

# ENVIRONMENTAL PRODUCT DECLARATION STEEL BEAMS AND ANGLES PROFILES



## BASED ON

PCR 2019:14 v1.3.4

## PROGRAMME

The International EPD System  
[www.environdec.com](http://www.environdec.com)

## In accordance with

ISO 14025 and  
EN 15804-2012+A2:2019

## REGISTRATION NUMBER

EPD-IES-0011367:001

## CPC CODE

412

## REGISTRATION DATE

(first issue)  
17-04-2025

## VALID UNTIL

17-04-2030

## MANUFACTURING SITE

TRAVI E PROFILATI DI  
PALLANZENO SPA  
Via Sempione, 7 28884  
Pallanzeno (VB) - ITALY



EPD OF MULTIPLE SITE, BASED ON THE AVERAGE RESULTS OF THE SITE GROUP



# GENERAL INFORMATION

## EPD REFERENCES

**EPD OWNER:** Travi E Profilati Di Pallanzeno SpA Via Sempione, 7 28884 Pallanzeno (VB) - ITALY  
Part of Duferco Travi e Profilati SpA Via Armando Diaz, 248 25010 San Zeno Naviglio (BS) ITALY

**PROGRAM OPERATOR:** EPD international ab, box 21060, Se-100 31 Stockholm, Sweden; info@environdec.com

## INDEPENDENT VERIFICATION

The declaration has been developed referring to the International EPD® System, following the General Programme Instructions v4.0. Further information and the document itself are available at: [www.environdec.com](http://www.environdec.com).

EPD document valid within the following geographical area: Europe according to sales market conditions

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): PCR 2019:14 Construction products, Version 1.3.4 – CPC CODE 4219: Other structures (except prefabricated buildings) and part of structures, of iron, steel or aluminum PCR review was conducted by: ILV Swedish Environmental Research Institute – Secretariat of the International EPD® System

Product-related or management system-related certifications:

[e.g. ISO 14024 Type I environmental labels, ISO 9001- and 14001-certificates, EMAS-registrations, SA 8000, supply chain management and social responsibility]

Name and location of production sites: San Zeno Naviglio (BS) and Pallanzeno (VB)

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☒ EPD verification by accredited certification body

**THIRD PARTY VERIFIER:** RINA Services S.p.A. – ACCREDIA (Registration number 0002VV)  
Is an approved certification body accountable for the third-party verification.

The certification body is accredited by: ACCREDIA (Registration number 0002VV)

Approved by: The Technical Committee of the International EPD® System

Procedure for follow-up during EPD validity involves third party verifier:

☐ YES ☒ NO

## CONTACTS

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Technical support to Duferco was provided by Life Cycle Engineering, Italy  
([info@studiolce.it](mailto:info@studiolce.it), [www.lcengineering.eu](http://www.lcengineering.eu)).



2025-04-17 Version 1  
New verification: Updated background data for ecoinvent 3.10, updated data and results added to EPD

INDICATORS		A1:A3 variance with previous study
GWP-total	kg CO <sub>2</sub> eq	-24.9%
GWP-fossil	kg CO <sub>2</sub> eq	-24.9%
GWP-biogenic	kg CO <sub>2</sub> eq	-64.6%
GWP-luluc	kg CO <sub>2</sub> eq	56.9%
GWP-ghg	kg CO <sub>2</sub> eq	-24.9%
ODP	kg CFC-11 eq	-29.2%
AP	mol H+ eq	-23.3%
EPf	kg P eq	-91.2%
EPm	kg N eq	-25.3%
EPt	mol N eq	-21.8%
POCP	kg NMVOC eq	-24.6%
ADPe	kg Sb eq	-11.4%
ADPf	MJ	-23.9%
WDP	m <sup>3</sup>	-1.0%

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com).

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable.

For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.



# THE COMPANY

## Description of the organisation

Duferco Travi e Profilati S.p.A. (DTP) is a leading steel group that specializes in the production of beams, special quality steels, special profiles and long products.

## The Company's history

In 1996 Duferco acquired Ferdofin siderurgica giving birth to Duferdofin. In 2008, a strategic alliance with Nucor set a benchmark in Italy, Europe, and North Africa becoming Duferdofin - Nucor. The JV with Nucor ended in December 2020, making the company fully owned by Duferco and renamed Duferco Travi e Profilati. With advanced technology, industry expertise and a skilled workforce, DTP has built an integrated production system that ensures competitive costs and minimal environmental impact. The group owns four plants in Italy, serving 800 customers in 60 countries.

**San Zeno Naviglio**, near Brescia, is home to the steel mill and one of the rolling mills. Here, ferrous scrap is melted to produce semi-finished products, which are then processed in the rolling mills of San Zeno, **Pallanzeno** (Verbania, Northern Italy), and **Giammoro** (Messina, Southern Italy). **San Giovanni Valdarno** (Tuscany) is the Group's mechanical division, where profiles from the rolling mill become track shoes for earth moving machines.

## Numbers



**800**  
clients



**769**  
employees



**400**  
million euros revenue



**635 k**  
tons of scrap used in 2024



**4**  
plants



**92%**  
of consumed material renewable

### • Pallanzeno (VB)

Rolling mill – Beams, profiles for track shoes, angle bars and bulb flats.

### • San Zeno Naviglio (BS)

Headquarter, Steel mill, Rolling mill – continuous casting products and beams.

### • San Giovanni Valdarno (AR)

Mechanical division – Track shoes.

### • Giammoro (ME)

Logistics and Energy division.

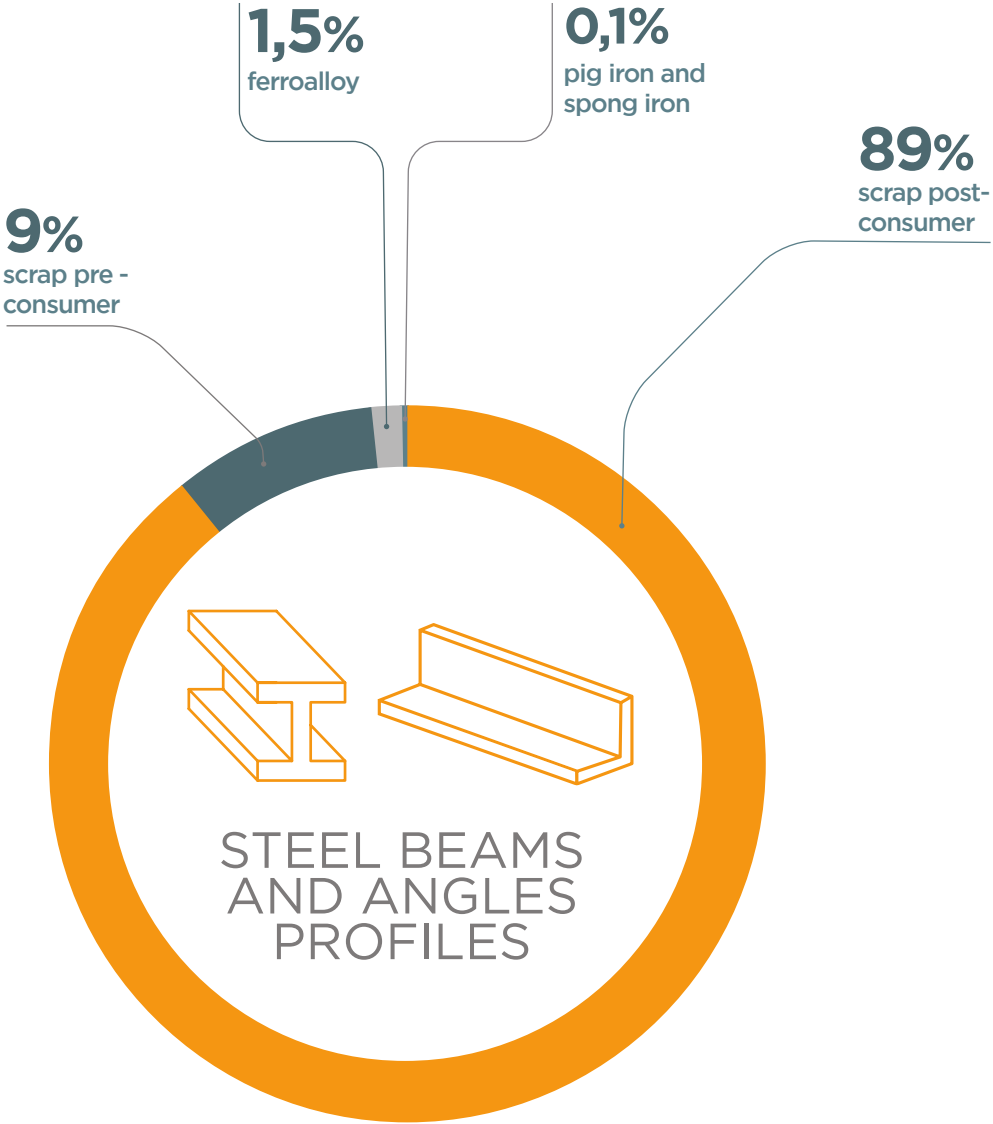
**4**  
**PLANTS**  
**IN ITALY**



# PRODUCT INFORMATION

**UN CPC CODE:** 4219: Other structures (except prefabricated buildings) and part of structures, of iron, steel or aluminum

**GEOGRAPHICAL SCOPE:** Europe



The product does not contain substances dangerous to the senses of REACH\*.

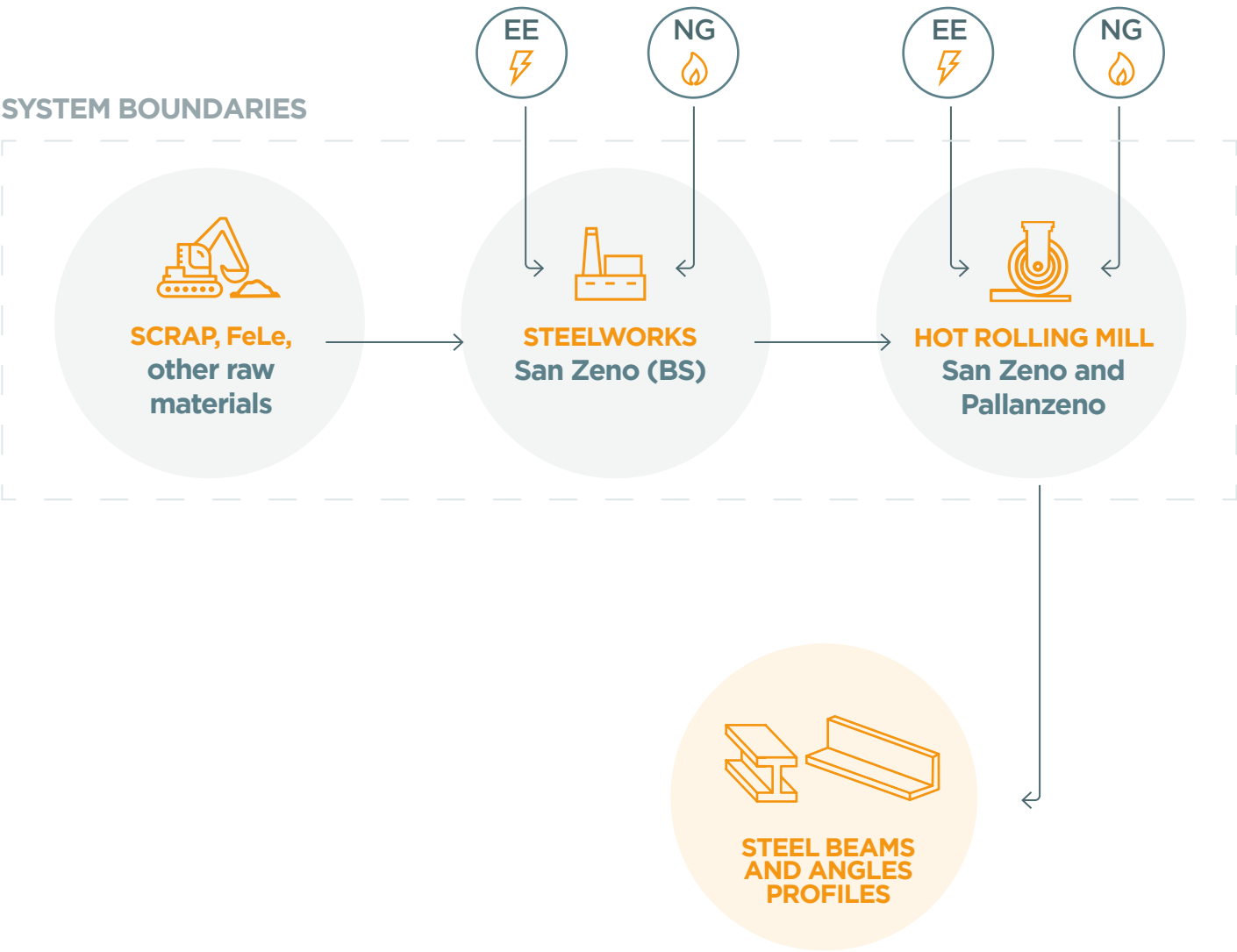
Minimum content of 92% of post-consumer recycled material.

\*Regulation (EC) n.1907/2006 of the European Parliament and of Council of 18 December 2006 on registration, evaluation, Authorization and restriction of chemicals.

INFORMATION	DESCRIPTION
PRODUCT IDENTIFICATION	Beams, equal and unequal angles.
PRODUCT FEATURES	Steel in different quality: S235 JR, S235 JO, S235 J2, S275 JR, S275 JO, S275 J2, S355 JR, S355 JO, S355 J2, S355 K2, S355 JOW, S355 J2W, S355 JOWP
PRODUCT PROPERTIES (UNDER UNI EN 10025-1:2005; UNI EN 10025-2:2019; 10025-5:2019)	Pallanzeno plant products range: HE from 100 to 200, IPN from 160 to 240, IPE from 80 to 300, UPN from 80 to 300  Equal angles from 120x120x10 mm to 250x250x35 mm and unequal angles from 150x90x10 mm to 200x100x16 mm.
	San Zeno plant SBM products range: HE from 140 to 600 IPN from 240 to 400 IPE from 180 to 750 UPN from 80 to 300
PLANT FEATURES	<p>Pallanzeno plant (TPP) has a production capacity of 650 K t/ year; it's equipped with a rolling mill, a finishing centre and a warehouse with a railway connection.</p> <p>SBM located San Zeno has a production capacity of 700 k tons per year. It's one of Europe's most advanced plant for production of beams. With cutting-edge automation and AI-driven monitoring, it maximizes efficiency, reduces waste, and optimizes energy use. The reheating furnace is designed to operate with a mix of gas and hydrogen, while three PPA contracts ensure renewable energy supply.</p>



# PRODUCTION PROCESS



In the **San Zeno site**, the steel production process begins with the melting of the scrap, which is thus entirely recycled, continues with refining and ends with continuous casting; the results are semi-finished products with round, square, rectangular and dog-bone sections of different qualities depending on the final use.

The semi-finished products supplied by the **San Zeno Naviglio steelworks** are rolled in the **Pallanzeno mill** or directly in **San Zeno site**, where beams of different shapes, sizes and qualities are produced. The qualitative and dimensional range of long products meets the requests of different sectors such as construction, infrastructure, power transportation and machinery.

# SCOPE & TYPE OF EPD

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

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				RESOURCE RECOVERY STAGE
	Raw material supply	Transport	Manufacturing	Transport from 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
module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
modules declared	✓	✓	✓	✓	ND	ND	ND	ND	ND	ND	ND	ND	✓	✓	✓	✓	✓
geography	GLO	GLO	IT	EU													
specific data used	>80%			>80%	-	-	-	-	-	-	-	-	-	-	-	-	-
variations - products	-10% + 9%			0%	-	-	-	-	-	-	-	-	-	-	-	-	-
variations - sites	-10% + 9%			0%	-	-	-	-	-	-	-	-	-	-	-	-	-





# ENVIRONMENTAL RESULTS

It is not recommended to use the results of modules A1-A3 without considering the results of module C.

**Mandatory impact category indicators according to EN 15804**

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

ENVIRONMENTAL IMPACTS		A1:A3	DOWNSTREAM					
			A4	C1	C2	C3	C4	D
GWP	kg CO <sub>2</sub> eq	5.25E+02	3.23E+01	5.88E+00	7.70E+00	1.30E-01	9.57E-01	-7.50E+01
GWP, f	kg CO <sub>2</sub> eq	5.24E+02	3.23E+01	5.88E+00	7.70E+00	1.27E-01	9.57E-01	-7.50E+01
GWP, b	kg CO <sub>2</sub> eq	4.06E-01	6.73E-03	3.47E-03	2.65E-04	2.93E-03	4.74E-05	-1.12E-02
GWP, luluc	kg CO <sub>2</sub> eq	3.42E-01	8.55E-03	4.52E-04	1.90E-04	3.26E-05	2.70E-05	-8.05E-04
GWP, GHG <sup>1</sup>	kg CO <sub>2</sub> eq	5.25E+02	3.23E+01	1.47E+01	7.70E+00	1.30E-01	9.57E-01	-7.50E+01
ODP	kg CFC-11 eq	1.15E-05	6.44E-07	2.72E-07	1.58E-07	2.93E-09	1.83E-08	-1.50E-07
AP	mol H <sup>+</sup> eq	1.65E+00	1.20E-01	8.82E-02	2.73E-02	8.28E-04	5.05E-03	-2.72E-01
EP,f	kg P eq	1.02E-02	2.66E-04	1.40E-05	6.50E-06	5.74E-07	1.41E-06	-3.19E-03
EP,m	kg N eq	4.73E-01	4.69E-02	4.01E-02	1.16E-02	3.71E-04	2.25E-03	-5.33E-02
EP,t	mol N eq	5.20E+00	5.14E-01	4.39E-01	1.27E-01	4.11E-03	2.47E-02	-6.28E-01
POCP	kg NMVOC eq	1.84E+00	1.79E-01	1.38E-01	4.45E-02	1.24E-03	7.92E-03	-2.11E-01
ADPe*	kg Sb eq	4.22E-04	1.13E-06	5.69E-07	2.56E-07	3.42E-08	3.30E-08	-6.14E-04
ADPF*	MJ	7.04E+03	4.51E+02	2.04E+02	1.02E+02	1.14E+01	1.26E+01	-6.42E+02
WDP*	m <sup>3</sup>	2.24E+02	8.20E-01	1.85E-01	4.35E-02	7.39E-02	6.73E-03	-7.64E+00

- 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
- GWP,ghg** Global warming potential, excluding biogenic uptake, emission and storage

**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\*

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

# ENVIRONMENTAL RESULTS

RESOURCE USE INDICATORS		A1:A3	DOWNSTREAM					
			A4	C1	C2	C3	C4	D
PERE	[MJ]	3.19E+03	1.52E+01	1.28E+01	3.56E-01	0.00E+00	4.62E-02	-4.63E+01
PERM	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.19E+03	1.52E+01	1.28E+01	3.56E-01	0.00E+00	4.62E-02	-4.63E+01
PENRE	[MJ]	7.02E+03	4.51E+02	2.04E+02	1.02E+02	1.14E+01	1.26E+01	-6.42E+02
PENRM	[MJ]	2.08E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	[MJ]	7.04E+03	4.51E+02	2.04E+02	1.02E+02	1.14E+01	1.26E+01	-6.42E+02
SM	[kg]	1.13E+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
NRSF	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	[m³]	6.08E+00	5.98E-02	4.56E-02	2.63E-03	4.02E-02	3.49E-04	-2.10E-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

# ENVIRONMENTAL RESULTS

WASTE INDICATORS		A1:A3	DOWNSTREAM					
			A4	C1	C2	C3	C4	D
HWD	kg	4.79E+01	4.44E-02	9.13E-03	2.11E-03	2.34E-03	6.03E-04	-2.57E+01
NHWD	kg	1.18E+02	8.16E-01	1.13E+00	1.48E-01	6.41E-02	8.43E-01	-6.43E+01
RWD	kg	6.15E-02	4.75E-04	1.55E-04	9.62E-06	1.40E-04	1.09E-06	4.40E-04

OUTPUT FLOW		A1:A3	DOWNSTREAM					
			A4	C1	C2	C3	C4	D
CRU	kg	4.67E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	9.76E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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
EE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	MJ	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  
**EET** Exported energy,thermal



# LCA METHODOLOGY

The site-specific data of the billet and profile production phase were provided by **TRAVI E PROFILATI DI PALLANZENO SPA**.

The EPD is a multiple site EPD based on average results of the sites Pallanzeno and San Zeno, variance results are reported in a specific section.

The **upstream** and **downstream** processes were modeled based on data from the **Ecoinvent 3.10 database**. The contribution of proxy data on the final results is less than 10% for each impact category. Packaging of raw materials and auxiliaries, infrastructure and business travels are excluded.

The impact on the GHG-GWP indicator of the electricity in Italy used by Duferco Travi e Profilati S.p.A. is 1,34E-04 kgCO<sub>2</sub>eq./kWh (residual mix from Ecoinvent 3.10).

The weighted average of the distribution distance of steel beams and angles profiles was calculated for the A4 module.

Modules **C1** to **C4** and **D** were modeled according to a reference scenario representative of the products studied. Module **C1** includes consumption for the demolition of buildings and structures.

An average distance is used to estimate the impact of transporting the products to the disposal site, quantified in module **C2**. The recycling preparation operations are counted in module **C3**: in the LCA model, a pre-processing operation of ferrous scrap for remelting was used. Module **C4** contains the impacts relating to landfill disposal of the non-recyclable product. In module **D**, the net impact between the remelting of ferrous scrap (positive value) and the production of steel from iron ore (negative value) is calculated, taking into account the efficiency of the process and removing the share of post-consumer scrap incoming for the production of billets.

For pre-consumer scrap originating from modules **A1-A3** in another product system and used in **San Zeno Naviglio steel plant**, an economic allocation was made, based on estimated data; for post-consumer scrap, impacts of collection, transport to scrap-yard, sorting and pressing to blocks were included.



# SYSTEM BOUNDARIES

## UPSTREAM PROCESS



Scrap pretreatment

Shearing

Shredding

Sorting

Raw material and  
Energy production

A1

## CORE PROCESS



Supplying transport

Billets production

Hot rolling process

Packaging

Internal handling

Ancillary materials and activities

Air emission

Water emission

Waste management

A2+A3

## DOWNSTREAM PROCESS



Distribution

De-construction  
demolition

Transport

Waste processing

Disposal

Reuse - Recovery  
Recycling potential

A4

C1

C2

C3

C4

D

**DECLARED UNIT:**  
1 ton of steel beams and angles profiles

**DATABASE AND LCA SOFTWARE USED:**  
SimaPro 10.1.0.3 and Ecoinvent 3.10, method compliant EF3.1

**TIME REPRESENTATIVENESS:**  
2024

**DESCRIPTION OF SYSTEM BOUNDARIES:**  
Cradle to gate with options, modules C1-C4, module D (A1 + A3 + A4 + C + D).



# VARIANCE BETWEEN AVERAGE SITE PRODUCTION

INDICATOR		Pallanzeno	San Zeno
GWP	kg CO <sub>2</sub> eq	-10.1%	8.4%
GWP, f	kg CO <sub>2</sub> eq	-10.1%	8.4%
GWP, b	kg CO <sub>2</sub> eq	-2.0%	1.6%
GWP, luluc	kg CO <sub>2</sub> eq	6.0%	-5.0%
GWP, GHG <sup>1</sup>	kg CO <sub>2</sub> eq	-10.1%	8.4%
ODP	kg CFC-11 eq	-15.6%	13.0%
AP	mol H+ eq	4.5%	-3.7%
EP,f	kg P eq	-1.9%	1.5%
EP,m	kg N eq	9.7%	-8.1%
EP,t	mol N eq	9.7%	-8.1%
POCP	kg NMVOC eq	4.1%	-3.4%
ADPe*	kg Sb eq	17.2%	-14.3%
ADPf*	MJ	-9.6%	8.0%
WDP*	m <sup>3</sup>	6.5%	-5.4%

**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

**GWP,ghg** Global warming potential, excluding biogenic uptake, emission and storage  
**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\*



# CALCULATION RULES

## UPSTREAM PROCESS



## CORE PROCESS



## DOWNSTREAM PROCESS



A1

### RAW MATERIAL SUPPLY

- Extraction and refining of raw materials
- Scrap collection
- Electricity generation from the national network
- Extraction, processing and dispatching of process fuels



# CALCULATION RULES

## UPSTREAM PROCESS



## CORE PROCESS



## DOWNSTREAM PROCESS



A2

### TRANSPORTATION

- Transport of raw materials to the production site
- Transport and handling of semi-finished products

A3

### MANUFACTURING

- Production of the product
- Ancillary consumption (canteens, offices...)
- Packaging and auxiliary materials (water)
- Waste production and disposal



# CALCULATION RULES

## UPSTREAM PROCESS



## CORE PROCESS



## DOWNSTREAM PROCESS



A4

### TRANSPORT - DISTRIBUTION

- Transport of steel products to the end customer

C1

### DE-CONSTRUCTION DEMOLITION

- Dismantling or demolition of the product
- Initial sorting materials on site

C2

### TRANSPORT TO WASTE PROCESSING

- Transport of waste products to recycling sites
- Waste transportation to final disposal

C3

### WASTE PROCESSING

- Waste treatment intended for reuse and recycling
- Treatment for the waste intended to energy recovery

C4

### DISPOSAL

- Physical pretreatment
- Waste disposal
- Site management of disposal

D

### REUSE - RECOVERY - RECYCLING POTENTIAL

# SUPPLEMENTARY INFORMATIONS

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Duferco Travi & Profilati production site is covered by 100%, renewable electricity with Guarantee of Origins.

# REFERENCES

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- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:14. Construction products. Version 1.3.4
- ISO 14040:2006/Amd 1:2020
- ISO 14044:2006/Amd 1:2017/Amd 2:2020
- ISO 14025:2010
- EN 15804:2012+A2:2019
- Bo P. Weidema & Gregory A. Norris, “Avoiding co-product allocation in the metals sector”, 2002
- AA. VV., A methodology to determine LCI of steel industry co-products, 2014
- [www.ecoinvent.org](http://www.ecoinvent.org)
- Studio LCA rev.





[www.dufercotp.com](http://www.dufercotp.com)