment processes are included within the system boundaries.*

Output flow indicators

Results per declared unit

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	8,50E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional LCA results (other environmental performance results) of the product(s)

As per the PCR, results for the 100% recycling and 100% disposal end-of-life scenarios are provided below.

The results of the 100% recycling end-of-life scenario are shown below.

Mandatory impact category indicators according to EN 15804 (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	3,70E-01	1,22E+01	3,20E+01	0,00E+00	-3,57E+00
GWP-fossil	kg CO ₂ eq.	3,70E-01	1,22E+01	1,65E+01	0,00E+00	-3,57E+00
GWP-biogenic	kg CO ₂ eq.	2,43E-05	7,97E-04	1,55E+01	0,00E+00	-2,02E-03
GWP-luluc	kg CO ₂ eq.	1,51E-05	2,39E-04	2,31E-03	0,00E+00	-1,21E-03
ODP	kg CFC 11 eq.	5,83E-09	2,64E-07	9,99E-08	0,00E+00	-6,88E-08
AP	mol H ⁺ eq.	3,54E-03	3,18E-02	4,52E-02	0,00E+00	-1,45E-02
EP-freshwater	kg P eq.	3,16E-07	9,60E-06	2,80E-04	0,00E+00	-1,64E-04
EP-marine	kg N eq.	1,66E-03	1,25E-02	3,81E-02	0,00E+00	-2,97E-03
EP-terrestrial	mol N eq.	1,81E-02	1,32E-01	2,10E-01	0,00E+00	-3,40E-02
POCP	kg NMVOC eq.	5,32E-03	5,14E-02	6,75E-02	0,00E+00	-1,68E-02
ADP-minerals&metals*	kg Sb eq.	1,55E-08	4,20E-07	3,61E-07	0,00E+00	-2,68E-05
ADP-fossil*	MJ	4,87E+00	1,62E+02	7,00E+01	0,00E+00	-3,65E+01
WDP*	m ³	6,23E-03	1,49E-01	8,19E-01	0,00E+00	-6,01E-01
Acronyms	<p>GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption</p>					

* The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Additional mandatory and voluntary impact category indicators (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
GWP-GHG ³	kg CO ₂ eq.	3,70E-01	1,22E+01	3,20E+01	0,00E+00	-3,57E+00

Resource use indicators (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
PERE	MJ	9,49E-03	4,27E-01	3,68E+00	0,00E+00	-3,44E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	9,49E-03	4,27E-01	3,68E+00	0,00E+00	-3,44E+00
PENRE	MJ	4,87E+00	1,62E+02	7,00E+01	0,00E+00	-3,65E+01
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,87E+00	1,62E+02	7,00E+01	0,00E+00	-3,65E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	2,42E-04	6,79E-03	3,78E-02	0,00E+00	-1,92E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water					

Waste indicators (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

³ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Output flow indicators (100% recycling end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	1,00E+03	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

The results of the 100% landfill end-of-life scenario are shown below.

Mandatory impact category indicators according to EN 15804 (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq.	3,70E-01	1,22E+01	0,00E+00	6,15E+00	0,00E+00
GWP-fossil	kg CO ₂ eq.	3,70E-01	1,22E+01	0,00E+00	6,12E+00	0,00E+00
GWP-biogenic	kg CO ₂ eq.	2,43E-05	7,97E-04	0,00E+00	2,81E-02	0,00E+00
GWP-luluc	kg CO ₂ eq.	1,51E-05	2,39E-04	0,00E+00	2,24E-03	0,00E+00
ODP	kg CFC 11 eq.	5,83E-09	2,64E-07	0,00E+00	8,36E-08	0,00E+00
AP	mol H ⁺ eq.	3,54E-03	3,18E-02	0,00E+00	5,26E-02	0,00E+00
EP-freshwater	kg P eq.	3,16E-07	9,60E-06	0,00E+00	6,21E-05	0,00E+00
EP-marine	kg N eq.	1,66E-03	1,25E-02	0,00E+00	2,30E-02	0,00E+00
EP-terrestrial	mol N eq.	1,81E-02	1,32E-01	0,00E+00	2,50E-01	0,00E+00
POCP	kg NMVOC eq.	5,32E-03	5,14E-02	0,00E+00	7,42E-02	0,00E+00
ADP-minerals&metals*	kg Sb eq.	1,55E-08	4,20E-07	0,00E+00	2,35E-07	0,00E+00
ADP-fossil*	MJ	4,87E+00	1,62E+02	0,00E+00	7,89E+01	0,00E+00
WDP*	m ³	6,23E-03	1,49E-01	0,00E+00	2,49E-01	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption					

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

Additional mandatory and voluntary impact category indicators (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
GWP-GHG ⁴	kg CO ₂ eq.	3,70E-01	1,22E+01	0,00E+00	6,15E+00	0,00E+00

⁴ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Resource use indicators (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
PERE	MJ	9,49E-03	4,27E-01	0,00E+00	1,77E+00	0,00E+00
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	9,49E-03	4,27E-01	0,00E+00	1,77E+00	0,00E+00
PENRE	MJ	4,87E+00	1,62E+02	0,00E+00	7,89E+01	0,00E+00
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,87E+00	1,62E+02	0,00E+00	7,89E+01	0,00E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	2,42E-04	6,79E-03	0,00E+00	1,03E-02	0,00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water					

Waste indicators (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Output flow indicators (100% landfill end-of-life scenario)

Results per declared unit						
Indicator	Unit	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ADDITIONAL ENVIRONMENTAL INFORMATION

(Add this section if applicable)

In accordance with CAM⁵ requirements, the following table details the content of recovered, recycled, or by-product material, calculated in compliance with the methodologies established by the CAM Decrees, distinguishing between the supply of steel from the integrated route and from the electric arc furnace route.

	Steel from integrated cycle	Steel from electric arc furnace (EAF)
Total recycled material content (pre- and post-consumer)	0%	83%
Total recovered material content	0%	0%
Total co-product content	0%	0%
Supply used for the EPD calculation	0%	100%

ADDITIONAL SOCIAL AND ECONOMIC INFORMATION

The company has obtained certification of its gender equality management system in accordance with UNI/PdR 125.

⁵ Ministry of Ecological Transition, 2022, Legislative Decree of 23 June 2022: “Minimum Environmental Criteria for the awarding of design services for building works, for the awarding of construction works, and for the joint awarding of design and construction works for building interventions”, Criterion 2.5.4 Steel; and Ministry of Ecological Transition, 2024, Decree of 5 August 2024: “Minimum Environmental Criteria for the awarding of design and execution services for the construction, maintenance and upgrading of road infrastructures”, Criterion 2.3.4 Steel products.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
PEF	Product Environmental Footprint
Other Relevant Terms	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m ³	Cubic Meter
NM VOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO ₂ eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO ₂ eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared
NA	Not Applicable

REFERENCES

- a) General Programme Instructions of International EPD System. Version 5.0.1.
- b) PCR 2019:14. Construction Products. Version 2.0.1
- c) EN 15804:2012 + A2:2019 + AC, Sustainability of construction works – Environmental Product Declarations – Core rules for the product category
- d) ISO 14025:2010, Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- e) ISO 14040:2021, Environmental management – Life cycle assessment – Principles and framework
- f) ISO 14044:2021, Environmental management – Life cycle assessment – Requirements and guidelines
- g) Association of Issuing Bodies, European Residual Mixes 2022
- h) PlasticsEurope, Eco-profiles and Environmental Product Declarations of the European Plastics Manufacturers, April 2014; December 2016: update water balance
- i) European Commission, 2021, Recommendation 2021/2279 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations
- j) Gervasio, H., Dimova, S., 2018, Model for Life Cycle Assessment (LCA) of buildings, EC JRC technical reports
- k) Eurostat waste database: <https://ec.europa.eu/eurostat/web/waste/data/database>
- l) What a Waste database: <https://datacatalog.worldbank.org/search/dataset/0039597/What-a-Waste-Global-Database>
- m) Ministry of Ecological Transition, 2022, Legislative Decree of 23 June 2022: “Minimum Environmental Criteria for the awarding of design services for building interventions, for the awarding of construction works, and for the joint awarding of design and construction works for building interventions”
- n) Ministry of Ecological Transition, 2024, Decree of 5 August 2024: “Minimum Environmental Criteria for the awarding of design and execution services for the construction, maintenance and upgrading of road infrastructures”

VERSION HISTORY

Original Version of the EPD, 2026-01-28

