steelgroup®

CB Trafilati Acciai S.p.A. con Socio Unico

ENVIRONMENTAL PRODUCT DECLARATION

of steel products: 7-wire strands, 2/3-wire strands and steel wires

Made at the production site of CB Trafilai Acciai S.p.A. in via Laghi 64, 36056 Tezze sul Brenta (VI)

Declaration in accordance with ISO 14025 and EN 15804:2012+A2:2019
Important: In case of conflict between the English version and the Italian original version, the latter prevails.

Programme:	The International EPD® System, www.environdec.com
Program operator:	EPD International AB
EPD registration number:	S-P-08144
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An EPD must provide current information and can be updated if conditions change. The declared validity is therefore subject to continuous registration and publication on www.environdec.com

General Information

Programme information

Programme Operator	EPD International AB (www.environdec.com) Box 210 60 SE-100 31 Stockholm Sweden
Independent verification	This declaration has been developed in accordance with The International EPD System Regulation; further information and the Regulation itself can be found at: www.environdec.com. EN 15804 is the framework reference for PCR 2019:14 Construction products; version 1.11 valid until 20/12/2024. Independent verification of declaration and data according to ISO 14025:2010. Internal ☐ External ☒ Third-party verification carried out by: Bureau Veritas Italia S.p.A., Viale Monza, 347 - 20126 Milan, Italy
Technical support	Via della Volta, 183 - 25124 Brescia Email: info@scfinternational.it Tel: +39 030 3532593
CPC Code	412 Products of iron or steel
Comparability	Environmental declarations published within the same product category, but by different programmes, may not be comparable. In particular, EPDs of construction products may not be comparable if they do not comply with EN 15804.
Liability	CB Trafilati Acciai S.p.A. releases The International EPD System from any non-compliance with environmental legislation self-declared by the manufacturer. The declaration holder will be responsible for the supporting information and evidence; The International EPD System disclaims any responsibility for the information, data and results of the manufacturer's life cycle assessment.
Reference documents	This declaration was developed following the regulations of The International EPD System programme, available on the website: www.environdec.com.
Product Category Rules (PCR)	PCR 2019:14 Standard EN 15804:2012+A2:2019 is the framework reference for PCRs.

Company information

EPD Owner: CB Trafilati Acciai S.p.A. con Socio Unico
Via Laghi 64, 36056 Tezze sul Brenta (VI)
Tel +39 024 560005 - Email: cb@steelgroup.com

Contact: Fabio Mondardini
fabio.cb@steelgroup.com

Description of the organisation: CB Trafilati S.p.A. was established in 1974, later becoming part of STEELGROUP ITALY HOLDING S.R.L. specialises in the production of 7-wire strands, 2/3-wire strands and steel wires. In addition to the complete product range and a production capacity of over 150,000 tonnes per year, there is a materials testing laboratory of enviable technological level, which operates in strict compliance with the most important government regulations worldwide, thanks to an impeccably effective ISO 9001:2015 certified quality system.

Name and address of the production site: CB Trafilati S.p.A. manufactures its products at its site in via Laghi 64 in Tezze sul Brenta (Vicenza).

Product and production cycle information

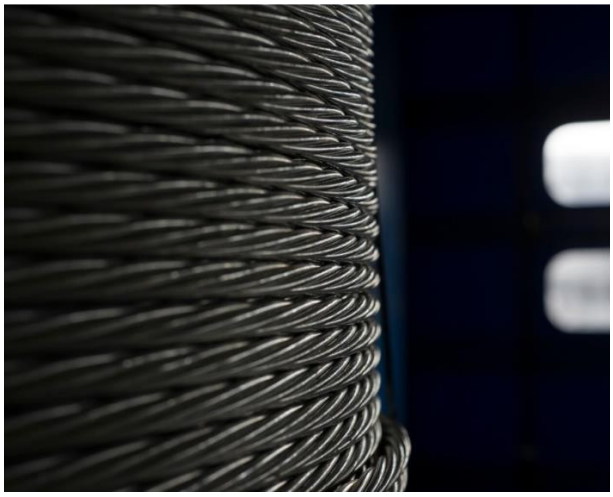
Product name: Steel products: 7-wire strands, 2/3-wire strands and steel wires

Product description: CB Trafilati S.p.A. specialises in the production of steel products to serve the prefabrication and large infrastructure industries, for prestressing and post-tensioning engineering works.

The products under study are the 7-WIRE STRAND, the 2/3-WIRE STRAND and the STEEL WIRE.

The products analysed are described below.

7-WIRE STRAND
7-wire steel strands are used in prestressing or post-tensioning applications for the construction of large works such as nuclear power plants, motorways, railways, viaducts and cable-stayed bridges, beams and floors for prefabricated civil or industrial buildings.





2/3-WIRE STRAND
2-wire or 3-wire steel strands are used for prestressing applications for lightweight structures such as beams, slabs or orchard posts.

STEEL WIRE
Steel wires are produced in plain or threaded coils or bars, for prestressing applications to make sleepers for high-speed or underground railway lines, with a smooth or imprinted finish, according to the client's different needs.



Description of the production cycle: The production of the steel products under study begins with the arrival of the hot-rolled round steel wire rod. It undergoes several acceptance checks: visual inspection on unloading, validation test of mechanical and dimensional characteristics, verification of chemical analysis carried out by the supplier. The wire rod is then stored divided by casting and made available for production. The first processing step is chemical pickling, i.e. a bath in a solution of sulphuric acid (sol. 10-30%) at a temperature >45°C for about 20 min until the surface oxides are completely removed. The wire rod then undergoes phosphating (the material is immersed in a bath of Zinc Phosphate), and a final immersion in a protective salt solution, all under controlled temperatures and with the aid of automated overhead travelling cranes. The subsequent drawing phase allows the raw material to be transformed into semi-finished wire useful for the manufacture of 7-wire strands, 2/3-wire strands and steel wires, by means of drawing machines that allow diameter reduction and strength increase. If the semi-finished product is destined to become a *trefolo (7-wire strand)* or *treccia (2/3-wire strand)* product, it is processed and wound in specific plants called "stranding machines" that braid the wires to form a cord composed of 2, 3 or 7 wires. If the semi-finished product is destined to become a *filo (wire)* product, it undergoes straightening operations; all semi-finished products are then subjected to in-line thermal-mechanical treatment using induction furnaces and a lengthening system using cable-stretching machines at a temperature of approximately 350-450°C with a final plunge in water. This treatment reduces pressure losses due to slackening during installation and increases the yield strength characteristics compared to the initial raw product. The finished product can then be coated with grease or wax and a layer of HDPE using equipment called "viplatrici". Lastly, the finished product, in rolls or bundles, is secured with metal straps, packed if required, the identification tag is applied and various quality checks are carried out on samples taken during production.

LCA information

Functional Unit / Declared Unit: 1 kg of product

Reference service life: Not applicable if modules B1-B5 are not analysed.

Temporal representation: The reference year is 2021.

Geographical area: Europe.

Database and LCA software used: Ecoinvent 3.8 and SimaPro 9.3.0.3

Description of system boundaries: Cradle to gate (A1-A3)

The Upstream Phase (**A1**) includes the supply of materials first and specifically:

- the extraction and processing of raw materials;
- the generation of electricity.

The Core phase comprises the following processes:

- transport of raw materials and packaging, to processes forming part of the core phase (**A2**);
- production of steel and packaging products and treatment of waste from production (**A3**).

The Downstream phase is not included as required by the reference standard; in particular (i) the product is physically integrated with other products during installation so that they cannot be physically separated from them at the end of life, and (ii) the product is no longer identifiable at the end of life as a result of a physical or chemical transformation process, and (iii) the product does not contain biogenic carbon.

Technical specifications: The product is classified by Classes of resistance (e.g. 1570-1670-1860-2160 MPa) and by the following broad characteristics

Technical characteristics of 7-WIRE STRANDS

Elongation at maximum force [Agt]			min 3,5%	
Modulus of Elasticity [E]			190÷210 GPa	
Curvature of the strand			max 25 mm/m	
Relaxation after 1000 h under 70% of Fmax (20°C)			max 2,5%	
Deflected Tensile test behaviour		Plain Strand	max D28	
Axial Fatigue test behaviour at 70% Fmax	Δ = 190 MPa	Plain Strand	2 M cycles without breakage	
	Δ = 170 MPa	Indented Strand		
Stress Corrosion resistance under solution with 25% of Ammonium Thiocyanate at 80% of Fmax (50°C)			Strand ≤ 9,3 mm	min 1,5 h
				med 3 h
Stress Corrosion resistance under solution with 25% of Ammonium Thiocyanate at 80% of Fmax (50°C)			Strand > 9,3 mm	min 2 h
				med 5 h

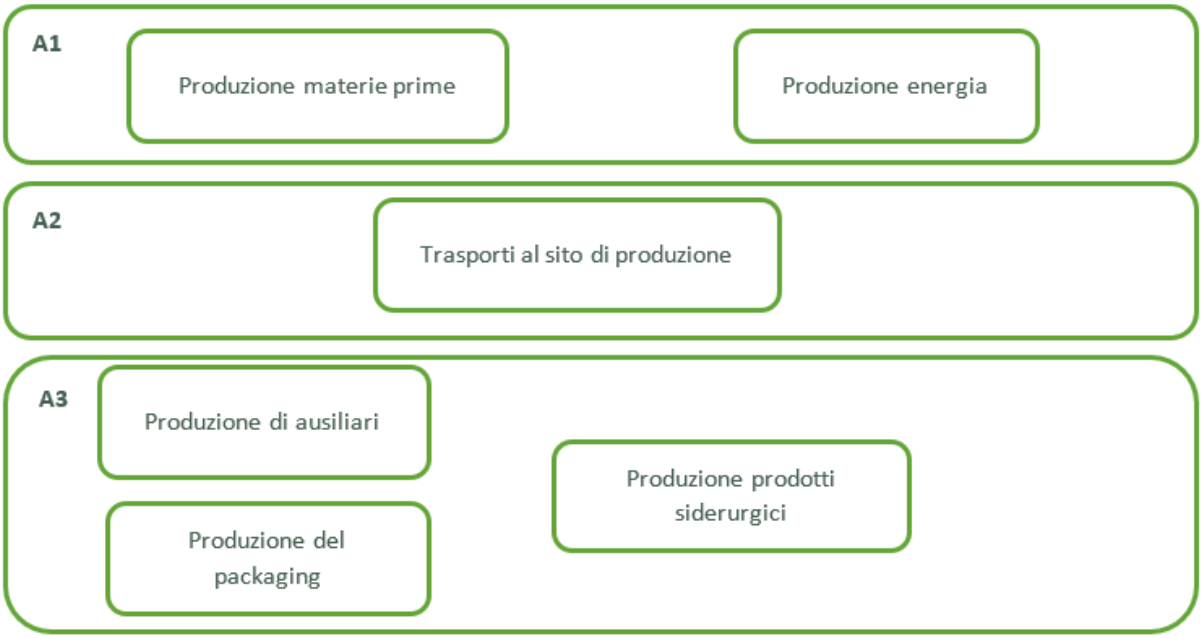
Technical characteristics of 2/3-WIRE STRANDS

Elongation at maximum force [Agt]			min 3,5%	
Modulus of Elasticity [E]			190÷210 GPa	
Curvature of the strand			max 25 mm/m	
Relaxation after 1000 h under 70% of Fmax (20°C)			max 2,5%	
Axial Fatigue test behaviour at 70% Fmax	Δ = 190 MPa	Plain Strand	2 M cycles without breakage	
	Δ = 170 MPa	Indented Strand		
Stress Corrosion resistance under solution with 25% of Ammonium Thiocyanate at 80% of Fmax (50°C)			Strand < 7,5 mm	min 1,5 h
				med 3 h
Stress Corrosion resistance under solution with 25% of Ammonium Thiocyanate at 80% of Fmax (50°C)			Strand ≥ 7,5 mm	min 2 h
				med 5 h

Technical characteristics of the STEEL WIRES

Elongation at maximum force [Agt]		min 3,5%	
Modulus of Elasticity [E]		190÷210 GPa	
Alternate Bendings (until 10 mm)		Plain Wire	min 4
		Indented Wire T1	min 3
		Indented Wire T2	min 2
Curvature of the wire		max 25 mm/m	
Relaxation after 1000 h under 70% of Fmax (20°C)		max 2,5%	
Axial Fatigue test behaviour at 70% Fmax	Δ = 200 MPa	Plain Strand	2 M cycles without breakage
	Δ = 1800 MPa	Indented Strand	
Stress Corrosion resistance under solution with 25 % of Ammonium Thiocyanate at 80% of Fmax (50°C)		All wires	min 2 h
			med 5 h

System boundaries:



Declared forms:

	Product stage		Construction process stage			Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	ND
Geography	EU	EU	IT														
Specific data used	>90%																
Variation – products	Not relevant																
Variation – sites	Not relevant																

Data quality:	Site-specific data from the production phase of 7-wire strands, 2/3-wire strands and steel wires are for 2021 and were provided by CB Trafilati Acciai S.p.A. Upstream and downstream processes were modelled based on data from the Ecoinvent 3.8 database. The contribution of generic data on the final results is less than 4% for each impact category. This excludes raw materials and packaging, the consumption of methane for heating, infrastructure and business trips, and the consumption of diesel for forklifts used for internal handling.
Other information:	All raw materials used in the production of the products under study, the energy required and the production of waste were considered in the LCA. The impact on the climate change indicator of electricity in Italy is 558 g CO_2eq./kWh (residual mix from Association of Issuing Bodies, European Residual Mixes 2021, Version 1.0, 31-05-2022).
Further information:	www.steelgroup.com

Environmental information

1 kg of FILO (WIRE)

Potential environmental impacts – mandatory indicators according to EN 15804

Indicators	Unit	A1	A2	A3	Total A1-A3
GWP-fossil	kg CO_2 eq.	1.65E+00	8.48E-02	1.54E-02	**1.75E+00**
GWP-biogenic	kg CO_2 eq.	5.36E-03	9.06E-05	1.62E-03	**7.07E-03**
GWP-luluc	kg CO_2 eq.	1.42E-03	5.13E-06	2.04E-05	**1.44E-03**
GWP-total	kg CO_2 eq.	1.66E+00	8.49E-02	1.71E-02	**1.76E+00**
ODP	kg CFC 11 eq.	1.09E-07	2.00E-08	7.66E-10	**1.29E-07**
AP	mol H^+ eq.	5.70E-03	4.00E-04	6.61E-05	**6.17E-03**
EP-freshwater	kg PO_4^{3-} eq.	7.60E-04	2.25E-06	5.19E-06	**7.67E-04**
EP-marine	kg N eq.	1.32E-03	1.47E-04	1.71E-05	**1.48E-03**
EP-terrestrial	mol N eq.	1.37E-02	1.61E-03	1.31E-04	**1.54E-02**
POCP	kg NMVOC eq.	6.88E-03	4.18E-04	4.55E-05	**7.34E-03**
ADP-minerals&metals*	kg Sb eq.	3.50E-07	3.74E-09	1.79E-07	**5.33E-07**
ADP-fossil*	MJ	1.83E+01	1.23E+00	1.69E-01	**1.97E+01**
WDP*	m^3	6.52E-01	2.40E-04	1.05E-01	**7.58E-01**
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				

** Disclaimer: The results of this environmental impact indicator should be used with care as the uncertainties of these results are high or experience with the indicator is limited.*

Additional environmental indicators were calculated, although not reported in the EPD, and are present in the LCA report instead.

GWP-GHG

Indicators	Unit	A1	A2	A3	Total A1-A3
GWP-GHG	kg CO_2 eq.	1.62E +00	8.46E-02	1.58E-02	**1.72E +00**

Use of resources

Indicators	Unit	A1	A2	A3	Total A1-A3
PERE	MJ	8.44E-01	8.83E-03	2.10E-01	**1.06E+00**
PERM	MJ	1.62E-01	1.62E-03	2.39E-01	**4.03E-01**
PERT	MJ	1.01E +00	1.05E-02	4.50E-01	**1.47E+00**
PENRE	MJ	1.83E+01	1.39E +00	-4.33E-04	**1.97E+01**
PENRM	MJ.	1.06E-02	3.49E-06	6.55E-03	**1.71E-02**
PENRT	MJ	1.83E+01	1.39E +00	6.12E-03	**1.97E+01**
SM	kg	4.70E-01	0.00E+00	0.00E+00	**4.70E-01**
RSF	MJ	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**
FW	m^3	1.69E-02	3.70E-05	2.38E-03	**1.93E-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 generation and output flows

Waste production

Indicators	Unit	A1	A2	A3	Total A1-A3
Disposal of hazardous waste	kg	1.21E-04	3.13E-06	1.83E-07	**1.24E-04**
Non-hazardous waste disposed	kg	2.57E-01	1.06E-04	1.43E-02	**2.72E-01**
Radioactive waste disposal	kg	3.89E-05	8.78E-06	5.01E-07	**4.82E-05**

Outgoing flows

Indicators	Unit	A1	A2	A3	Total A1-A3
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Materials for recycling	kg	0.00E+00	0.00E+00	5.20E-02	**5.20E-02**
Materials for energy recovery	kg	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**
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**

1 kg of TRECCIA (2/3-WIRE STRAND)

Potential environmental impacts – mandatory indicators according to EN 15804

Indicators	Unit	A1	A2	A3	Total A1-A3
GWP-fossil	kg CO_2 eq.	1.73E+00	8.52E-02	1.14E-01	**1.93E+00**
GWP-biogenic	kg CO_2 eq.	5.40E-03	9.08E-05	4.39E-03	**9.88E-03**
GWP-luluc	kg CO_2 eq.	1.42E-03	5.13E-06	9.84E-05	**1.52E-03**
GWP-total	kg CO_2 eq.	1.73E+00	8.53E-02	1.19E-01	**1.94E+00**
ODP	kg CFC 11 eq.	1.22E-07	2.01E-08	5.63E-09	**1.47E-07**
AP	mol H^+ eq.	5.91E-03	4.02E-04	5.50E-04	**6.86E-03**
EP-freshwater	kg PO_4^{3-} eq.	7.67E-04	2.25E-06	3.90E-05	**8.08E-04**
EP-marine	kg N eq.	1.36E-03	1.48E-04	1.08E-04	**1.61E-03**
EP-terrestrial	mol N eq.	1.41E-02	1.62E-03	1.02E-03	**1.67E-02**
POCP	kg NMVOC eq.	7.00E-03	4.20E-04	3.39E-04	**7.76E-03**
ADP-minerals&metals*	kg Sb eq.	3.51E-07	3.76E-09	1.76E-06	**2.11E-06**
ADP-fossil*	MJ	1.95E+01	1.23E+00	1.34E+00	**2.20E+01**
WDP*	m^3	6.68E-01	2.39E-04	1.40E-01	**8.08E-01**
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				

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Additional environmental indicators were calculated, although not reported in the EPD, and are present in the LCA report instead.

GWP-GHG

Indicators	Unit	A1	A2	A3	Total A1-A3
GWP-GHG	kg CO_2 eq.	1.70E+00	8.50E-02	1.13E-01	**1.89E +00**

Use of resources

Indicators	Unit	A1	A2	A3	Total A1-A3
PERE	MJ	8.97E-01	8.84E-03	2.35E-01	**1.14E+00**
PERM	MJ	1.92E-01	1.63E-03	1.49E-01	**3.43E-01**
PERT	MJ	1.09E+00	1.05E-02	3.84E-01	**1.48E+00**
PENRE	MJ	1.95E+01	2.57E+00	-2.07E-02	**2.20E+01**
PENRM	MJ.	1.06E-02	3.51E-06	2.68E-02	**3.74E-02**
PENRT	MJ	1.95E+01	2.57E+00	6.12E-03	**2.20E+01**
SM	kg	4.70E-01	0.00E+00	0.00E+00	**4.70E-01**
RSF	MJ	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**
FW	m^3	1.73E-02	3.70E-05	3.35E-03	**2.07E-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 generation and output flows

Waste production

Indicators	Unit	A1	A2	A3	Total A1-A3
Disposal of hazardous waste	kg	1.22E-04	3.14E-06	1.33E-06	**1.27E-04**
Non-hazardous waste disposed	kg	2.58E-01	1.07E-04	8.63E-02	**3.44E-01**
Radioactive waste disposal	kg	4.05E-05	8.83E-06	3.87E-06	**5.32E-05**

Outgoing flows

Indicators	Unit	A1	A2	A3	Total A1-A3
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Materials for recycling	kg	0.00E+00	0.00E+00	5.20E-02	**5.20E-02**
Materials for energy recovery	kg	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**
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**

1 kg TREFOLO (7-WIRE STRAND)

Potential environmental impacts – mandatory indicators according to EN 15804

Indicators	Unit	A1	A2	A3	Total A1-A3
GWP-fossil	kg CO_2 eq.	1.73E+00	8.51E-02	2.84E-02	**1.85E +00**
GWP-biogenic	kg CO_2 eq.	5.55E-03	9.07E-05	2.02E-03	**7.66E-03**
GWP-luluc	kg CO_2 eq.	1.43E-03	5.13E-06	2.91E-05	**1.46E-03**
GWP-total	kg CO_2 eq.	1.74E+00	8.52E-02	3.06E-02	**1.86E+00**
ODP	kg CFC 11 eq.	1.22E-07	2.00E-08	1.44E-09	**1.44E-07**
AP	mol H^+ eq.	5.93E-03	4.02E-04	1.32E-04	**6.47E-03**
EP-freshwater	kg PO_4^{3-}eq.	7.70E-04	2.25E-06	1.00E-05	**7.82E-04**
EP-marine	kg N eq.	1.36E-03	1.48E-04	2.95E-05	**1.54E-03**
EP-terrestrial	mol N eq.	1.41E-02	1.62E-03	2.51E-04	**1.60E-02**
POCP	kg NMVOC eq.	7.02E-03	4.19E-04	8.45E-05	**7.52E-03**
ADP-minerals&metals*	kg Sb eq.	3.52E-07	3.75E-09	4.11E-07	**7.66E-07**
ADP-fossil*	MJ	1.96E+01	1.23E+00	3.23E-01	**2.11E+01**
WDP*	m^3	6.70E-01	2.40E-04	1.10E-01	**7.81E-01**
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				

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GWP-GHG

Indicators	Unit	A1	A2	A3	Total A1-A3
GWP-GHG	kg CO2 eq.	1.70E+00	8.48E-02	2.88E-02	**1.82E+00**

Use of resources

Indicators	Unit	A1	A2	A3	Total A1-A3
PERE	MJ	9.12E-01	8.83E-03	1.67E-01	**1.09E+00**
PERM	MJ	2.14E-01	7.07E-04	1.49E-01	**3.64E-01**
PERT	MJ	1.13E+00	9.54E-03	3.16E-01	**1.45E+00**
PENRE	MJ	1.96E+01	1.55E+00	-3.08E-04	**2.11E+01**
PENRM	MJ.	1.06E-02	3.50E-06	6.43E-03	**1.70E-02**
PENRT	MJ	1.96E+01	1.55E+00	6.12E-03	**2.11E+01**
SM	kg	4.70E-01	0.00E+00	0.00E+00	**4.70E-01**
RSF	MJ	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**
FW	m^3	1.74E-02	3.70E-05	2.51E-03	**1.99E-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 generation and output flows

Waste production

Indicators	Unit	A1	A2	A3	Total A1-A3
Disposal of hazardous waste	kg	1.22E-04	3.14E-06	3.39E-07	**1.26E-04**
Non-hazardous waste disposed	kg	2.58E-01	1.07E-04	2.49E-02	**2.83E-01**
Radioactive waste disposal	kg	4.10E-05	8.81E-06	9.66E-07	**5.08E-05**

Outgoing flows

Indicators	Unit	A1	A2	A3	Total A1-A3
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**
Materials for recycling	kg	0.00E+00	0.00E+00	5.20E+00	**5.20E+00**
Materials for energy recovery	kg	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**
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	**0.00E+00**

Differences from the previous version

This is the first version of the EPD.

Bibliography

1. ISO 14040:2020 Environmental management – Life cycle assessment - Principles and Framework
2. ISO 14044:2020 Environmental management – Life cycle assessment – Requirements and provides guidelines for life cycle assessment (LCA)
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5. PCR 2019:14 Construction products (EN 15804:A2) (1.11)
6. Association of Issuing Bodies, European Residual Mixes 2021, Version 1.0, 31-05-2022
7. ISPRA Special Waste Report – Edition 2021
8. LCA report of steel products manufactured by CB Trafilati Acciai S.p.A., rev01 of 30.11.2022

SUMMARY

Organisation description: CB Trafilati Acciai S.p.A. is a company that was founded in 1974, then becoming part of STEELGROUP ITALY HOLDING S.R.L. specialising in the production of 7-wire strands, 2/3-wire strands and steel wires. To the complete range of products and a production capacity of over 150,000 tonnes per year, there is a material testing laboratory, of enviable technological level, which operates in the strictest compliance with the most important governmental qualifications on a world scale, thanks to a quality system of impeccable effectiveness that is ISO 9001: 2015 certified.

Product description: The products covered by the EPD are three steel products: PC 7-wire strand, PC 2/3- wire strand (tress) and PC wire.
The 7-wire steel strands are used in prestressing or post-tensioning applications for the construction of major works such as nuclear power plants, highways, railways, viaducts and cable-stayed bridges, beams and floors for prefabricated civil or industrial buildings.
The 2 or 3-wire strands (tress) are used for prestressing applications for the construction of light works such as joists, floors or poles for orchards.
The steel wires are produced in rolls or simple or threaded bars, for prestressing applications intended for the construction of sleepers for high-speed or underground railway lines, with smooth or indented finish, according to the different needs of the customer.

Functional unit / Declared unit: 1 kg of product.

Description of system boundaries: Cradle to gate (A1-A3).
The product stages include:
A1: Extraction and processing of raw materials.
A1: Generation of electricity and heat from primary energy sources, including their extraction, refining and distribution.
A2: Transportation up to the factory gate and internal transport. A3: Production of ancillary materials or pre-products.
A3: Manufacturing of products and packaging.
Downstream is not included.

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