

ENVIRONMENTAL PRODUCT DECLARATION

Headquarter

Via Dell'edilizia, 22 - 36100
Vicenza (IT)

Production Plant

Via Dell'edilizia, 22 - 36100
Vicenza (IT)
Via Borgosatollo, snc - 25010
Montirone (BS);
loc. Pannella, 45 - 33039
Sedegliano (UD);
via Filippo Anfuso, 40 - 95121
Catania (CT)

Shaped, cutted
and welded steel
for reinforced
concrete

**Based on:**

PCR ICMQ-001/15 v3
EN:15804:2012+A2:2019
UNI EN ISO 14025:2010

Certification N°:

EPDITALY0718

Product CPC code:

41

Date of issue:

27/09/2024

Valid until:

27/09/2029

Declaration number:

FB_EPD_002

General information

EPD REFERENCES

EPD OWNER: FERRO BERICA s.r.l. - Via Dell'Edilizia, 22 - 36100 Vicenza (IT)

PROGRAM OPERATOR: EPDIItaly, Via Gaetano De Castillia 10, 20124 Milano - ITALY

INDEPENDENT VERIFICATION

This declaration has been developed referring to the EPDIItaly, following the last version of "Regolamento di EPDIItaly"; further information and the document itself are available at: www.epditaly.it. EPD document valid within the following geographical area: Italy and other countries worldwide according to sales market conditions.

CEN standard EN 15804 served as the core PCR (PCR ICMQ-001/15 v3)
PCR review conducted by Daniele Pace, contact via info@epditaly.it

Independent verification of the declaration and data, according to UNI EN ISO 14025:2010

Third party verifier: ICMQ SpA, via De Castillia, 10 20124 Milano
(www.icmq.it)

EPD process
certification
(Internal)

EPD verification
(External)

Accredited by: Accredia

YES

NO

Environmental declarations published within the same product category, though originating from different programs, may not be comparable. In particular, EPDs of construction products may not be comparable if they do not comply with EN 15804.

The EPD Owner exempts EPDIItaly from any non-compliance with environmental legislation. The holder of the declaration will be responsible for supporting information and evidence. EPDIItaly disclaims all liability for the information, data and results provided by the EPD Owner for life cycle assessment.

CONTACTS

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 FERROBERICA

Technical support to Ferro Berica was provided by Life Cycle Engineering, Italy.
(info@studiolce.it, www.lcengineering.eu).



Alfa Acciai Group

The Alfa Acciai Group has been among Europe's main manufacturers of reinforced steel and wire rod for 70 years, with over 1,200 employees and a total production capacity of 2.5 million tons per year and is a benchmark in terms of cutting-edge technology, mindful of the employees and with environmental awareness throughout the entire steel supply chain.

The Group has always been renowned for its industrial flexibility, utmost operational efficiency upstream and downstream of the melting process, and great financial and equity strength. It is focused on ethical corporate social responsibility principles, routine maintenance on installations and operations, caring and listening to stakeholders' requirements.

ALFA ACCIAI

The Brescia-based parent company is one of the largest electric-arc steelmaking plants in Italy and one of the top national wire rod producers, as well as being ranked among the leaders in the production of reinforcing steel for concrete in Europe.

The steel-making plant comprises two EAFs (electric arc furnaces) and 2 LFs (ladle furnaces), 2 five-strand

continuous casting machines (10 lines) and a shredder for proler production. The hot rolling division is equipped with two bars and spool mills and a wire rod mill.

The production cycle is completed by cold rolling mills that produce high-ductility welded mesh for reinforced concrete and recoiled wire.



Acciaierie di Sicilia

Located in the industrial district of Catania, has been part of the Alfa Acciai Group since 1998 and is the only steel mill in the heart of the Mediterranean. It is one of the main industrial centers of the Region and is characterized by a strong export vocation thanks to its proximity to significant port infrastructures. The company stands out for its constant technological innovation and steel know-how, factors that guarantee increasingly high-quality standards, respecting the environment and the health and safety of its employees. The production process includes an EAF (electric arc furnace), a continuous casting machine (4 lines) and a hot rolling mill using a hot-charge system to produce reinforcing steel in bars and coils.



FERROBERICA

Has belonged to the Group for over 30 years and has 5 operational sites located in: Vicenza, Montirone (BS), Sedegliano (UD) and 2 in Catania.

The company is the leading operator in Italy and the second in Europe in the cutting and bending, including the assembling of reinforcing steel for use in structural work. Thanks to its expertise, reliable supplies and market competitiveness, today Ferroberica is a production facility with a total annual capacity of 400,000 tonnes boasting the world's most high-tech plant in Montirone.

TECNOFIL

Located in Gottolengo (BS), has been part of the Alfa Acciai Group since September 2016.

Tecnofil is currently the major drawing mill with a galvanizing plant in Europe. It produces steel wire, galvanized wire, alu-zinc wire, bright wire, annealed wire, redrawn wire and skinpassed wire for use in construction, household appliances, automotive, agricultural and numerous other applications of everyday life. Over the years the company has significantly expanded its overall production capacity (currently over 100,000 tons / year) and the range of products to be offered on the market.



Scope & type of EPD®

The approach used in this EPD is “Cradle to gate with options” one

TABLE OF MODULES																	
MODULE	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
	Raw material supply	Transport	Manufacturing	Transport to the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De- construction demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling Potential
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
modules declared	✓	✓	✓	✓	MND	MND	MND	MND	MND	MND	MND	MND	✓	✓	✓	✓	✓
geography	IT	IT	IT	WLD	-	-	-	-	-	-	-	-	WLD	WLD	WLD	WLD	WLD
specific data used	>90%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
variations - products	NOT RELEVANT			-	-	-	-	-	-	-	-	-	-	-	-	-	-
variations - sites	NOT RELEVANT			-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOFTWARE: SimaPro ver. 9.5

MAIN DATABASE: Ecoinvent 3.9.1

REPORT LCA: Life Cycle Assessment (LCA) for cutted, shaped and welded steel produced by Ferro Berica for EPD® purposes - Final Report

GEOGRAPHICAL SCOPE OF THE EPD: World according to sales market conditions

TYPE OF EPD: specific for cutted, shaped and welded steel products

The Product

Cutting, bending, shaping and assembly of steel for reinforced concrete



This EPD refers to construction products made of reinforced concrete steel. Shaped steel is produced through a complex manufacturing process, which includes cutting, shaping and assembly, and straightening in the case of rolls. This process is supported by specific technical programs that allow to prepare the bills of materials and identification labels for the items to be produced, manage the traceability of castings, optimize cutting and shaping operations. Finally, equipments complete with optical readers are used to continuously check the number and shape of the products, which is programmed on the basis of dimensional parameters conforming to the items to be produced. In addition to the production of shaped steel, there is the material assembled in the processing centers, which is made by qualified personnel and with certified welding processes.

Our range of pre-assembled products includes:

- Framework for tunnel boring operations;
- Framework for slurry walls complete with inserts, space-saving elements and all types of intake systems;
- Framework for large elements with mixed structures;
- Reinforcement framework for masts of any diameter, bulkheads and prefabricated structural elements.

The basic raw materials are bars and rolls produced by Alfa Acciai and Acciaierie di Sicilia.

EPD reference products have a chemical composition that complies with the national regulations of the destination countries to which they are sent.

In general, the main components of the final product are: iron > 96%; alloying elements (e.g. manganese, silicon, carbon) approx 2%; other elements (e.g. copper, nickel, chromium), 100% complementary.

Declared Unit: According to EN:15804, the declared unit is 1 ton of shaped, cutted and welded product

INFORMATION	DESCRIPTION
Product identification	Cutting, bending, shaping and assembly of steel for reinforced concrete.
Product features	Shaped and assembled products (by spot welding): foundation piles, diaphragm walls, pillars, beams.
Product properties (under EN10080:2005)	<ul style="list-style-type: none"> • Italian law DM 17/01/2018 (Technical Standards for Buildings) • Quality management system compliance with the standard UNI EN ISO 9001
Plant features	<p>Total production of EPD covered products, year 2023:</p> <p>Vicenza: 48 644 t Montirone (BS): 44 977 t Sedegliano (UD): 17 500 t Catania: 30 455 t</p> <p>Main operating machines:</p> <p>Vicenza: n.5 bar cutting line, n.8 bar shaping, n.8 multifunction (streitening, cutting and bending) machines from coils, n.3 foundation pile machines</p> <p>Montirone: n.3 bar cutting line, n.4 bar shaping, n.6 multifunction (streitening, cutting and bending) machines from coils, n.6 foundation pile machines</p> <p>Sedegliano: n.2 bar cutting line, n.2 bar shaping, n.6 multifunction (streitening, cutting and bending) machines from coils, n.2 foundation pile machines</p> <p>Catania: n.2 bar cutting line, n.4 bar shaping, n.5 multifunction (streitening, cutting and bending) machines from coils, n.2 foundation pile machines</p> <p>No use water for the production cycle.</p>

Environmental performance

The detailed environmental performance (in terms of use of resources, pollutant emissions and waste generation) is presented for the three phases, Upstream, Core and Downstream and related sub-phases (A1-A2-A3-A4-C1-C2-C3-C4-D). The numbers reported in the following tables are the outcome of rounding.

For this reason total results could slightly differ from the sum of contributions of the different phases. The energy sources behind the electricity grid used in manufacturing is the Italian residual mix 0,457 kg CO₂ eq./kWh (AIB report May 2023) to which LCE adds emissions related to network losses and transformation.

ENVIRONMENTAL IMPACTS - VICENZA											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
GWP	kg CO ₂ eq	6.70E+02	9.00E+00	2.28E+00	6.81E+02	1.24E+01	5.26E+01	1.78E+01	2.31E+00	2.70E-01	1.47E+02
GWP,f	kg CO ₂ eq	6.69E+02	8.99E+00	2.28E+00	6.81E+02	1.24E+01	5.26E+01	1.78E+01	2.30E+00	2.70E-01	1.47E+02
GWP,b	kg CO ₂ eq	4.49E-01	5.50E-04	1.52E-03	4.51E-01	7.58E-04	3.13E-03	1.06E-03	5.63E-03	2.85E-05	1.14E-02
GWP,luluc	kg CO ₂ eq	2.23E-01	1.82E-04	7.07E-04	2.24E-01	2.51E-04	2.16E-03	3.52E-04	5.79E-03	1.36E-05	1.41E-02
GWP,ghg	kg CO ₂ eq	6.70E+02	9.00E+00	2.28E+00	6.81E+02	1.24E+01	5.26E+01	1.78E+01	2.31E+00	2.70E-01	1.47E+02
ODP	kg CFC11 eq	1.39E-05	2.01E-07	1.43E-08	1.41E-05	2.77E-07	8.30E-07	3.88E-07	1.47E-08	4.02E-09	2.77E-06
AP	mol H+ eq	2.16E+00	1.16E-02	1.61E-02	2.18E+00	1.60E-02	5.04E-01	3.59E-02	1.12E-02	2.51E-03	5.73E-01
EP,f	kg P eq	1.17E-01	6.35E-05	2.68E-04	1.17E-01	8.75E-05	3.97E-04	1.23E-04	1.04E-03	8.07E-06	6.86E-02
EP,m	kg N eq	4.99E-01	2.87E-03	7.63E-03	5.09E-01	3.95E-03	2.37E-01	1.26E-02	2.38E-03	1.14E-03	1.23E-01
EP,t	mol N eq	5.15E+00	2.76E-02	8.16E-02	5.26E+00	3.80E-02	2.57E+00	1.31E-01	2.38E-02	1.24E-02	1.31E+00
POCP	kg NMVOC eq	2.07E+00	2.18E-02	2.08E-02	2.11E+00	3.00E-02	7.57E-01	6.06E-02	7.15E-03	3.71E-03	7.00E-01
ADPE*	kg Sb eq	1.48E-04	3.20E-07	8.69E-08	1.48E-04	4.41E-07	2.21E-06	6.18E-07	6.57E-08	1.07E-08	1.30E-03
ADPF*	MJ	8.97E+03	1.24E+02	1.15E+01	9.10E+03	1.71E+02	6.92E+02	2.39E+02	3.08E+01	3.47E+00	1.25E+03
WDP*	m ³	1.99E+02	1.13E-01	1.89E+00	2.01E+02	1.56E-01	8.87E-01	2.19E-01	4.00E-01	4.78E-03	1.24E+01

GWP Global warming potential, total

GWP,f Global warming potential, fossil

GWP,b Global warming potential, biogenic

GWP,luluc Global warming potential, land use & land use change

ODP Ozone depletion potential

AP Acidification Potential

EP,f Eutrophication potential, freshwater

EP,m Eutrophication potential, marine

EP,t Eutrophication potential, terrestrial

POCP Photochemical ozone creation potential

ADPE Abiotic depletion potential minerals & metals

ADPF Abiotic depletion potential fossil fuels

WDP Water use deprivation potential

Additional environmental impact indicators are computed in the LCA report but not reported in the EPD.

*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.

RESOURCES USE - VICENZA											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
PERE	[MJ]	5.98E+02	3.25E-01	1.28E+00	5.99E+02	4.48E-01	1.35E+00	6.28E-01	4.34E+00	1.55E-02	1.06E+02
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.98E+02	3.25E-01	1.28E+00	5.99E+02	4.48E-01	1.35E+00	6.28E-01	4.34E+00	1.55E-02	1.06E+02
PENRE	[MJ]	1.06E+04	1.25E+02	1.18E+01	1.07E+04	1.72E+02	7.00E+02	2.42E+02	4.01E+01	3.57E+00	1.89E+03
PENRM	[MJ]	0.00E+00	0.00E+00	1.63E+00	1.63E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.06E+04	1.25E+02	1.30E+01	1.07E+04	1.72E+02	7.00E+02	2.42E+02	4.01E+01	3.57E+00	1.89E+03
SM	[kg]	1.48E+03	0.00E+00	0.00E+00	1.48E+03	0.00E+00	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	5.32E+00	5.18E-03	4.76E-02	5.38E+00	7.13E-03	3.44E-02	1.00E-02	1.76E-02	1.82E-04	3.60E-01

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 resources

SM Use of secondary raw materials

RSF Use of renewable secondary fuels

NRSF Use of non-renewable secondary fuels

FW Use of net fresh water

OUTPUT FLOWS - VICENZA											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
HWD	[kg]	3.15E+00	0.00E+00	6.00E-02	3.21E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	[kg]	6.87E+01	0.00E+00	0.00E+00	6.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+02	0.00E+00
RWD	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.32E+02	0.00E+00	1.84E+01	2.50E+02	0.00E+00	0.00E+00	0.00E+00	9.00E+02	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

HWD Hazardous waste disposed

NHWD Non-hazardous waste disposed

RWD Radioactive waste disposed

CRU Components for re-use

MFR Materials for recycling

MER Materials for energy recovery

EE Exported energy

Environmental performance

ENVIRONMENTAL IMPACTS - MONTIRONE (BS)											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
GWP	kg CO ₂ eq	6.64E+02	9.98E-01	1.31E+00	6.66E+02	1.29E+01	5.26E+01	1.78E+01	2.31E+00	2.70E-01	1.47E+02
GWP,f	kg CO ₂ eq	6.63E+02	9.98E-01	1.31E+00	6.66E+02	1.29E+01	5.26E+01	1.78E+01	2.30E+00	2.70E-01	1.47E+02
GWP,b	kg CO ₂ eq	4.48E-01	6.11E-05	1.01E-03	4.49E-01	7.88E-04	3.13E-03	1.06E-03	5.63E-03	2.85E-05	1.14E-02
GWP,luluc	kg CO ₂ eq	2.23E-01	2.02E-05	4.70E-04	2.24E-01	2.61E-04	2.16E-03	3.52E-04	5.79E-03	1.36E-05	1.41E-02
GWP,ghg	kg CO ₂ eq	6.64E+02	9.98E-01	1.31E+00	6.66E+02	1.29E+01	5.26E+01	1.78E+01	2.31E+00	2.70E-01	1.47E+02
ODP	kg CFC11 eq	1.37E-05	2.23E-08	6.19E-09	1.37E-05	2.88E-07	8.30E-07	3.88E-07	1.47E-08	4.02E-09	2.77E-06
AP	mol H+ eq	2.14E+00	1.29E-03	1.15E-02	2.15E+00	1.66E-02	5.04E-01	3.59E-02	1.12E-02	2.51E-03	5.73E-01
EP,f	kg P eq	1.16E-01	7.05E-06	1.75E-04	1.16E-01	9.09E-05	3.97E-04	1.23E-04	1.04E-03	8.07E-06	6.86E-02
EP,m	kg N eq	4.95E-01	3.18E-04	5.49E-03	5.01E-01	4.10E-03	2.37E-01	1.26E-02	2.38E-03	1.14E-03	1.23E-01
EP,t	mol N eq	5.11E+00	3.06E-03	5.95E-02	5.18E+00	3.95E-02	2.57E+00	1.31E-01	2.38E-02	1.24E-02	1.31E+00
POCP	kg NMVOC eq	2.05E+00	2.42E-03	1.46E-02	2.07E+00	3.12E-02	7.57E-01	6.06E-02	7.15E-03	3.71E-03	7.00E-01
ADPE*	kg Sb eq	1.48E-04	3.55E-08	2.85E-08	1.48E-04	4.58E-07	2.21E-06	6.18E-07	6.57E-08	1.07E-08	1.30E-03
ADPF*	MJ	8.87E+03	1.37E+01	5.93E+00	8.89E+03	1.77E+02	6.92E+02	2.39E+02	3.08E+01	3.47E+00	1.25E+03
WDP*	m ³	1.98E+02	1.26E-02	3.45E-01	1.98E+02	1.62E-01	8.87E-01	2.19E-01	4.00E-01	4.78E-03	1.24E+01

GWP Global warming potential, total
GWP,f Global warming potential, fossil
GWP,b Global warming potential, biogenic
GWP,luluc Global warming potential, land use & land use change
ODP Ozone depletion potential

AP Acidification Potential
EP,f Eutrophication potential, freshwater
EP,m Eutrophication potential, marine
EP,t Eutrophication potential, terrestrial
POCP Photochemical ozone creation potential

ADPE Abiotic depletion potential minerals & metals
ADPF Abiotic depletion potential fossil fuels
WDP Water use deprivation potential

Additional environmental impact indicators are computed in the LCA report but not reported in the EPD.
 *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.

RESOURCES USE- MONTIRONE (BS)											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
PERE	[MJ]	5.92E+02	3.61E-02	8.51E-01	5.93E+02	4.66E-01	1.35E+00	6.28E-01	4.34E+00	1.55E-02	1.06E+02
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	5.92E+02	3.61E-02	8.51E-01	5.93E+02	4.66E-01	1.35E+00	6.28E-01	4.34E+00	1.55E-02	1.06E+02
PENRE	[MJ]	1.05E+04	1.39E+01	6.02E+00	1.05E+04	1.79E+02	7.00E+02	2.42E+02	4.01E+01	3.57E+00	1.89E+03
PENRM	[MJ]	0.00E+00	0.00E+00	4.51E-01	4.51E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.05E+04	1.39E+01	6.85E+00	1.05E+04	1.79E+02	7.00E+02	2.42E+02	4.01E+01	3.57E+00	1.89E+03
SM	[kg]	1.48E+03	0.00E+00	0.00E+00	1.48E+03	0.00E+00	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	5.31E+00	5.74E-04	1.05E-02	5.32E+00	7.41E-03	3.44E-02	1.00E-02	1.76E-02	1.82E-04	3.60E-01

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 resources

SM Use of secondary raw materials
RSF Use of renewable secondary fuels
NRSF Use of non-renewable secondary fuels
FW Use of net fresh water

OUTPUT FLOWS - MONTIRONE (BS)											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
HWD	[kg]	3.15E+00	0.00E+00	0.00E+00	3.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	[kg]	6.87E+01	0.00E+00	0.00E+00	6.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+02	0.00E+00
RWD	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.32E+02	0.00E+00	1.52E+01	2.47E+02	0.00E+00	0.00E+00	0.00E+00	9.00E+02	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

HWD Hazardous waste disposed
NHWD Non-hazardous waste disposed
RWD Radioactive waste disposed

CRU Components for re-use
MFR Materials for recycling
MER Materials for energy recovery

EE Exported energy

Environmental performance

ENVIRONMENTAL IMPACTS - SEDEGLIANO (UD)											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
GWP	kg CO ₂ eq	6.72E+02	2.29E+01	2.23E+00	6.97E+02	8.57E+00	5.26E+01	1.78E+01	2.31E+00	2.70E-01	1.47E+02
GWP,f	kg CO ₂ eq	6.72E+02	2.29E+01	2.23E+00	6.97E+02	8.57E+00	5.26E+01	1.78E+01	2.30E+00	2.70E-01	1.47E+02
GWP,b	kg CO ₂ eq	4.49E-01	1.40E-03	6.00E-04	4.51E-01	5.24E-04	3.13E-03	1.06E-03	5.63E-03	2.85E-05	1.14E-02
GWP,luluc	kg CO ₂ eq	2.23E-01	4.64E-04	2.77E-04	2.24E-01	1.74E-04	2.16E-03	3.52E-04	5.79E-03	1.36E-05	1.41E-02
GWP,ghg	kg CO ₂ eq	6.72E+02	2.29E+01	2.23E+00	6.97E+02	8.57E+00	5.26E+01	1.78E+01	2.31E+00	2.70E-01	1.47E+02
ODP	kg CFC11 eq	1.39E-05	5.12E-07	8.99E-09	1.45E-05	1.92E-07	8.30E-07	3.88E-07	1.47E-08	4.02E-09	2.77E-06
AP	mol H+ eq	2.16E+00	2.96E-02	1.21E-02	2.20E+00	1.11E-02	5.04E-01	3.59E-02	1.12E-02	2.51E-03	5.73E-01
EP,f	kg P eq	1.17E-01	1.62E-04	1.03E-04	1.17E-01	6.05E-05	3.97E-04	1.23E-04	1.04E-03	8.07E-06	6.86E-02
EP,m	kg N eq	5.00E-01	7.30E-03	5.84E-03	5.13E-01	2.73E-03	2.37E-01	1.26E-02	2.38E-03	1.14E-03	1.23E-01
EP,t	mol N eq	5.16E+00	7.03E-02	6.36E-02	5.30E+00	2.63E-02	2.57E+00	1.31E-01	2.38E-02	1.24E-02	1.31E+00
POCP	kg NMVOC eq	2.08E+00	5.55E-02	1.59E-02	2.15E+00	2.08E-02	7.57E-01	6.06E-02	7.15E-03	3.71E-03	7.00E-01
ADPE*	kg Sb eq	1.48E-04	8.15E-07	3.11E-08	1.49E-04	3.05E-07	2.21E-06	6.18E-07	6.57E-08	1.07E-08	1.30E-03
ADPF*	MJ	9.00E+03	3.15E+02	6.84E+00	9.33E+03	1.18E+02	6.92E+02	2.39E+02	3.08E+01	3.47E+00	1.25E+03
WDP*	m ³	1.99E+02	2.89E-01	2.10E-01	1.99E+02	1.08E-01	8.87E-01	2.19E-01	4.00E-01	4.78E-03	1.24E+01

GWP Global warming potential, total
GWP,f Global warming potential, fossil
GWP,b Global warming potential, biogenic
GWP,luluc Global warming potential, land use & land use change
ODP Ozone depletion potential

AP Acidification Potential
EP,f Eutrophication potential, freshwater
EP,m Eutrophication potential, marine
EP,t Eutrophication potential, terrestrial
POCP Photochemical ozone creation potential

ADPE Abiotic depletion potential minerals & metals
ADPF Abiotic depletion potential fossil fuels
WDP Water use deprivation potential

Additional environmental impact indicators are computed in the LCA report but not reported in the EPD.
 *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.

RESOURCES USE- SEDEGLIANO (UD)											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
PERE	[MJ]	6.00E+02	8.28E-01	4.99E-01	6.01E+02	3.10E-01	1.35E+00	6.28E-01	4.34E+00	1.55E-02	1.06E+02
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.00E+02	8.28E-01	4.99E-01	6.01E+02	3.10E-01	1.35E+00	6.28E-01	4.34E+00	1.55E-02	1.06E+02
PENRE	[MJ]	1.06E+04	3.18E+02	6.96E+00	1.10E+04	1.19E+02	7.00E+02	2.42E+02	4.01E+01	3.57E+00	1.89E+03
PENRM	[MJ]	0.00E+00	0.00E+00	4.85E-01	4.85E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.06E+04	3.18E+02	7.40E+00	1.10E+04	1.19E+02	7.00E+02	2.42E+02	4.01E+01	3.57E+00	1.89E+03
SM	[kg]	1.48E+03	0.00E+00	0.00E+00	1.48E+03	0.00E+00	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	5.33E+00	1.32E-02	6.34E-03	5.35E+00	4.93E-03	3.44E-02	1.00E-02	1.76E-02	1.82E-04	3.60E-01

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 resources

SM Use of secondary raw materials
RSF Use of renewable secondary fuels
NRSF Use of non-renewable secondary fuels
FW Use of net fresh water

OUTPUT FLOWS - SEDEGLIANO (UD)											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
HWD	[kg]	3.15E+00	0.00E+00	0.00E+00	3.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	[kg]	6.87E+01	0.00E+00	0.00E+00	6.87E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+02	0.00E+00
RWD	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	2.32E+02	0.00E+00	1.44E+01	2.46E+02	0.00E+00	0.00E+00	0.00E+00	9.00E+02	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

HWD Hazardous waste disposed
NHWD Non-hazardous waste disposed
RWD Radioactive waste disposed

CRU Components for re-use
MFR Materials for recycling
MER Materials for energy recovery

EE Exported energy

Environmental performance

ENVIRONMENTAL IMPACTS - CATANIA											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
GWP	kg CO ₂ eq	6.65E+02	7.91E-02	2.72E-01	6.66E+02	1.88E+01	5.26E+01	1.78E+01	2.31E+00	2.70E-01	1.47E+02
GWP,f	kg CO ₂ eq	6.65E+02	7.91E-02	2.72E-01	6.65E+02	1.88E+01	5.26E+01	1.78E+01	2.30E+00	2.70E-01	1.47E+02
GWP,b	kg CO ₂ eq	3.51E-01	4.84E-06	3.34E-04	3.52E-01	1.15E-03	3.13E-03	1.06E-03	5.63E-03	2.85E-05	1.14E-02
GWP,luluc	kg CO ₂ eq	2.18E-01	1.60E-06	1.54E-04	2.18E-01	3.82E-04	2.16E-03	3.52E-04	5.79E-03	1.36E-05	1.41E-02
GWP,ghg	kg CO ₂ eq	6.65E+02	7.91E-02	2.72E-01	6.66E+02	1.88E+01	5.26E+01	1.78E+01	2.31E+00	2.70E-01	1.47E+02
ODP	kg CFC11 eq	1.40E-05	1.77E-09	8.20E-09	1.40E-05	4.20E-07	8.30E-07	3.88E-07	1.47E-08	4.02E-09	2.77E-06
AP	mol H+ eq	2.20E+00	1.02E-04	6.74E-04	2.21E+00	2.59E-02	5.04E-01	3.59E-02	1.12E-02	2.51E-03	5.73E-01
EP,f	kg P eq	1.18E-01	5.59E-07	5.69E-05	1.18E-01	1.33E-04	3.97E-04	1.23E-04	1.04E-03	8.07E-06	6.86E-02
EP,m	kg N eq	4.87E-01	2.52E-05	1.64E-04	4.87E-01	6.40E-03	2.37E-01	1.26E-02	2.38E-03	1.14E-03	1.23E-01
EP,t	mol N eq	5.12E+00	2.43E-04	1.25E-03	5.13E+00	6.22E-02	2.57E+00	1.31E-01	2.38E-02	1.24E-02	1.31E+00
POCP	kg NMVOC eq	2.08E+00	1.92E-04	1.84E-03	2.08E+00	4.67E-02	7.57E-01	6.06E-02	7.15E-03	3.71E-03	7.00E-01
ADPE*	kg Sb eq	2.35E-04	2.82E-09	8.06E-08	2.35E-04	6.68E-07	2.21E-06	6.18E-07	6.57E-08	1.07E-08	1.30E-03
ADPF*	MJ	8.87E+03	1.09E+00	5.66E+00	8.88E+03	2.59E+02	6.92E+02	2.39E+02	3.08E+01	3.47E+00	1.25E+03
WDP*	m ³	1.43E+02	9.97E-04	5.83E-02	1.43E+02	2.37E-01	8.87E-01	2.19E-01	4.00E-01	4.78E-03	1.24E+01

GWP Global warming potential, total
GWP,f Global warming potential, fossil
GWP,b Global warming potential, biogenic
GWP,luluc Global warming potential, land use & land use change
ODP Ozone depletion potential

AP Acidification Potential
EP,f Eutrophication potential, freshwater
EP,m Eutrophication potential, marine
EP,t Eutrophication potential, terrestrial
POCP Photochemical ozone creation potential

ADPE Abiotic depletion potential minerals & metals
ADPF Abiotic depletion potential fossil fuels
WDP Water use deprivation potential

Additional environmental impact indicators are computed in the LCA report but not reported in the EPD.
 *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.

RESOURCES USE- CATANIA											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
PERE	[MJ]	6.06E+02	2.86E-03	2.65E-01	6.06E+02	6.80E-01	1.35E+00	6.28E-01	4.34E+00	1.55E-02	1.06E+02
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	6.06E+02	2.86E-03	2.65E-01	6.06E+02	6.80E-01	1.35E+00	6.28E-01	4.34E+00	1.55E-02	1.06E+02
PENRE	[MJ]	1.05E+04	1.10E+00	4.35E+00	1.05E+04	2.62E+02	7.00E+02	2.42E+02	4.01E+01	3.57E+00	1.89E+03
PENRM	[MJ]	0.00E+00	0.00E+00	2.23E+00	2.23E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	1.05E+04	1.10E+00	6.19E+00	1.05E+04	2.62E+02	7.00E+02	2.42E+02	4.01E+01	3.57E+00	1.89E+03
SM	[kg]	1.39E+03	0.00E+00	0.00E+00	1.39E+03	0.00E+00	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m ³]	4.07E+00	4.55E-05	2.11E-03	4.08E+00	1.08E-02	3.44E-02	1.00E-02	1.76E-02	1.82E-04	3.60E-01

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 resources

SM Use of secondary raw materials
RSF Use of renewable secondary fuels
NRSF Use of non-renewable secondary fuels
FW Use of net fresh water

OUTPUT FLOWS - CATANIA											
INDICATORS	UNITS / D.U.	UPSTREAM	CORE PROCESS			A1:A3	DOWNSTREAM				
		A1	A2	A3	A4		C1	C2	C3	C4	D
HWD	[kg]	1.41E-02	0.00E+00	5.00E-03	1.91E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD	[kg]	1.56E+02	0.00E+00	0.00E+00	1.56E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+02	0.00E+00
RWD	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	[kg]	6.88E+01	0.00E+00	1.14E+01	8.02E+01	0.00E+00	0.00E+00	0.00E+00	9.00E+02	0.00E+00	0.00E+00
MER	[kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

HWD Hazardous waste disposed
NHWD Non-hazardous waste disposed
RWD Radioactive waste disposed

CRU Components for re-use
MFR Materials for recycling
MER Materials for energy recovery

EE Exported energy

Calculation Rules

The environmental burden of the product has been calculated according to EN 15804:2012+A2:2019¹ and PCR ICMQ-001/15 v3. This declaration is a cradle to gate with options EPD type, based on the application of Life Cycle Assessment² (LCA) methodology to the whole life-cycle system.

In the whole LCA model, infrastructures and production equipments are not taken into account.

Cutted, shaped, welded steel products at plant level were described by using specific data from manufacturing facilities placed in Vicenza, Montirone (BS), Sedegliano (UD) and Catania for year 2023. This EPD reports the single plants results. Customized LCA questionnaires were used to gather in-depth information about all aspects of the production system (for example, raw materials contents and specifications, pre treatments, process efficiencies, air and water emissions, waste management), in order to provide a complete picture of the environmental burden of the system from raw materials supply (A1) to Transport (A2) and Manufacturing (A3).

The use phase was not considered according to EN:15804 and PCR ICMQ-001/15 v3, while transport to final destination (A4) and end of life phases (C1-C2-C3-C4-D) were considered. The product is designed for being incorporated into concrete structures. Therefore, in nominal installation and operating conditions, no emissions to air nor to water shall occur.

According to ISO 14040 and 14044, allocation is avoided whenever possible by dividing the system into sub-systems. When allocation cannot be avoided physical properties are used to drive flow analysis.

Data quality has been assessed and validated during data collection process.

According to EN:15804 the applied cut-off criterion for mass and energy flows is 1%.



System boundaries

Broad scheme of hot-rolled reinforcing steel for concrete production, in which the main activities included in the system boundaries, are listed and divided in the three subsystems:



UPSTREAM process

A1

» Raw material and Energy production

CORE module

A2/A3

» Supplying transport
 » Internal handling
 » Ancillary materials and activities
 » Air emission
 » Waste management

DOWNSTREAM process

A4/C1/C2/C3/C4/D

» Distribution
 » De-construction demolition
 » Transport
 » Waste processing
 » Disposal
 » Reuse - Recovery - Recycling potential

¹EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations Core rules for the product category of construction products.

²The LCA methodology is standardized at international level by ISO 14040 and ISO 14044.

Upstream process

A1



A1
RAW MATERIALS SUPPLY

Hot and cold rolled steel production

Specific secondary materials pre-treatments, where appropriate

Generation of electricity and other fuels from primary and from secondary energy resources (excluding waste treatments)

Core module

A2 / A3



A2
TRANSPORTATION
+
A3
MANUFACTURING

Raw materials transportation from production or collection facilities to the production plant and internal transportation

Plant production, including utilities

Treatment of waste generated from the manufacturing processes

Downstream process

A4 / C1 / C2 / C3 / C4 / D



A4 DISTRIBUTION

Transport to the customers (general market average). Distances estimated considering the transported quantities and the distances from the different plants to the clients. Most of the clients are in the Italian country and a small portion abroad. The means of transport used to deliver the products are truck and train. The main truck class emissions are modeled with Ecoinvent datasets for lorry >32 t, Euro 6.

C1 DE-CONSTRUCTION DEMOLITION

Dismantling and demolition operations required to remove the product from the building. Initial onsite sorting of the materials is included as well.

C2 TRANSPORT

Transportation of the discarded product as part of the waste processing (to recycling site or to a final disposal site).

C3 WASTE PROCESSING

Waste processing, including collection of waste fraction from deconstruction and waste processing of material flows intended for reuse, recycling and energy recovery.

C4 DISPOSAL

Waste disposal including physical pre-treatment and management of the disposal site.

D REUSE - RECOVERY - RECYCLING POTENTIAL

Environmental impacts associated to waste use after the investigated system (including recycling).

In this module impacts arising from steel recycling are accounted, including avoided impacts associated to primary steel production. The result is expressed as net value between direct impact (i.e. recycling steel in EAF furnace) and avoided impact (i.e. producing steel from iron ore in BOF furnace).

Other optional additional environmental information

Other environmental characteristics of Ferro Berica plant

Ferro Berica is sensitive to environmental aspects and for this reason it develops, year after year, procedures and practices aimed at minimizing the impact on the surrounding environment.

The production cycle of cutting and shaping does not involve the use of water or any hazardous substance. Thanks to the use of advanced production programs and thanks to modern automatic systems, the entire production cycle of Ferro Berica is oriented towards minimizing scrap.

Scrap is 100% recyclable, normally it does not come into contact with any type of dangerous substance, so it does not require special treatments.

The transport and delivery of the shaped and assembled material at the customers' construction sites, are planned and coordinated with the transport of the raw material that comes from Alfa Acciai or Acciaierie di Sicilia, thus reducing the emission of CO₂ and fine dust.

"Car sharing" is used by some of the employees for the home-work transfer.

The paper documents provided to the customer are reduced to a minimum. Most of them are not printed but made available through a web portal from which the customer can view and download them.

Since 2018, the Vicenza plant has been equipped with a runoff water decantation plant (the so-called first rain water).

REFERENCES

- EN 15804:2012+A2:2019
- ISO 14040:2021
- ISO 14044:2021
- Life Cycle Assessment (LCA) for cutted, shaped and welded steel produced by Ferro Berica for EPD® purposes - Final Report v2.0 22/07/2024
- EPDIItaly General Programme Information v6.0
- PCR ICMQ-001/15 v3



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