

Environmental Product Declaration



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

Cold Rolled Coils

from

ArcelorMittal Europe – Flat Products



Programme:	The International EPD® System, www.environdec.com
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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

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): <i>PCR 2019:14 Construction products, version 1.3.4 Published on 2024.04.30. Based on CEN standard EN 15804. ISO standard ISO 21930 and CEN standard EN 15804 serves as the core PCR. The product group classification for the assessed products is UN CPC 412.</i>
PCR review was conducted by: The Technical Committee of the International EPD® System. See https://www.environdec.com/about-us/the-international-epd-system-about-the-system for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact .
Life Cycle Assessment (LCA)
LCA accountability: <i>Leonardo Guimarães Ribeiro, ArcelorMittal Europe</i> – leonardo.guimaraesribeiro@arcelormittal.com
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier
Third-party verifier: Dr Matthew Fishwick, Fishwick Environmental Ltd
Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

The Environmental Product Declaration (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.

Company information

Owner of the EPD: ArcelorMittal Europe – Flat Products.

Contact: ArcelorMittal Europe – Flat Products: flateurope@arcelormittal.com.

Description of the organisation: ArcelorMittal Europe – Flat Products is the largest producer of flat steel in Europe and produces hot rolled coils, cold rolled coils, coated products, tinplate, plate and hot-dip galvanised products, and enamelled and electrical steels. Flat Products has 11 integrated and mini-mill sites, and primary facilities in five countries. It sells to a wide range of industries including packaging, general industry (civil engineering, construction, domestic appliances, oil & gas, renewable energies, yellow & green goods) and automotive.

Product-related or management system-related certifications: ArcelorMittal sites are covered by CE-marking including Declaration of Performances, ISO 9001, ISO 14001 and ISO 45001 certificates.

Name and location of production site(s):

- ArcelorMittal Gent, John Kennedylaan 51, 9042 Gent, Belgium.
- ArcelorMittal Liège, Quai du Halage 10, 4400 Flémalle, Belgium.
- ArcelorMittal France - Florange site, 17, avenue des Tilleuls, 57190 Florange, France.
- ArcelorMittal Bremen, Carl-Benz Strasse 30, 28237 Bremen, Germany.
- ArcelorMittal Eisenhüttenstadt, Werkstraße 1, 15888 Eisenhüttenstadt, Germany.
- ArcelorMittal Poland – Krakow site, ul. Tadeusza Sendzimira 1, 31-752 Kraków, Poland.
- ArcelorMittal Sagunto, Carretera de Acceso IV Planta, KM 3,9, 46520 Sagunto, Spain.

Product information

Product name: Cold Rolled Coils.

Product identification: The products included into this EPD is covered by one of the following names: Cold Rolled Coils.

Product description:

This EPD refers to Cold Rolled Steel Coils including Indaten® weathering steel, consisting of carbon steel.

The mean thickness value is at 1,5 mm but the declaration covers the whole range from 0,3 mm up to 3 mm. Width range is from 35 mm up to 2075 mm.

For the use and application of Cold Rolled Steel Coils, the product has a performance taking into consideration:

- EN 10130:2006 - Cold rolled low carbon steel flat products for cold forming - Technical delivery conditions, or
- EN 10268+A1:2013 - Cold rolled steel flat products with high yield strength for cold forming - Technical delivery conditions.
- EN 10209:2023 - Cold rolled low carbon steel flat products for vitreous enamelling - Technical delivery conditions

ArcelorMittal has also created Indaten® weathering steel grade to meet different applications.

Indaten® cold rolled steel offers improved resistance to atmospheric corrosion. Despite not being covered by a specific European standard, it is a thin gauge version of the hot rolled steel defined in the

EN 10025-5:2019 - Hot rolled products of structural steels - Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance for Indaten®.

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) Regulation (EU) No. 305/2011 (CPR) applies.

For the application and use, the respective national provisions apply.

Manufacturing process:

Cold Rolled Coils are produced in ArcelorMittal cold rolling mills in which Hot Rolled Steel Coils are pickled, continuously rolled between a series of stands of rotating cylinders, and then annealed, either on a continuous annealing line or on batch annealing facilities.

Alloy composition and process parameters are set to guarantee the required grade. The coils are then delivered to manufacturers for shaping into end products to be included in building works, generally to precise dimensions, thereby avoiding losses on the construction site.

Applications:

Cold Rolled Coils can be used in various applications, such as:

- Construction: Building & infrastructures, structural or non-structural components, façade & cladding, roofing, sun screens & shades.
- Building interiors: partition walls, heating or sanitary equipment's, etc.

Cold-rolled coils are delivered in wide coils. They can be further processed by all conventional processing operations used for cold rolled: cutting, slitting, bending, drawing, clinching, profiling, stamping, welding etc.

Additional alloying elements and specific thermal treatments during annealing can be used to increase the steel's tensile strength or make forming processes easier.

UN CPC code: 412 Products of iron or steel.

Geographical scope: Europe

LCA information

Functional unit / declared unit:

1 metric tonne Cold Rolled Coils.

Reference service life:

A reference service life for Cold Rolled Coils is not declared.

Cold rolled coil products are used in construction with many different application purposes. The lifetime therefore will be limited by the application as well as the service life of the work. At the end of life, they will be recovered and recycled into a new steel product.

Time representativeness:

The collection of the foreground data refers to the year 2022.

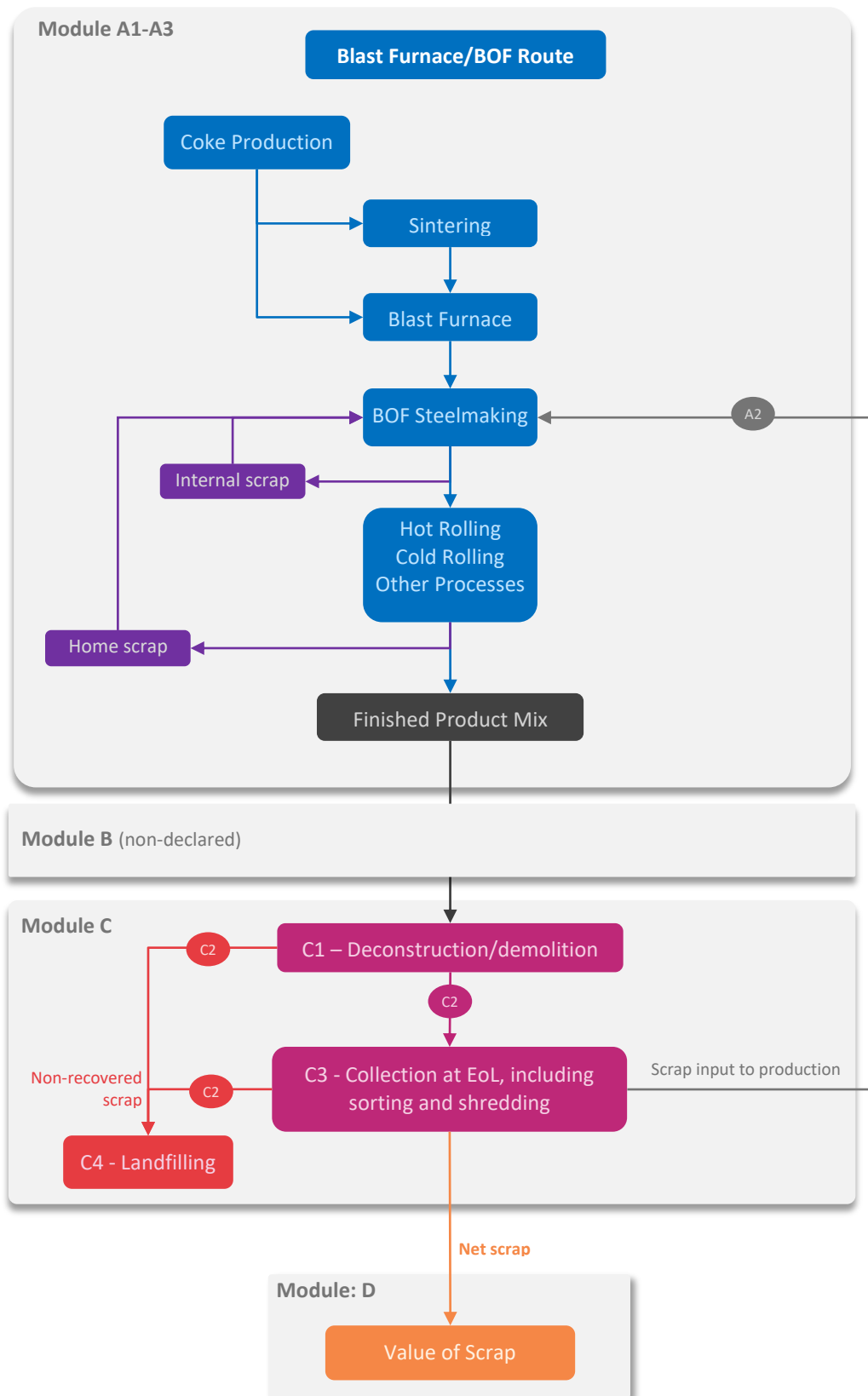
Database(s) and LCA software used:

The background data has been taken from the latest available Sphera LCA FE (GaBi) database, Managed LCA Content 2023.2 and the LCA model was created using LCA Sphera for Experts software, version 10.7.1.28

Description of system boundaries:

The system boundaries are: Cradle to gate with options, modules C1–C4, and module D.

System diagram:



- *Module A1 to A3:*

The product stage includes provision of all materials, products, and energy, as well as waste processing up to the end-of waste state or disposal of final residues during the product stage. Impacts on raw material transportation, including external scrap, and intermediate products are included.

These modules consider the production of hot rolled coils and the transport to the finishing sites for pickling, cold rolling and annealing. Cold Rolled Coils packaging is tailored to the needs of the clients. In general, the finished product is strapped with steel and wrapped with cardboard. Transit packaging may include pallets or cradle.

This EPD utilizes residual electricity mixes from Germany, Belgium, France, Spain, and Poland, resulting in a GWP-GHG value of 34,27 kgCO₂eq per ton of product, with electricity contributing less than 1,5% to the total GWP-GHG impact. The climate impact as kg CO₂ eq./kWh (using the GWP-GHG indicator) is 0,427 kg CO₂ eq./kWh.

- *Module C1 to C4:*

Within this EPD, the modules C1-C4 are included. 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, steel material leaves the product system in C3 for recycling in Module D. The environmental impacts from grinding, sorting and transportation of steel scrap are included. Based on common practices, the considered EoL scenario for the steel material is 98% recycling and 2% losses.

Category	Subcategory	Unit	Quantity
Collection process	Collected separately	kg	1000
	Collected with mixed construction waste	kg	0
Recovery	Reuse	kg	0
	Recycling	kg	980
	Landfill	kg	20
	Incineration	kg	0
	Incineration with energy recovery	kg	0
	Energy conversion efficiency rate	kg	0
Disposal	Material for final disposal	kg	0
Transport	Deconstruction site to scrap processing plant	km	100
	Scrap processing plant to site for end of waste	km	200

- *Module D:*

Module D includes declared benefits and loads resulting from the net flow of secondary fuels or materials exiting the product system. This excludes flows that have been allocated as co-products.

Metals are assumed to reach the end of waste state after they have gone through a sorting and shredding process. The treatment as well as net benefits and loads of reuse or recycling potentials (for the net scrap amount only) are grouped to module D.

Potential environmental benefits are given for the net steel scrap that is produced at the end of a final product's life, calculated as follows:

Net scrap = Amount of steel recycled at end-of-life – Scrap input from previous product life cycles.

In the manufacturing of Cold Rolled Coils, 103 kg of external scrap were used. At the end-of-life, 980 kg of scrap are recovered for recycling and 0 kg for reuse. This means that the system has a net output of 877 kg of scrap (980 + 0 - 103), which is shown in module D as an environmental credit or burden depending on the impact category.

As previously stated, due to the buildings life span, it is hard to predict what will happen. The scenarios included are either currently in use or deemed to be probable alternatives to happen at the end-of-life.

Cut-off criteria: The environmental impact of the product studied has been assessed by considering all significant processes, materials, and emissions. Excluded flows are assumed to have a negligible impact, contributing less than 5% to the cumulative impact assessment categories.

The production of capital equipment, facilities, and infrastructure required for manufacture has not been considered.

The current study has evaluated both transit and product packaging wherever possible. For raw materials, no packaging was able to be considered. Nevertheless, it is reasonable to assume that most of the raw materials, and more specifically those where quantities are most relevant, such as scrap, beach iron, DRI and lime, are transported in bulk.

As part of the iterative LCA process, the outcomes obtained on the packaging LCA modelling have led to a decision to exclude results of packaging in the current LCA results. This is due to the low impact contribution which was nevertheless reducing the results of most currently observed indicator in EPDs, the GWP-total.

Data quality and sources: Data quality is compliant with ISO 14025:2006. All primary data were collected for 2022. All background data come from the Sphera LCA FE (GaBi) 2023.2 databases and are representative for the years 2018-2023.

Allocation: Steel production generates several co-products, such as slags, process gases, and organic products which are used by other industries. Since the production processes cannot be subdivided by each co-product, allocation is used in modelling steel products. Economic allocation is used for partitioning inputs/outputs between hot metal and slag. For the remaining the World Steel Association and EUROFER physical allocation rules are applied methodology, which is aligned with EN 15804 (2019).

More information: <https://industry.arcelormittal.com/catalogue>

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	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	NR	NR	NR	NR	NR	NR	NR	NR	NR	X	X	X	X	X
Geography	EU	EU	EU	-	-	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	70%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	< 15%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

NR- Not reported. MNR- Module not declared.

Content information

Cold Rolled Coils

Product content	Weight ¹ , kg	Post-consumer material, weight ²	Biogenic material, weight
Steel	1000	5,9%	0% and 0 kg C / kg
Chemical composition			
Iron	992,0		
Manganese	4,6		
Silicon	0,3		
Carbon	0,5		
Other	2,6		

¹ These numbers are the average values of product compositions.

² Post-consumer material according to this PCR excludes pre-consumer scrap. According to ISO 14021:2016, the average recycled content, which includes external pre- and post-consumer recycled scrap, is approximately 9,4%. The figures provided represent our best estimate at the time of publication.

Packaging Materials	Weight, kg	Weight (as % of product weight)	Weight biogenic carbon, C/kg
Steel	0,796	0,0796%	0
Plastic	0,075	0,0075%	0
Cardboard	1,73	0,1730%	0,74
Timber	1,5	0,1500%	0,59

The products do not contain any of the substances of very high concern (SVHC) regulated by the Regulation (EC) No 1907/2006 (REACH) or the Regulation (EC) No 1272/2008 of European parliament.

Results of the environmental performance indicators

The environmental performance of the functional unit of 1 metric tonne of Cold Rolled Coils are reported below using the parameters and units as specified in PCR 2019:14.

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 impact assessment models, indicator's units and characterisation factors used to calculate the results are obtained on the package released on February 2023 for the EN 15804 based on EF Reference Package 3.1.

Mandatory impact category indicators according to EN 15804+A2:2019

Results per 1 metric tonne of Cold Rolled Coils							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	2,49E+03	4,16E+01	2,60E+01	1,34E+00	2,96E-01	-1,52E+03
GWP-biogenic	kg CO ₂ eq.	1,20E+00	2,22E-02	1,04E-02	9,82E-03	-1,02E-02	8,98E+00
GWP-luluc	kg CO ₂ eq.	9,41E-01	3,73E-01	2,45E-01	1,04E-03	9,33E-04	-2,03E-01
GWP-total	kg CO ₂ eq.	2,50E+03	4,20E+01	2,63E+01	1,36E+00	2,87E-01	-1,52E+03
ODP	kg CFC 11 eq.	7,70E-10	1,54E-11	3,45E-12	2,20E-11	7,64E-13	2,05E-09
AP	mol H ⁺ eq.	5,54E+00	2,95E-01	1,92E-01	3,30E-03	2,13E-03	-3,73E+00
EP-freshwater	kg P eq.	1,40E-03	1,50E-04	9,69E-05	4,80E-06	6,05E-07	-3,55E-04
EP-marine	kg N eq.	1,51E+00	1,45E-01	9,51E-02	9,70E-04	5,51E-04	-5,99E-01
EP-terrestrial	mol N eq.	1,64E+01	1,61E+00	1,05E+00	1,04E-02	6,06E-03	-5,37E+00
POCP	kg NMVOC eq.	5,29E+00	2,79E-01	1,82E-01	2,63E-03	1,66E-03	-2,43E+00
ADP-minerals&metals*	kg Sb eq.	2,22E-04	2,77E-06	1,76E-06	1,95E-07	1,39E-08	-8,63E-03
ADP-fossil*	MJ	2,25E+04	5,81E+02	3,61E+02	2,71E+01	4,00E+00	-1,52E+04
WDP*	m ³	1,56E+02	6,23E-01	3,20E-01	2,66E-01	3,30E-02	-1,03E+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						

* 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.

We discourage the use of the results of modules A1-A3 without considering the results of module C.

Resource use indicators according to EN 15804+A2:2019

Results per 1 metric tonne of Cold Rolled Coils							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	9,59E+02	4,68E+01	2,63E+01	1,51E+01	6,52E-01	5,98E+02
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	9,59E+02	4,68E+01	2,63E+01	1,51E+01	6,52E-01	5,98E+02
PENRE	MJ	2,26E+04	5,83E+02	3,62E+02	2,71E+01	4,00E+00	-1,52E+04
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,26E+04	5,83E+02	3,62E+02	2,71E+01	4,00E+00	-1,52E+04
SM	kg	1,03E+02	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	4,92E+00	4,96E-02	2,88E-02	1,22E-02	1,01E-03	-1,54E+02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

Waste indicators according to EN 15804+A2:2019

Results per 1 metric tonne of Cold Rolled Coils							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	7,35E-07	9,53E-10	1,12E-09	-1,96E-09	8,72E-11	-1,13E-04
Non-hazardous waste disposed	kg	1,98E+01	9,69E-02	5,52E-02	1,87E-02	2,00E+01	1,83E+02
Radioactive waste disposed	kg	1,13E-01	2,88E-03	6,78E-04	3,99E-03	4,56E-05	1,66E-03

Output flow indicators according to EN 15804+A2:2019

Results per 1 metric tonne of Cold Rolled Coils							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	9,80E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional environmental performance indicator

Results per 1 metric tonne of Cold Rolled Coils							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq,	2,49E+03	4,17E+01	2,61E+01	1,36E+00	2,97E-01	-1,52E+03

* The indicator is calculated with characterization factors from IPCC AR6 GWP 100, excl biogenic carbon, and 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

References

- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:14. Construction Products, Version 1.3.4
- Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data; CEN/TR 15941:2010
- CPR: Regulation (EU) No 305/2011 of the European parliament and of the council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC.
- EN 15804: EN 15804:2012+A2:2019: Sustainability of construction works -Environmental Product Declarations - Core rules for the product category of construction products.
- EN ISO 14025: EN ISO 14025:2011-10 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- EN ISO 14040: EN ISO 14040:2009-11 Environmental management - Life cycle assessment - Principles and framework
- EN ISO 14044: EN ISO 14044:2006-10 Environmental management - Life cycle assessment - Requirements and guidelines.
- LCA FE: LCA FE Software System and Database for Life Cycle Engineering, Sphera Solution GmbH, Leinfelden-Echterdingen, 2022 (<https://www.gabi-software.com/support/gabi>)
- EN 10130:2006 - Cold rolled low carbon steel flat products for cold forming - Technical delivery conditions, or
- EN 10268+A1:2013 - Cold rolled steel flat products with high yield strength for cold forming - Technical delivery conditions.
- EN 10209:2013 - Cold rolled low carbon steel flat products for vitreous enamelling - Technical delivery conditions
- Worldsteel. (2014). A methodology to determine the LCI of steel industry co-products. World Steel Association, Brussels. Retrieved from <https://worldsteel.org/steel-topics/life-cycle-thinking/methodology-for-slag-lci-calculation/>

Impact category indicators according to EN 15804+A1

To ensure consistency within the different versions of the EN 15804 for user performing a complete LCA of a building, the table below indicates the environmental performances of Cold Rolled Coils following the version EN 15804+A1. The end-of life scenario for steel is 98% recycling and 2% losses.

Results per 1 metric tonne of Cold Rolled Coils							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Global warming potential	kg CO ₂ eq.	2,48E+03	4,14E+01	2,59E+01	1,34E+00	2,84E-01	-1,50E+03
Depletion potential of stratospheric ozone layer	kg CFC 11 eq.	9,80E-10	1,82E-11	4,06E-12	2,59E-11	8,99E-13	2,41E-09
Acidification potential of land and water	kg SO ₂ eq.	4,38E+00	2,01E-01	1,31E-01	2,57E-03	1,70E-03	-3,19E+00
Eutrophication potential	kg(PO ₄) ³ eq.	5,16E-01	5,07E-02	3,31E-02	4,06E-04	1,92E-04	-2,04E-01
Formation potential of tropospheric ozone photochemical oxidants	kg ethene-eq.	8,64E-01	-7,71E-02	-5,10E-02	2,30E-04	1,28E-04	-7,23E-01
Abiotic depletion potential for non-fossil resources	kg Sb eq.	2,22E-04	2,77E-06	1,75E-06	2,22E-07	1,41E-08	-8,63E-03
Abiotic depletion potential for fossil resources	MJ	2,19E+04	5,67E+02	3,55E+02	1,56E+01	3,84E+00	-1,57E+04

