Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Cold Rolled Steel Sheet in Coil

from

Thai Cold Rolled Steel Sheet Public Company Limited

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products, based on the average results of the product group. The list of all products covered by this EPD refers to Page 4.
EPD registration number:	EPD-IES-0035924:001
Version date:	2026-11-10
Validity date:	2031-11-09
	An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019: Construction Products, version 2.0.1 (valid until: 2030-04-07). Based on CEN standard EN 15804. UN CPC – 412
PCR review was conducted by: Technical Committee of the International EPD ® System. A full list of members is available on environdec.com. The review panel may be contacted via support@environdec.com. Review chair: Rob Rouwette (chair): start2see, Noa Meron (co-chair): thinkstep.

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: Claudia A. Peña, Director of PINDA LCT SpA., Email: claudia@epd-americalatina.com Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

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

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Thai Cold Rolled Steel Sheet Public Company Limited

Address: 111 Moo 4, Ban Klang Na - Yai Ploy Road, Mae Ram Phueng Sub-district, Bang Saphan District, Prachuap Khiri Khan, Thailand.

Contact: Suchart Boonkrew, E-mail: suchart_boo@TCRSS.COM

Address and contact information of the LCA practitioner commissioned by the EPD owner:
ECEE company limited
INC-204, Innovation Cluster 1, 131 Thailand Science Park, Phahonyothin Road, Khlong Nueng, Khlong Luang, Pathum Thani 12120

Description of the organisation: Thai Cold Rolled Steel Sheet Public Company Limited (TCRSS) manufactures cold-rolled steel sheet in Thailand, with an installed production capacity of up to 1,2 million tonnes per year. TCRSS's products are widely applied across various industries, including automotive, home and electrical appliances, hot-dip galvanized steel (GI), electro-galvanized steel (EG), machinery, furniture, drums, and other.

Product-related or management system-related certifications: The Company holds the following voluntary Management System Certifications, all of which are regularly maintained and renewed:

- ISO 9001 - Quality management systems
- ISO 14001 - Environmental management systems
- ISO 45001 - Occupational health and safety management systems
- ISO 50001 - Energy management systems
- IATF 16949 - Automotive quality management
- TLS 8001 - Thai Labour Standard
- ISO/IEC 17025 - General requirements for the competence of testing and calibration laboratories
- JIS Certificate (JIS Mark): JIS G 3141.

PRODUCT INFORMATION

Product name: Cold Rolled Steel Sheet in Coil
Product identification: This declaration covers Cold Rolled Steel Sheet in Coil products manufactured by Thai Cold Rolled Steel Sheet Public Company Limited (TCRSS) at a single manufacturing site in Thailand. The primary products covered by this declaration are Cold Rolled Steel Sheet in Coil. The products comply with applicable national and international product standards. Product dimensions include thicknesses ranging from 0,20 mm to 3,40 mm and widths from 600 mm to 1 600 mm, with dimensional tolerances tailored to specific customer requirements.



UN CPC code: 412 (Products of iron or steel)

Product description:
Cold Rolled Steel Sheet in Coil is manufactured from hot-rolled steel coils through a continuous cold rolling process, including pickling, cold rolling, electrolytic cleaning, annealing, temper rolling, recoiling and inspection. The product is manufactured to achieve the required mechanical properties, dimensional accuracy and surface quality in accordance with applicable product standards. Cold Rolled Steel Sheet in Coil is intended for use in automotive, home and electrical appliances, hot-dip galvanized steel (GI), electro-galvanized steel (EG), machinery, furniture, drums and other industrial applications. The product provides mechanical strength, dimensional accuracy and surface quality suitable for further processing and manufacturing. Its influence on the operational performance and environmental impacts of buildings or other construction works depends on the final application and is not assessed separately in this EPD. A reference service life is not declared, as it depends on the specific application of the product.

From the company web site is possible to download the catalogue with the technical information of each product.

Type	Thickness (mm)	Width (mm)
Cold Rolled Steel Sheet in Coil	0,200 – 0,299	600 – 1 219
	0,300 – 0,349	600 – 1 283
	0,350 – 0,499	600 – 1 550
	0,500 – 0,549	600 – 1 560
	0,550 – 2,000	600 – 1 600
	2,001 – 3,000	600 – 1 550
	3,001 – 3,200	600 – 1 275
	3,201 – 3,400	600 – 1 219

Name and location of production site(s): Thai Cold Rolled Steel Sheet Public Company Limited (TCRSS), located in 111 Moo 4, Ban Klang Na - Yai Ploy Road, Mae Ram Phueng Sub-district, Bang Saphan District, Prachuap Khiri Khan, Thailand.

Technical data:

Name	Value	Unit
Density	7 850	kg/m^3
Modulus of Elasticity	200 000 – 210 000	N/mm^2

Name	Value	Unit
Coefficient of Thermal Expansion	11 - 13	$10^{-6}K^{-1}$
Thermal Conductivity	45 - 54	W/m.K
Melting Point	1 410 – 1 530	°C
Minimum Yield Strength	≤ 280	N/mm^2
Tensile strength	≥ 270	N/mm^2
Elongation	17 - 62	%
Thickness	0,20 - 3,40	mm
Width	600 - 1 600	mm

CONTENT DECLARATION

- The content declaration represents the average results of the product group covered by this EPD.

- The mass (weight) of one unit of a product, as purchased or per declared unit: The declared unit is 1 tonne of the Cold Rolled Steel Sheet in Coil.

- Content of the product in the form of a list of materials and substances, and their mass: A list of the components and materials, along with their mass, of Cold Rolled Steel Sheet in Coil is shown in the product content below.

Product content	Mass, kg (Average)	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Hot-rolled steel coils - Import	989,601	0	0	0
Hot-rolled steel coils - Domestic	10,399	0,108	0	0
Total	1 000	0,108	0	0

- The mass and the content of distribution and/or consumer packaging:

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Paper-based packaging (Seal Pad Paper, VCI Paper, Paper Laminate, Paper Sleeve)	0,660	0,066	0
Plastic packaging (Filament tape, Cloth Tape, Plastic white, Plastic guard board, Angle board)	0,082	0,008	0
Rubber packaging (Rubber Sleeve, Rubber Sheet, Rubber Skid)	0,010	0,001	0

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Steel packaging (Magazine seal, Steel hoop, Seal)	0,594	0,059	0
Labels (Arrow Label, Coil Handling Label)	<0,001	<0,001	0
Total	1,346	0,135	0

- Information on the environmental and hazardous/toxic properties of a substances contained in the product: All product does not contain any Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Substances of Very High Concern (SVHCs) in amounts greater than 0,1% (1 000 ppm).

- Other information on substances with hazardous and toxic properties: -

- The declared share of biogenic/recycled materials: The recycled content of a hot-rolled steel coils from Sahaviriya Steel Industries Public Company Limited (SSI) is approximately 0,108%.

LCA INFORMATION

Declared unit: 1 tonne of the Cold Rolled Steel Sheet in Coil.

Time representativeness: 2024-01-01 to 2024-12-31.

Geographical scope:
- Modules A1-A2: Japan, Thailand
- Modules A3: Thailand
- Modules C1-C4, D: Thailand, United States

Database(s) and LCA software used: The LCI includes data collection from a variety of publicly available sources, taking into consideration the representativeness in technology, temporal and geographical scales. In case of missing data, proxy data from Ecoinvent 3.10 were referred to, and sensitivity analysis was conducted. For the modelling and calculation, the LCA software SimaPro version 9.6.01 was used.

EPD/LCA Tool used: SimaPro 9.6.0.1.

Description of system boundaries: Cradle to gate with modules C1-C4 and module D (A1-A3 + C + D).

A1: RAW MATERIAL SUPPLY
The production starts with the material supply. This module includes the mining and pretreatment processes before production (processing of raw materials, generation of electricity and fuels required for the manufacturing, and recycling process of secondary materials). As TCRSS has no operational control or influence over the mining and pretreatment activities, all upstream processes in A1 are modeled using secondary data. Hot-rolled steel coil is the main raw materials, sourced from Japan and Thailand.

A2: TRANSPORTATION OF RAW MATERIALS TO THE MANUFACTURER

Transportation is relevant to the delivery of raw materials from the supplier to the gate of the manufacturing plant and internal transport. Hot-rolled steel coil and other raw materials are transported to the manufacturing site from both domestic and international sources mainly by trucks, and shipping vessels.

A3: MANUFACTURING

The manufacturing process of Cold Rolled Steel Sheet in Coil includes pickling of hot-rolled steel coils, cold rolling, annealing, skin-pass rolling, and associated finishing processes to achieve the required dimensional accuracy, surface quality, and mechanical properties.

Module A3 covers electricity consumption, supporting materials (including lubricating oil, gear oil, and grease), and water use associated with manufacturing operations. Material losses and waste streams are accounted for at the point of generation in accordance with PCR 2019:14, Section 4.3.2, including onsite wastewater treatment and offsite treatment of waste materials such as used oils, grease, and wastewater treatment sludge.

Packaging materials are included in Modules A1–A3, and the packaging leaves the product system in Module A5. In accordance with Option A and Annex 3 of PCR 2019:14, the inherent non-renewable primary energy associated with the packaging is balanced by an equivalent virtual output of energy. As Module A5 is not declared in this EPD, the corresponding balancing flow is accounted for within the LCA model in Modules A1–A3.

C1-C4: DE-CONSTRUCTION DEMOLITION/TRANSPORT/WASTE PROCESSING/DISPOSAL

These modules consider the dismantling of the considered product (C1), the transportation of the dismantled components to their End of Life (EoL) destination (C2), the waste processing for recovery or recycling (C3) as well as the disposal (C4), if given. At EoL, the steel material leaves the product system in C3 for recycling in Module D. The considered EoL scenario for the steel material is 95% recycling and 5% landfill reference from Iron and Steel Institute of Thailand. (2024).

The declared products are sold in Thailand and the United States, with US exports accounting for only 0,0025% of total sales. Modules C1–C4 are therefore modelled using Thailand-specific conditions and datasets, with RoW datasets used where Thai data are unavailable. Module D loads and benefits are reported separately beyond the system boundary.

Default data for modelling C1, C2, C3 and C4 provided in PCR 2019:14 Construction productts, version 2.0.1 as given below:

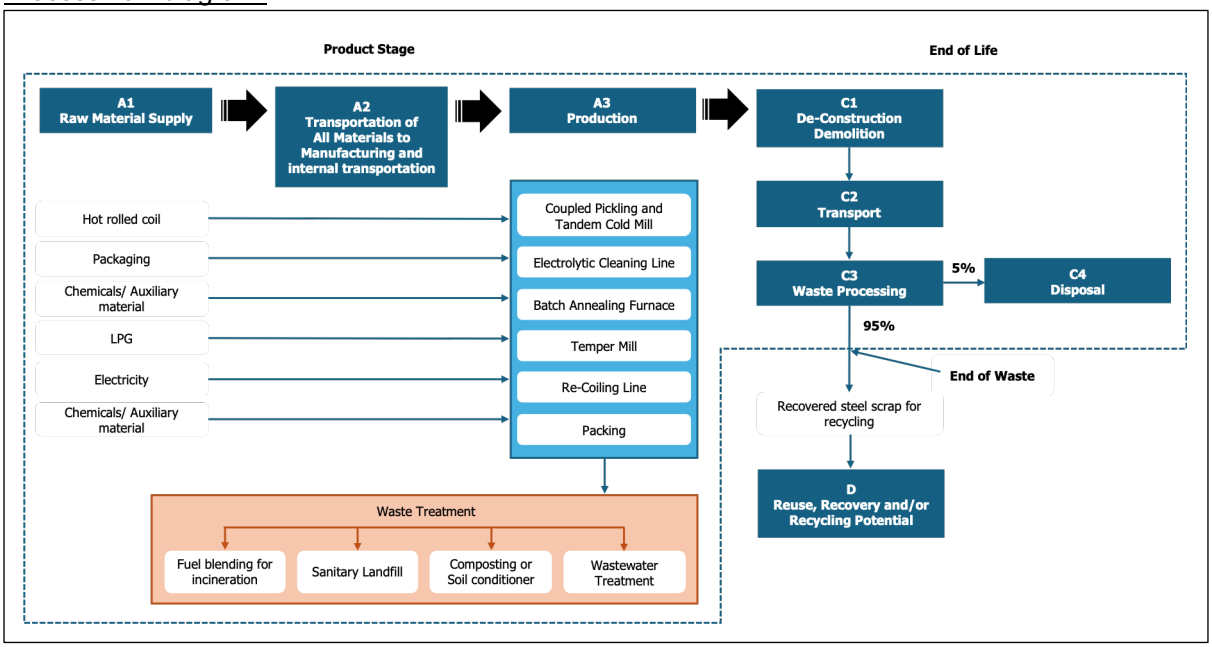
Process in C1	Energy carrier	Quantity [kWh/tonne]
Demolition/deconstruction of steel, wood, and other materials	Diesel	1,1
Process in C2	Distance (km)	Means of transport
Transport (for products/materials not to be incinerated)	80	16-32 tonne lorry (EURO 5), 50% load factor
Process in C3	Energy carrier	Quantity [kWh/tonne]
Loading and unloading at sorting facility	Diesel	1,8
Mechanical sorting	Electricity	2,2
Fragging of steel	Diesel	7,4
Process in C4	Energy carrier	Quantity [kWh/tonne]
Compacting of inert construction waste for landfills (including backfilling)	Diesel	1,6

D: REUSE-RECOVERY-RECYCLING-POTENTIAL

Module D assesses the impact of the net flows of recovered materials (recycled or reused) from the life cycle stages A to C. As mentioned above, 95% of waste steel scrap will be recycled, which is considered as a net flow for impact assessment.

Excluded life-cycle stages: modules A4 (transport to construction site) and A5 (construction/installation) are excluded, as they are highly dependent on project-specific logistics and construction practices and are not representative for a generic product EPD. Use-stage modules B1-B7 are excluded, as the product is an inert steel product with no emissions during use and no significant maintenance, operational energy, or water consumption during use. These exclusions are in line with EN 15804+A2 and the applicable PCR for steel products; no other relevant life-cycle stages have been omitted.

Process flow diagram:



More information:

Allocation procedures: Scrap during manufacturing have economic value and are treated as co-products (PCR Section 4.5.1). As the revenue difference between the main product and co-products exceeds 25%, economic allocation was applied using three-year average market prices (2022-2024) of construction steel solutions and scrap from The Iron and Steel Institute of Thailand. Waste streams without economic value are not allocated; their treatment burdens are fully accounted for in the module where they are generated (Polluter Pays Principle).

Data quality: foreground (primary) data are measured/calculated data collected directly from TCRSS's production records for the 2024 reference year; background (secondary) data are sourced from the Ecoinvent 3.10 database. Precision, completeness, consistency and representativeness are all assessed as high.

The climate impact of electricity used in the manufacturing process (Module A3) is modelled using two electricity sources. Purchased electricity accounts for 91,364% of total electricity consumption and is represented by the Thailand residual electricity mix (2024 reference year, PEA grid), with a climate impact of 0,696 kgCO_2eq./kWh. This market-based approach follows PCR 2019:14 v2.0.1, Section 4.7.2.3, as no manufacturer-specific evidence of RECs, PPAs, GOs or other qualifying contractual instruments was available. The remaining 8,636% of electricity consumption is supplied by an on-site rooftop photovoltaic (PV) installation located within the TCRSS manufacturing facility and directly

consumed in the manufacturing process. PV electricity is modelled separately using the corresponding photovoltaic electricity dataset from ecoinvent 3.10, with an emission factor of 0,083 $kgCO_2eq./kWh$.

Modules C1–C4: The end-of-life stage of Cold Rolled Steel Sheet in Coil. is modelled in accordance with the default end-of-life scenarios specified in PCR 2019:14. The default scenario assumes that 95% of the product is recycled, while the remaining 5% is disposed of in landfill at the end of its service life.

In accordance with PCR 2019:14, Clause 4.8.4, the following additional scenarios are also reported:

- Scenario A – 100% Recycling: All steel components are assumed to be recovered and recycled at the end of life. Module D accounts for the benefits and loads associated with the substitution of primary steel production.
- Scenario B – 100% Landfill: All steel components are assumed to be disposed of in landfill at the end of life. Under this scenario, no benefits from material recovery are assigned to Module D.

Module D scenario: Module D reports the net flow of recovered scrap steel reaching End-of-Waste (EoW) status in Module C3, after accounting for the 0,108% recycled content in Module A1 to avoid double counting. The recovered scrap is credited as secondary material substituting Electric Arc Furnace (EAF) / Induction Furnace (IF) steel production in Thailand, based on the default 95% end-of-life recycling rate.
Characterisation methods: Environmental Footprint (EF) 3.1 characterisation factors, in accordance with EN 15804+A2 and the applicable PCR.

<u>Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):</u>

	Product stage			Distribution/ installation stage		Use stage							End-of-life stage				Beyond product life cycle
	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	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	JP, TH	JP, TH	TH	ND	ND	ND	ND	ND	ND	ND	ND	ND	TH, US	TH, US	TH, US	TH, US	TH, US
Share of primary data	10,839% GWP-GHG			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = declared module; ND = module not declared; TH = Thailand; JP = Japan, US = United States

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of product	Collected data	EPD Owner	2023	Primary data	7,347%
Generation of electricity used in manufacturing of product	Database	Ecoinvent v. 3.10	2023	Primary data	1,069%
Transport of Inputs	Database	Ecoinvent v. 3.10	2023	Primary data	1,506%
Production of raw materials - Fuel	Database	Ecoinvent v. 3.10	2021, 2023	Secondary data	0,0%
Production of raw materials - Other	Database	Ecoinvent v. 3.10	2022-2023	Secondary data	0,0%
Production of HRC (Domestic from SSI)	Collected data	Manufacturer-specific primary data from SSI	2024	Primary data	0,848%
Production of HRC (Import)	Database	Ecoinvent v. 3.10	2023	Secondary data	0,0%
Total share of primary data, of GWP-GHG results for A1-A3					10,770%

Note: The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

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.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Mandatory impact category indicators according to EN 15804

Result per 1 tonne of Cold Rolled Steel Sheet in Coil							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	2,8E+03	3,6E-01	1,6E+01	4,6E+00	2,7E-02	-1,1E+03
GWP-fossil	kg CO_2 eq,	2,8E+03	3,6E-01	1,6E+01	4,6E+00	2,7E-02	-1,1E+03
GWP-biogenic	kg CO_2 eq.	4,7E+00	2,2E-05	2,7E-03	5,0E-03	1,6E-06	-4,0E-01
GWP-luluc	kg CO_2 eq.	1,4E+00	1,9E-05	6,2E-03	3,0E-03	1,4E-06	-2,0E-01
ODP	kg CFC 11 eq.	2,8E-05	4,8E-09	2,2E-07	7,9E-08	3,6E-10	-1,6E-06
AP	mol H^+ eq.	1,2E+01	2,1E-03	5,2E-02	2,2E-02	1,5E-04	-3,3E+00
EP-freshwater	kg P eq.	1,1E+00	4,3E-06	1,2E-03	1,2E-03	3,2E-07	-4,7E-01
EP-marine	kg N eq.	2,8E+00	8,3E-04	1,7E-02	8,0E-03	6,2E-05	-9,6E-01
EP-terrestrial	mol N eq.	2,9E+01	9,0E-03	1,8E-01	8,4E-02	6,7E-04	-9,7E+00
POCP	kg NMVOC eq.	1,0E+01	2,8E-03	7,3E-02	2,6E-02	2,0E-04	-2,9E+00
ADP-minerals&metals*	kg Sb eq.	1,6E-02	6,0E-08	5,0E-05	1,2E-06	4,4E-09	-1,5E-03
ADP-fossil*	MJ	3,0E+04	4,7E+00	2,2E+02	6,0E+01	3,5E-01	-9,6E+03
WDP*	m^3	8,1E+02	4,4E-03	9,9E-01	2,4E-01	3,3E-04	-2,6E+02
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						

**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 experienced with the indicator.*

Additional mandatory and voluntary impact category indicators

Result per 1 tonne of Cold Rolled Steel Sheet in Coil							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG*	kg CO_2 eq.	2,8E+03	3,6E-01	1,6E+01	4,6E+00	2,7E-02	-1,1E+03
Particulate matter	disease inc.	2,4E-04	3,0E-08	1,2E-06	2,6E-07	2,3E-09	-1,1E-04
Ionising radiation**	kBq U-235 eq.	8,3E+01	1,0E-03	1,8E-01	1,2E-02	7,6E-05	1,1E+01
Ecotoxicity (freshwater)***	CTUe	1,6E+05	6,3E-01	1,2E+02	1,3E+01	4,7E-02	-1,1E+05
Human toxicity, cancer effect***	CTUh	5,2E-04	6,5E-10	1,6E-07	7,8E-09	4,9E-11	-3,2E-04
Human toxicity, non-cancer effects***	CTUh	8,9E-05	7,8E-10	2,7E-07	2,1E-08	5,8E-11	1,1E-04
Land use related impacts/Soil quality***	Pt	9,0E+03	3,1E-01	1,3E+02	3,5E+00	2,3E-02	-3,0E+03

**This indicator accounts for all greenhouse gases except biogenic carbon dioxide update and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.*
***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.*
****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.*

Resource use indicators

Result per 1 tonne of Cold Rolled Steel Sheet in Coil							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,3E+03	1,3E-02	2,8E+00	8,1E-01	9,4E-04	-1,0E+02
PERM	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PERT	MJ	2,3E+03	1,3E-02	2,8E+00	8,1E-01	9,4E-04	-1,0E+02
PENRE	MJ	3,0E+04	4,7E+00	2,2E+02	6,0E+01	3,5E-01	-9,6E+03
PENRM	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PENRT	MJ	3,0E+04	4,7E+00	2,2E+02	6,0E+01	3,5E-01	-9,6E+03
SM	kg	1,1E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
RSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
NRSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
FW	m^3	2,6E+01	1,3E-04	2,9E-02	6,9E-03	1,0E-05	-8,1E+00
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						

Note: the PENRM balancing for packaging occurs within Modules A1-A3 because Module A5 is excluded from the system boundary in accordance with Option A of PCR 2019:14.

Waste indicators

Result per 1 tonne of Cold Rolled Steel Sheet in Coil							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	7,9E-01	3,9E-05	5,5E-03	1,1E-03	2,9E-06	-2,0E-04
Non-hazardous waste disposed	kg	2,3E+02	1,7E-03	1,0E+01	1,1E-01	1,3E-04	-1,0E-01
Radioactive waste disposed	kg	2,1E-02	2,5E-07	4,4E-05	2,6E-06	1,8E-08	2,6E-06

Output flow indicators

Result per 1 tonne of Cold Rolled Steel Sheet in Coil							
Indicator	**Unit**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Material for recycling	kg	0,0E+00	0,0E+00	0,0E+00	9,5E+02	0,0E+00	0,0E+00
Materials for energy recovery	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy, electricity	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy, thermal	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00

Additional LCA results (other environmental performance results) of the product(s)

This section provides results for alternate end-of-life scenarios.

Mandatory impact category indicators according to EN 15804 for 100% Recycling

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3,6E-01	1,6E+01	4,7E+00	0,0E+00	-1,2E+03
GWP-fossil	kg CO_2 eq.	3,6E-01	1,6E+01	4,7E+00	0,0E+00	-1,2E+03
GWP-biogenic	kg CO_2 eq.	2,2E-05	2,7E-03	5,0E-03	0,0E+00	-4,2E-01
GWP-luluc	kg CO_2 eq.	1,9E-05	6,2E-03	3,0E-03	0,0E+00	-2,1E-01
ODP	kg CFC 11 eq.	4,8E-09	2,2E-07	8,0E-08	0,0E+00	-1,7E-06
AP	mol H^+ eq.	2,1E-03	5,2E-02	2,3E-02	0,0E+00	-3,5E+00
EP-freshwater	kg P eq.	4,3E-06	1,2E-03	1,2E-03	0,0E+00	-5,0E-01
EP-marine	kg N eq.	8,3E-04	1,7E-02	8,3E-03	0,0E+00	-1,0E+00
EP-terrestrial	mol N eq.	9,0E-03	1,8E-01	8,8E-02	0,0E+00	-1,0E+01
POCP	kg NMVOC eq.	2,8E-03	7,3E-02	2,7E-02	0,0E+00	-3,1E+00
ADP-minerals&metals*	kg Sb eq.	6,0E-08	5,0E-05	1,2E-06	0,0E+00	-1,6E-03
ADP-fossil*	MJ	4,7E+00	2,2E+02	6,1E+01	0,0E+00	-1,0E+04
WDP*	m^3	4,4E-03	9,9E-01	2,4E-01	0,0E+00	-2,8E+02
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					

**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 experienced with the indicator.*

Additional mandatory and voluntary impact category indicators for 100% Recycling

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG*	kg CO_2 eq.	3,6E-01	1,6E+01	4,7E+00	0,0E+00	-1,2E+03
Particulate matter	disease inc.	3,0E-08	1,2E-06	2,7E-07	0,0E+00	-1,2E-04
Ionising radiation**	kBq U-235 eq.	1,0E-03	1,8E-01	1,2E-02	0,0E+00	1,1E+01
Ecotoxicity (freshwater)***	CTUe	6,3E-01	1,2E+02	1,3E+01	0,0E+00	-1,1E+05
Human toxicity, cancer effect***	CTUh	6,5E-10	1,6E-07	8,1E-09	0,0E+00	-3,3E-04
Human toxicity, non-cancer effects***	CTUh	7,8E-10	2,7E-07	2,1E-08	0,0E+00	1,2E-04
Land use related impacts/Soil quality***	Pt	3,1E-01	1,3E+02	3,6E+00	0,0E+00	-3,2E+03

**This indicator accounts for all greenhouse gases except biogenic carbon dioxide update and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.*
***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.*

****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.*

Resource use indicators for 100% Recycling

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,3E-02	2,8E+00	8,1E-01	0,0E+00	-1,1E+02
PERM	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PERT	MJ	1,3E-02	2,8E+00	8,1E-01	0,0E+00	-1,1E+02
PENRE	MJ	4,7E+00	2,2E+02	6,1E+01	0,0E+00	-1,0E+04
PENRM	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PENRT	MJ	4,7E+00	2,2E+02	6,1E+01	0,0E+00	-1,0E+04
SM	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
RSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
NRSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
FW	m^3	1,3E-04	2,9E-02	6,9E-03	0,0E+00	-8,5E+00
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 indicators for 100% Recycling

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	3,9E-05	5,5E-03	0,0E+00	0,0E+00	-2,1E-04
Non-hazardous waste disposed	kg	1,7E-03	1,0E+01	0,0E+00	0,0E+00	-1,1E-01
Radioactive waste disposed	kg	2,5E-07	4,4E-05	0,0E+00	0,0E+00	2,7E-06

Output flow indicators for 100% Recycling

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Material for recycling	kg	0,0E+00	0,0E+00	1,0E+03	0,0E+00	0,0E+00
Materials for energy recovery	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy, electricity	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy, thermal	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00

Mandatory impact category indicators according to EN 15804 for 100% Landfill

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3,6E-01	1,6E+01	0,0E+00	5,3E-01	3,0E+00
GWP-fossil	kg CO_2 eq.	3,6E-01	1,6E+01	0,0E+00	5,3E-01	3,0E+00
GWP-biogenic	kg CO_2 eq.	2,2E-05	2,7E-03	0,0E+00	3,2E-05	1,6E-03
GWP-luluc	kg CO_2 eq.	1,9E-05	6,2E-03	0,0E+00	2,8E-05	1,4E-03
ODP	kg CFC 11 eq.	4,8E-09	2,2E-07	0,0E+00	7,0E-09	1,5E-08

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
AP	mol H^+ eq.	2,1E-03	5,2E-02	0,0E+00	3,0E-03	1,3E-02
EP-freshwater	kg P eq.	4,3E-06	1,2E-03	0,0E+00	6,3E-06	1,1E-03
EP-marine	kg N eq.	8,3E-04	1,7E-02	0,0E+00	1,2E-03	2,7E-03
EP-terrestrial	mol N eq.	9,0E-03	1,8E-01	0,0E+00	1,3E-02	2,7E-02
POCP	kg NMVOC eq.	2,8E-03	7,3E-02	0,0E+00	4,0E-03	9,8E-03
ADP-minerals&metals*	kg Sb eq.	6,0E-08	5,0E-05	0,0E+00	8,7E-08	7,5E-06
ADP-fossil*	MJ	4,7E+00	2,2E+02	0,0E+00	6,9E+00	3,1E+01
WDP*	m^3	4,4E-03	9,9E-01	0,0E+00	6,5E-03	6,8E-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					

**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 experienced with the indicator.*

Additional mandatory and voluntary impact category indicators for 100% Landfill

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG*	kg CO_2 eq.	3,6E-01	1,6E+01	0,0E+00	5,3E-01	3,0E+00
Particulate matter	disease inc.	3,0E-08	1,2E-06	0,0E+00	4,4E-08	2,6E-07
Ionising radiation**	kBq U-235 eq.	1,0E-03	1,8E-01	0,0E+00	1,5E-03	1,0E-01
Ecotoxicity (freshwater)***	CTUe	6,3E-01	1,2E+02	0,0E+00	9,2E-01	1,5E+02
Human toxicity, cancer effect***	CTUh	6,5E-10	1,6E-07	0,0E+00	9,6E-10	4,1E-07
Human toxicity, non-cancer effects***	CTUh	7,8E-10	2,7E-07	0,0E+00	1,1E-09	2,8E-07
Land use related impacts/Soil quality***	Pt	3,1E-01	1,3E+02	0,0E+00	4,5E-01	7,8E+00

**This indicator accounts for all greenhouse gases except biogenic carbon dioxide update and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.*

***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.*

****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.*

Resource use indicators for 100% Landfill

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,3E-02	2,8E+00	0,0E+00	1,9E-02	1,9E+00
PERM	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PERT	MJ	1,3E-02	2,8E+00	0,0E+00	1,9E-02	1,9E+00
PENRE	MJ	4,7E+00	2,2E+02	0,0E+00	6,9E+00	3,1E+01
PENRM	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PENRT	MJ	4,7E+00	2,2E+02	0,0E+00	6,9E+00	3,1E+01
SM	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
RSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
NRSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
FW	m^3	1,3E-04	2,9E-02	0,0E+00	0,0E+00	0,0E+00
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 indicators for 100% Landfill

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	3,9E-05	5,5E-03	0,0E+00	5,8E-05	8,4E-07
Non-hazardous waste disposed	kg	1,7E-03	1,0E+01	0,0E+00	2,5E-03	2,0E-04
Radioactive waste disposed	kg	2,5E-07	4,4E-05	0,0E+00	3,6E-07	2,5E-08

Output flow indicators for 100% Landfill

Result per 1 tonne of Cold Rolled Steel Sheet in Coil						
Indicator	**Unit**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Material for recycling	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Materials for energy recovery	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy, electricity	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
Exported energy, thermal	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CLC	Co-Location Centre
CPC	Central Product Classification
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GRI	Global Reporting Initiative
SVHC	Substances of Very High Concern
ND	Not Declared
GWP-total	Global Warming Potential total
GWP-fossil	Global Warming Potential fossil
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Ozone Depletion Potential
AP	Acidification Potential
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 Photochemical Oxidants
ADP	Abiotic Depletion Potential
AWARE	Water Use by Available Water Remaining
PERE	Use of renewable primary energy excluding 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 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
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
EEE	Exported electrical energy
EET	Exported thermal energy

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VERSION HISTORY

Original Version of the EPD, 2026-11-10



INTERNATIONAL EPD SYSTEM

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