

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO14025 and EN15804+A2:2019 for
ERW Steel Pipes
Manufactured by ÇINAR BORU SAN. VE TİC. A.Ş.



Programme: The International EPD® System
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Local Operator: EPD Turkey
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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.

General Information

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ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product
Category Rules (PCR) Product Category Rules (PCR): 2019:14 Version 1.2.5,
Construction Products and, EN 15804:2012 + A2:2019/AC:2021 Sustainability of
Construction Works

Technical Committee of the International EPD® System. Review chair: Claudia A.
Peña, University of Concepción, Chile. The review panel may be contacted via the
Secretariat www.environdec.com/contact.

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

EPD process certification EPD verification

Third party verifier: Prof. Ing. Vladimír Kočí, Ph.D., MBA LCA Studio Šárecká
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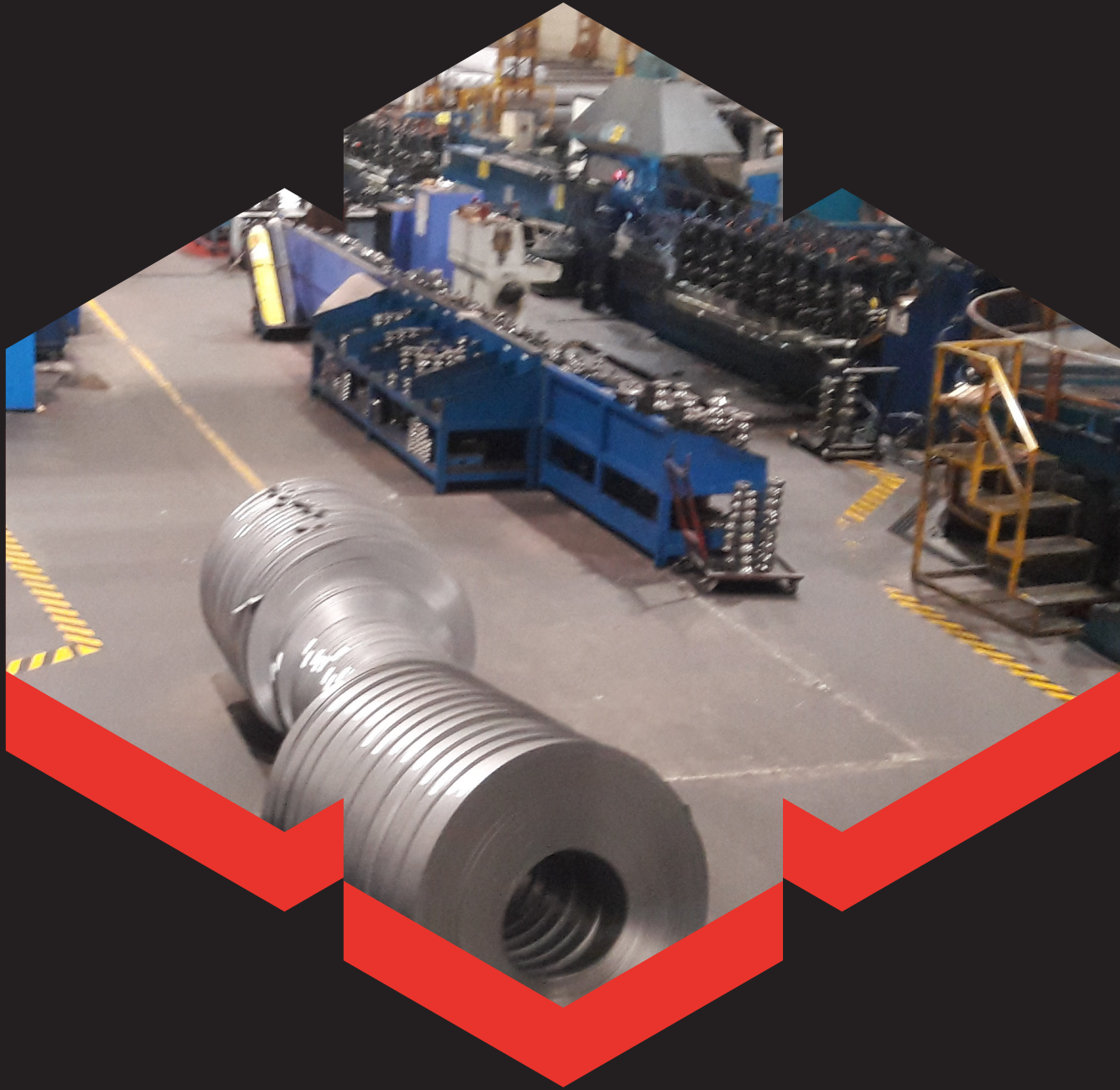
Approved by: The International EPD® System Technical Committee
supported by the Secretariat

Procedure for follow-up of data during EPD validity
involves third party verifier: Yes No

Life Cycle Assessment (LCA)
LCA accountability: Metsims Sustainability Consulting

The EPD owner has the sole ownership, liability, and responsibility for the EPD.
EPDs within the same product category but from different programmes may not
be comparable. EPDs of construction products may not be comparable if they do
not comply with EN 15804.

About the Çınar Boru



The founder of our company, Mr. Abdurrahman Çınar Born in 1940 in the village of Bayındır, Çerkeş, district of Çankırı. He started his business life in Erdemir in 1962 after his military service and left Erdemir in 1978, became engaged in trade in Karadeniz Ereğli. As a result of the determined efforts of Mr. Abdurrahman Çınar, our company gained its current structure.

In the years when the sheet metal trade continued, the excess demand in the pipe and profile market and the insufficiency in the sector caused the company to be structured in this direction. While Çınar Boru was producing 25.000 tons / year in a closed area of 6.500 square meters during its establishment years, today as a result of smart investments it is possible to produce 180.000 tons / year with its modern machines in a total area of 52.000 square meters, 22.000 square meters closed and 30.000 square meters open area . Our company become a Turkey leading manufacturer of pipes and profiles.

Çınar Boru has proven its strength in overseas markets as in Turkey market because of its quality, product range and experience of over 40 years. The company, which exported 5.000 tons in 2001, has now exported 40% of its production to various European countries, especially England, Germany, America and the Middle East countries.

Company; In order to increase its strength in the sector, underwent restructuring in 2006 and decided to operate its transport group as a separate company under the name of Çınar Lojistik. Because of newly established company, all logistics activities related to raw materials and products have become more professionally carried out.

Again within the framework of the same structuring; steel service, which was previously provided in Akçakoca facilities, started to be provided in Çınar Çelik Service Center, which was established in the new Organized Industrial Zone in Ereğli, with a total area of 50.000 m2, 15.000 m2 closed and 35.000 m2 open. In our facility, services are provided in sheet metal slitting, cut to length and sheet sizing, especially in the automotive and white goods sector, with machines capable of making extremely modern and precise production.

Today, where quality and customer satisfaction are at the forefront, we offer our gratitude to you, our customers, from whom we take our strength as a company with more than 40 years of experience.

Our employees, who work in a team spirit with the aim of offering you the best quality product in the shortest time at the most affordable price, are happy to share with you the joy of their contribution to the Turkish industry.

Çınar Boru, which is with us in every aspect of our lives from the automotive sector to the white goods sector, from water and gas installations to construction, furniture, and agriculture, is among the leading organizations in its field thanks to its technology and management power.

V i s i o n

Being a global company satisfying its customers, setting a reference in every aspect of its field, and being happy with its corporate structure

Mission

To deliver the product of the highest quality in the shortest possible lead times for the best price to our customers and to steer innovation in our industry whilst contributing to the economies of our country and region.

Values

Highly-motivated staff and a safe working environment,
Commitment to the environment and human resources,
Our cost- and efficiency- awareness as well as our R&D activities that consistently provide dynamism to our company.

About the Product

ERW Steel Pipes are manufactured longitudinally welded with source of high frequency (ERW) from the strips having steel grade at their manufacturing standards.

Production starts with the slitting of flat steel. After slitting, production is carried out in the desired dimensions in the pipe machine with the cold forming method.

The product UN CPC code is 41273 according to Central Product Classification (CPC) Version 2.1.

Production Range

Production Standards: TS EN 10305-3, DIN 2394, EN 10219, BS 6323, ASTM A500

Tolerance: It can change with customer specifications and standards.

Shape of Cross-sections	Dimensions
Rectangular hollow sections	B X H = from 15 X 10 up to 150 X 100 mm Wall thickness from 0.60 up to 8.50 mm
Square hollow sections	B X H = from 10 X 10 up to 130 X 130 mm Wall thickness from 0.60 up to 8.50 mm
Circular hollow sections	Outside Diameter from \varnothing 10.0 up to \varnothing 168.3 Wall thickness from 0.60 up to 6.30 mm

Technical Specifications

Production Standards	Steel Grades
EN 10219-1	S235JRH S275JOH S275J2H S355JOH S355J2H S355K2H S420MH S460MH
EN 10305-3/5	E155 E190 E195 E220 E235 E260 E275 E320 E355 E370 E420 E460 E500 E550 E600 E700
ASTM A500	Grade A Grade B Grade C Grade D

System Boundaries & Description

A1 - RAW MATERIAL SUPPLY

This stage includes raw material/s extraction and pre-treatments before its use in manufacturing. Flat steel is the main input of the process. Minor additives like oil are included in the assessment. The steel used for the manufacturing is sourced both from EAF and BOF routes. EAF and BOF ratios were allocated based on the supply figures in the reporting year.

A2 - RAW MATERIAL TRANSPORT

Transport information of the raw materials are provided by the manufacturer. The distances and routes are calculated accordingly. According to the manufacturer, locally supplied steel is transported via trucks and other supplies come through seaway.

Transport Mode	Type
Road	Vehicle: Lorry Size Class: >32 metric ton Emission Standard: EURO5 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil

A3 - MANUFACTURING

The production starts with slitting of the supplied flat steel. After the slitting, production is carried out in the desired dimensions in the pipe machine with the cold forming method. Electricity and diesel is used throughout the production process. The electricity source is the Turkish electricity grid mix.

A4 - TRANSPORT

Transport of final product to customers are considered and the routes and distances are calculated accordingly. Transport routes were provided by Çınar Boru for 2022.

Transport Mode	Type
Road	Vehicle: Lorry Size Class: >32 metric ton Emission Standard: EURO5 Fuel Type: Diesel
Sea	Vehicle: Container Ship DWT (Load Capacity): 43000 tonnes Fuel Type: Heavy Fuel Oil

C1 - DECONSTRUCTION / DEMOLITION

Steel pipes' installation and demolition stages may vary according to the use area and the auxiliary equipment. This study assumes that half an hour of crane operation is performed per functional unit with a diesel mobile crane.

Parameter	Value
Fuel Consumption (Mobile Crane)	8 liters/hour
Working Time (assumption)	30 minutes per functional unit

C2 - WASTE TRANSPORT

This step includes the transport of materials after they reach their end-of-life. The average distance was assumed 100 km by truck from demolition site to a waste or recycling area.

Parameter	Value
Vehicle Type	Vehicle: Lorry Size Class: 16-32 metric ton Emission Standard: EURO5 Fuel Type: Diesel
Distance	100 km

C3 - WASTE PROCESSING

It is assumed that no waste processing is needed after the product reaches its end-of-life. Recycling has already been calculated in module D, so the impact of this stage is considered zero.

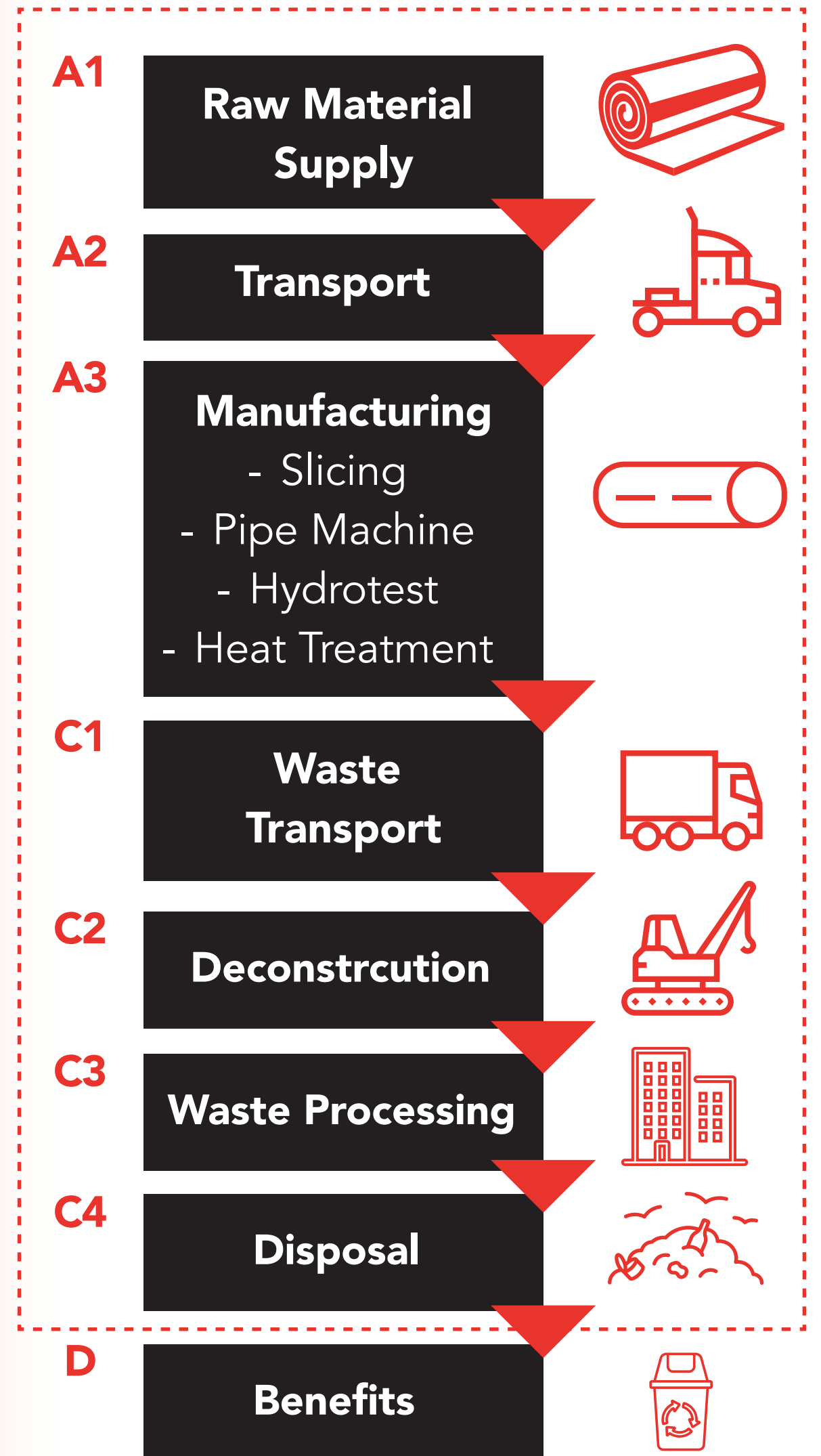
C4 - DISPOSAL

Based on the figures of World Steel Association (WSA), the recycling rate of steel is around 95%. Based on this, 95% of the steel is assumed to be recycled.

D - BENEFITS

In order to consider net output benefits, scrap inputs to the production stage are subtracted from scrap to be recycled at end of life. This remaining net scrap is then delivered to recycling process.

SYSTEM BOUNDARIES



LCA Information

Declared Unit: 1 tonne (1000 kg) of ERW steel pipe manufactured in Düzce Plant

Time Representativeness: 2022

Database(s) and LCA Software: Ecoinvent 3.9.1 and SimaPro 9.5

System Boundaries: Cradle to gate with options, modules C1–C4, module D and with optional module (A4).

	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	x	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	GLO	GLO	TR	GLO	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	>90%			>90%	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation-products	>10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation-sites	NR			-	-	-	-	-	-	-	-	-	-	-	-	-	-

The inventory for the LCA study is based on the 2022 production figures. This EPD's system boundary is cradle to gate with options, modules C1-C4, and module D. (A1–A3 + C + D and A4 and A5 modules).

Allocations

Water consumption, energy consumption and raw material transportation were weighted according to 2022 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the 2022 total waste generation.

Cut-Off Criteria

1% cut-off is applied. Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included.

REACH Regulation

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

LCA Modelling, Calculation and Data Quality

The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while fresh water use is calculated with selected inventory flows in SimaPro according to the PCR. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations. Data quality assessment is given below table.

LCA Stages	Data Type
Raw Material Supply	Generic database, plant specific data
Raw Material Transport	Generic database, plant specific data
Manufacturing	Generic database, plant specific data
Product Transport	Generic database, generic data
Demolition	Generic database, scenario and generic data
Waste Transport	Generic database, scenario and generic data
Waste Processing	-
Disposal	Generic database, scenario and generic data
Benefits and Loads	Generic database, scenario and generic data

Content Declarations

Product Composition

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Hot Rolled Steel	>99%	70-80%	0%
Others	<1%	0%	0%

Packaging

Steel pipes are packed and shipped with steel strips and labels which are very low weights when it compared to product weight.

Product components	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Steel Strip	1.75	<1%	946E-6
Label	0.00093	<1%	1.02E-3

LCA Results

Mandatory Impact Category Indicators According to EN 15804

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP - fossil	kg CO ₂ eq.	1841	41.1	14.3	19.2	0	478E-3	-328
GWP - biogenic	kg CO ₂ eq.	4.24	19.2E-3	3.28E-3	6.48E-3	0	4.61E-3	1.24
GWP - luluc	kg CO ₂ eq.	1.01	23.2E-3	1.61E-3	9.90E-3	0	772E-6	-110E-3
GWP - total	kg CO ₂ eq.	1846	41.2	14.3	19.2	0	484E-3	-327
ODP	kg CFC 11 eq.	43.8E-6	813E-9	227E-9	288E-9	0	11.7E-9	-7.86E-6
AP	mol H+ eq.	8.13	476E-3	132E-3	68.0E-3	0	3.25E-3	-1.28
EP-freshwater	kg P eq.	0.91	2.44E-3	439E-6	1.56E-3	0	47.1E-6	-123E-3
EP - marine	kg N eq.	1.81	128E-3	61.4E-3	22.4E-3	0	1.25E-3	-304E-3
EP - terrestrial	mol N eq.	19.3	1.40	667E-3	237E-3	0	13.3E-3	-3.20
POCP	kg NMVOC eq.	8.82	432E-3	198E-3	91.5E-3	0	4.56E-3	-1.78
ADP-minerals&metals**	kg Sb eq.	16.3E-3	88.8E-6	5.0E-6	61.4E-6	0	948E-9	-184E-6
ADP - fossil**	MJ	20022	571	187	270	0	10.0	-3408
WDP**	m ³	370	2.33	403E-3	1.20	0	342E-3	-3.64
PM	disease inc.	149E-6	3.24E-6	3.69E-6	1.53E-6	0	68.9E-9	-26.5E-6
IRP	kBq U235 eq	89.53	0.598	88.8E-3	230E-3	0	7.61E-3	-2.91
HT-cancer	CTUh	12.9E-6	17.8E-9	4.38E-9	8.69E-9	0	241E-12	-1.81E-6
HT-non-cancer	CTUh	86.6E-6	343E-9	30.4E-9	194E-9	0	3.54E-9	-1.31E-6
SQP	pt	6647	433	12.6	161	0	16.9	-750

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; PM: Particulate Matter; IRP: Ionizing Radiation; HTP-c: Cancer human health effects. HTP-nc: Noncancer human health effects. SQP: Land use related impacts soil quality

Legend

A1: Raw Material Supply. A2: Transport. A3: Manufacturing. A4: Transport. A5: Installation. C1: Deconstruction / demolition. C2: Transport. C3: Waste Processing. C4: Disposal. D: Future reuse, recycling or energy recovery potentials

***Disclaimer-1:** This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

****Disclaimer-2:** 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.

Additional Mandatory and Voluntary Impact Category Indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP-GHG	kg CO2 eq.	1847	41.2	14.3	19.3	0	0.480	329

GWP-GHG = Global Warming Potential total excl. biogenic carbon following IPCC AR5 methodology * The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013

Resource Use Indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
PERE	MJ	2051	7	1	3	0	0	-68
PERM	MJ	0	0	0	0	0	0	0
PERT	MJ	2051	7	1	3	0	0	-68
PENRE	MJ	20022	571	187	0	0	10	-3408
PENRM	MJ	0	0	0	0	0	0	0
PENRT	MJ	20022	571	187	0	0	10	-3408
SM	kg	807	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m3	0	0	0	0	0	0	0

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 resources; 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

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0.519	0	0	0	0	0	0
Non-hazardous waste disposed	kg	36.6	0	0	0	0	0	0
Radioactive waste disposed	kg	0	0	0	0	0	0	0

Output Flow Indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0	0	0	0	0	0	0
Material for recycling	kg	0	0	0	0	0	950	0
Materials for energy recovery	kg	0	0	0	0	0	0	0
Exported energy. electricity	MJ	0	0	0	0	0	0	0
Exported energy. thermal	MJ	0	0	0	0	0	0	0

References



GPI/ General Programme Instructions of the International EPD® System. Version 4.0. EN ISO 9001/ Quality Management Systems - Requirements EN ISO 14001/ Environmental Management Systems - Requirements

EN ISO 50001/ Energy Management Systems - Requirements ISO 14020:2000/ Environmental Labels and Declarations — General principles

EN 15804:2012+A2:2019/ Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

ISO 14025/ DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040/44/ DIN EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006) PCR 2019:14 Construction products (EN 15804:A2) (1.2.5) prepared by IVL Swedish Environmental Research Institute, EPD International Secretariat, date 2022-11-01.

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