

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 and EN 15804 for:

ERW Steel Pipes - Rectangular Hollow Sections from NOKSEL

Programme:	The International EPD® System www.environdec.com
Programme operator:	EPD International AB
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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

Programme 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 5,16000 Prague 6- Czech Republic

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

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About the Company

Established in 1987, NOKSEL serves domestic and international markets by manufacturing spiral welded steel pipes petroleum , gas, water and piling industries and its partnership structure consists of Nokia Corporation, Finnish Fund Industrial Co. Ltd. and Cukurova Group which holds the majority share.

NOKSEL first established its production operations in Iskenderun in 1988 and the second production plant was operated in Hendek, Sakarya in 1997, NOKSEL increased the number of production lines to five in both plants and its production capacity to 350.000 tons per year. Both of facilities manufacture spiral welded steel pipes up to 3.048 mm in diameter, with a wall thickness of 26 mm, in full compliance with American Petroleum Institute (API) standards.

NOKSEL's product range was enriched with longitudinally welded steel tubes and hollow sections (ERW) in sizes ranging from 10*10 mm up to 130*130 mm and from 0,5 to 6 inches for general construction, automotive and furniture industries in 2001. These products are manufactured in nine production lines at the Company's Hendek facilities with an annual production capacity of 450.000 tons.

In order to penetrate the European markets better, Noksel Espana S.A was established in Spain in 2008. Through this investment NOKSEL, has obtained a new spiral pipe production plant in Spaşn possessing production capacity of 150.000 tons.

With a full commitment to operational excellence, the Company constantly strives to ensure that its quality policies and principles are in full compliance with all national and international regulations and standars. To optimize the management of information, NOKSEL has been using the SAP system for its own business operations and MIS systems since 2005.

For its outstanding compliance, the Company was rewarded the ISO 9001: Quality Management System Certificate, ISO 1400:Environmental Managenebt System Certificate, the ISO 1800: Occupational Health and Safety Management System, ISO/TS 29001: Specific Quality Management System for Oil and Gas Industry, API 5L: API (American Petroleum Institute) Monogram Authorization and API Q1; Quality Management System for Specific API (American Petroleum Institute) Products.,

With the well-trained and experienced employees, its modern and well-equipped facilities and its wide range of products, NOKSEL aims to continue to fraw and to be a lader in its sector by focusing on its strengths.

1 MISSION

Our mission is to contribute to society by supplying sustainably and safely produced steel pipes.

2 VISION

Our vision is to help build a better world with high quality and innovative steel pipes.

3 VALUES

Integrity, safety, excellence, creativity, and courage are our core values that unite and sustain us.

About the Product

ERW Steel Pipes are manufactured by cold-forming a sheet of steel into a cylindrical shape.

Production starts with the slitting of flat steel. After slitting, production is carried out 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.

Field of Application

Automotive industry, Furniture industry, Construction etc.

Production Range

Size: 10x20 mm- 120x140 mm

Wall Thickness: 0.7 mm- 8 mm

Tube Lengths: 6m as standard, 4- 12 m upon request

Production Standards

EN: 10305-5

DIN: 2395- 1/2

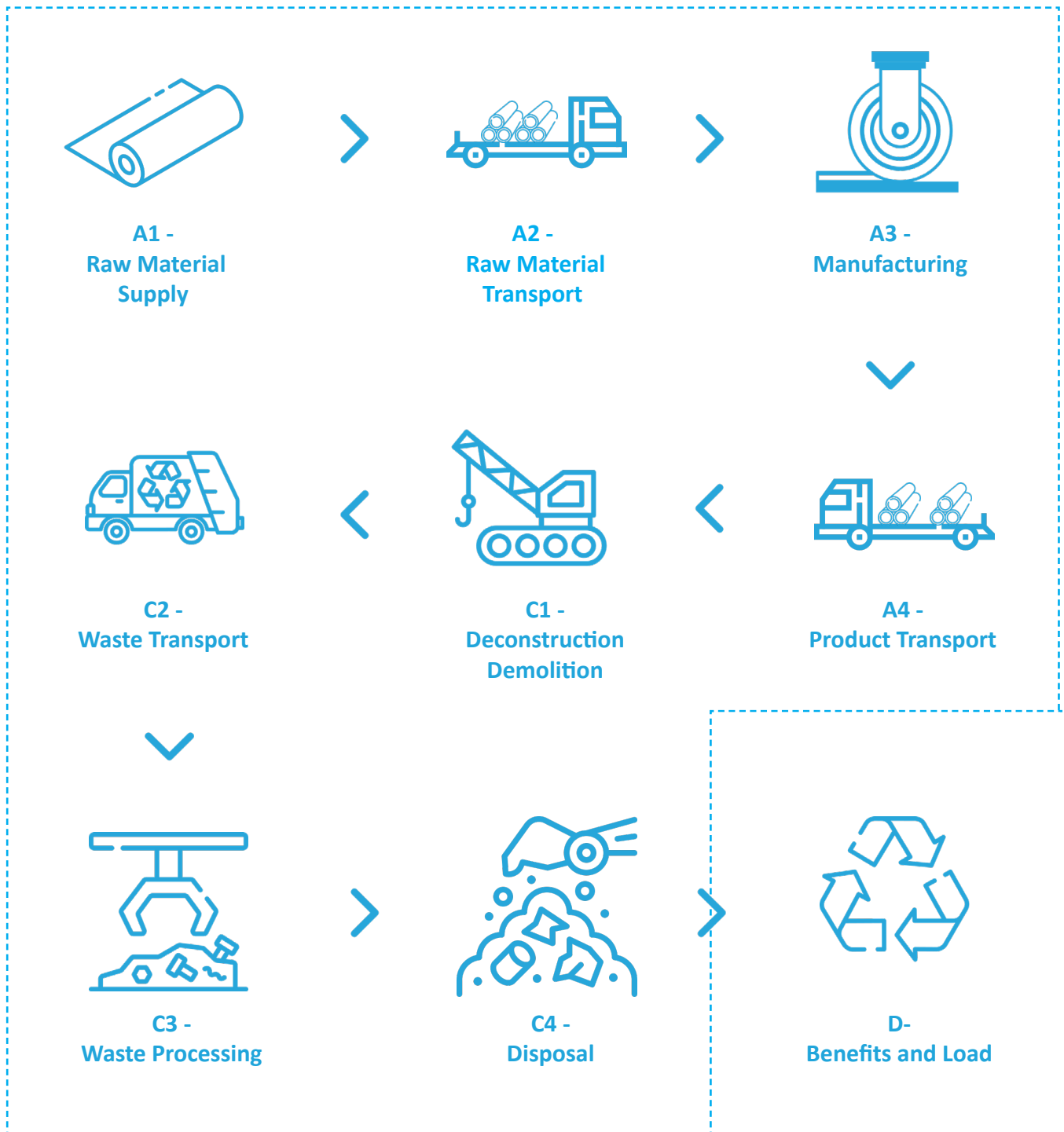
BS: 6363

ASTM: A500

EN: 10219 - 1/2



System Boundaries & Description





A1 - RAW MATERIAL SUPPLY

Raw material extraction and pre-treatments is considered in raw material supply stage. 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

Raw material transport from supplier to manufacturer is considered in raw material supply stage. The distances and routes are calculated accordingly. Depending 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

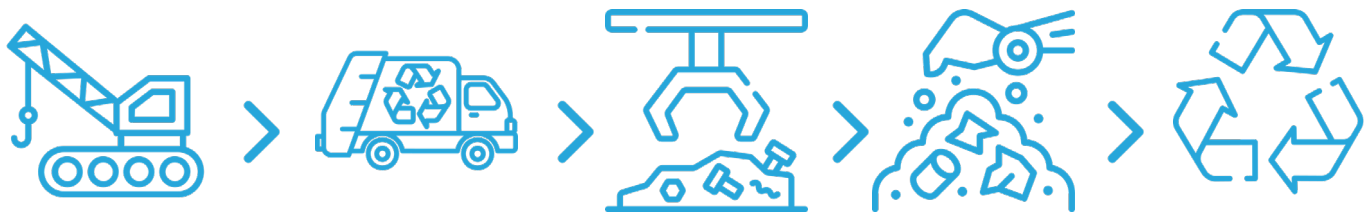
Electricity and diesel is used throughout the manufacturing process. The Turkish electricity grid mix is used as electric energy. Manufacturing process is given as,

Slitting -> Cold-forming -> Forming -> Welding -> Sizing and cutting

A4 - PRODUCT TRANSPORT

Product transport from manufacturer to customer is considered in product material supply stage. The distances and routes are calculated accordingly. Depending the customer location, product 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



C1- Deconstruction
Demolition

C2- Waste
Transport

C3- Waste
Processing

C4- Disposal

D- Benefits &
Loads

C1 - DECONSTRUCTION / DEMOLITION

At the end of the service life deconstruction is done. 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

Waste transport 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 impact of the product has already been calculated in benefits & loads stage.

C4 - DISPOSAL

According to World Steel Association (WSA), the recycling rate of steel is around 95%. So, 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.

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				BENEFITS AND LOADS
	Raw Materials Supply	Transport	Manufacturing	Transport from the gate	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-constuction	Transport	Waste processing	Disposal	Reuse-Recycling-Recovery
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	X	-	-	-	-	-	-	-	-	X	X	X	X	X
Geography	GLO		TR	GLO													
Specific Data Used	>90%																
Variation - products	0%																
Variation - sites	0%																

Description of the system boundary

(X = Included in LCA. MND= Module Not Declared. NR=Not Relevant)

ALLOCATION

Source of raw material, 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 in LCA. 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).

PRODUCT COMPOSITION

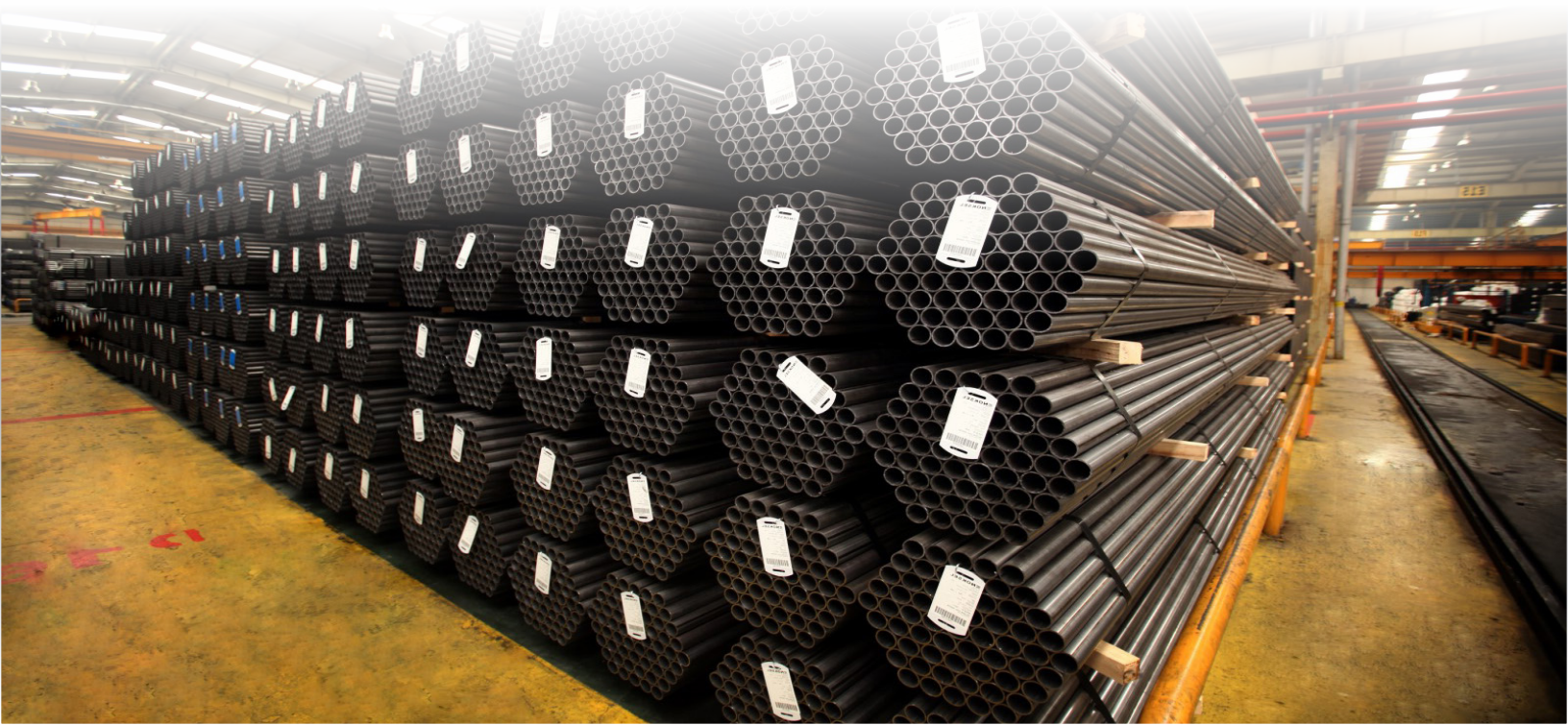
Flat steel is the main input of the process. Minor additives like oil are included in the assessment. The steel used for the manufacturing is sourced both from EAF and BOF routes.

Product Component	Weight, %	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Hot-rolled Steel	>99	40-50	0
Others	<1	0	0

PACKAGING

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

Product Component	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Packaging	5.46	<1	0.738



LCA Results

ENVIRONMENTAL IMPACTS									
Parameter	Unit	A1-3	A4	C1	C2	C3	C4	D	
Total	kg CO ₂ eq.	1686	41.1	14.3	19.2	0	0.484	767	
Global Warming Potential	Fossil	kg CO ₂ eq.	-6.55	0.032	0.003	0.006	0	0.005	-2.91
	Biogenic	kg CO ₂ eq.	1689	41.1	14.3	19.2	0	0.478	770
	Land Use & Transformation	kg CO ₂ eq.	3.49	0.019	0.002	0.010	0	0.001	0.257
Acidification	mol H ⁺ eq	9.02	0.138	0.132	0.068	0	0.003	3.01	
Particulate matter	disease inc.	134E-6	4.15E-6	3.69E-6	1.53E-6	0	68.9E-9	62.3E-6	
Eutrophication. marine	kg N eq.	1.97	0.048	0.061	0.022	0	1.25E-3	0.714	
Eutrophication. freshwater	kg P eq.	0.911	0.003	439E-6	0.002	0	47.1E-6	0.289	
Eutrophication. terrestrial	mol N eq.	20.6	0.506	0.667	0.237	0	0.013	7.51	
Human toxicity. cancer	CTUh	20.9E-6	17.8E-9	4.38E-9	8.69E-9	0	241E-12	4.26E-6	
Human toxicity. cancer - inorganics	CTUh	16.2E-6	8.61E-9	1.99E-9	4.24E-9	0	111E-12	62.3E-9	
Human toxicity. cancer - organics	CTUh	4.70E-6	9.19E-9	2.39E-9	4.45E-9	0	130E-12	4.20E-6	
Human toxicity. non-cancer	CTUh	21.5E-6	432E-9	30.4E-9	194E-9	0	3.54E-9	3.09E-6	
Human toxicity. non-cancer - inorganics	CTUh	20.6E-6	408E-9	26.7E-9	183E-9	0	3.12E-9	2.83E-6	
Human toxicity. non-cancer - organics	CTUh	936E-9	23.8E-9	3.75E-9	10.9E-9	0	420E-12	251E-9	
Ionising radiation	kBq U- ²³⁵ eq.	57.6	0.758	0.089	0.230	0	0.008	6.82	
Land use	Pt	5694	610	12.6	161	0	16.9	1761	
Ozone depletion	kg CFC ¹¹ eq.	27.3E-6	899E-9	227E-9	288E-9	0	11.7E-9	18.5E-6	
Photochemical ozone formation	kg NMVOC eq.	8.23	0.215	0.198	0.092	0	0.005	4.18	
Resource use. fossils	MJ	17624	601	187	270	0	10.0	8001	
Resource use. minerals and metals	kg Sb eq.	11.9E-3	111E-6	4.99E-6	61.4E-6	0	948E-9	431E-6	
Water use	m ³ depriv.	453	2.87	0.403	1.20	0	0.342	8.54	

Legend

A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A1-A3: Sum of A1, A2, and A3. A4: Transport to Site, C1: De-Construction, C2: Waste Transport, C3: Waste Processing, C4: Disposal, D: Benefits and Loads Beyond the System Boundary.

*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

Parameter	Unit	A1-3	A4	C1	C2	C3	C4	D
GWP - GHG	CTUh	1698	41.2	14.3	19.3	0	0.480	772

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

Parameter	Unit	A1-3	A4	C1	C2	C3	C4	D
PERE	MJ	2337	8.80	1.06	3.44	0	0.108	160
PERM	MJ	0	0	0	0	0	0	0
PERT	MJ	2337	8.80	1.06	3.44	0	0.108	160
PENRE	MJ	17625	601	187	271	0	10.0	8002
PENRM	MJ	0	0	0	0	0	0	0
PENRT	MJ	17625	601	187	271	0	10.0	8002
SM	kg	460	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	m ³	0	0	0	0	0	0	0

Legend 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 & OUTPUT INDICATORS

Parameter	Unit	A1-3	A4	C1	C2	C3	C4	D
HWD	kg	0.985	0	0	0	0	0	0
NHWD	kg	3.77	0	0	0	0	0	0
RWD	kg	0	0	0	0	0	0	0
CRU	kg	0	0	0	0	0	0	0
MFR	kg	2.42	0	0	0	950	0	0
MER	kg	0	0	0	0	0	0	0
EE (Electrical)	MJ	0	0	0	0	0	0	0
EE (Thermal)	MJ	0	0	0	0	0	0	0

Legend HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed, CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy, Thermal.

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.

The International EPD® System/ The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

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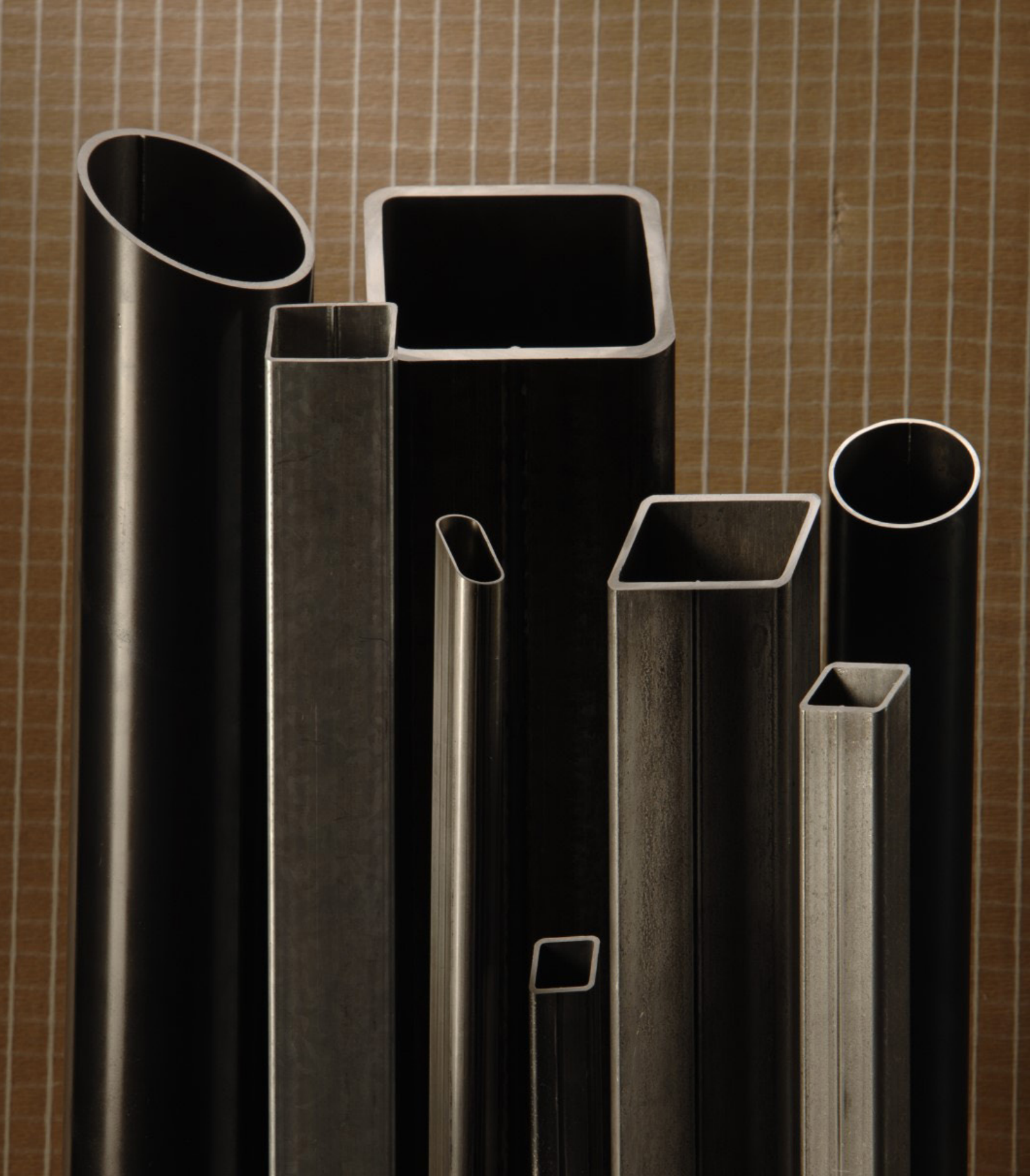
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