

# Environmental Product Declaration



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

## XCarb<sup>®</sup> recycled and renewably produced Hot Dip Galvanised steel coils with Magnelis<sup>®</sup> coating

from

### ArcelorMittal Europe – Flat Products



Programme:	The International EPD <sup>®</sup> System, <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD International AB
EPD registration number:	S-P-11914
Publication date:	2023-12-15
Valid until:	2028-12-14

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



# XCarb<sup>®</sup>

Recycled and renewably  
produced

## General information

### Programme information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
<b>E-mail:</b>	<a href="mailto:info@environdec.com">info@environdec.com</a>

### 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): *PCR 2019:14 Construction products, version 1.3.1 Published on 2023.06.20. 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.*

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](http://www.environdec.com/contact).

#### Life Cycle Assessment (LCA)

LCA accountability: *Leonardo Guimarães Ribeiro, ArcelorMittal Europe*  
[leonardo.guimaraesribeiro@arcelormittal.com](mailto:leonardo.guimaraesribeiro@arcelormittal.com)

#### Third-party verification

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

Yes  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](mailto: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, hot-dip galvanised products, 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. ArcelorMittal Europe's target is to reduce Scope 1 and 2 greenhouse gas emissions by 35% by 2030, with a further ambition to be net zero by 2050. Its strategy is consistent with limiting global warming to 1.5°C above pre-industrial levels, and it is committed to having our targets officially validated by the Science Based Targets Initiative (SBTi).

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 Bremen, Carl-Benz Strasse 30, 28237 Bremen, Germany.
- ArcelorMittal Asturias (Avilés), Lugar Trasona 90, 33400 Avilés, Spain.

## Product information

Product name: XCarb<sup>®</sup> recycled and renewably produced Hot Dip Galvanized steel coils with Magnelis<sup>®</sup> coating.

Product identification: Hot Dip Galvanized steel coils included into this EPD are covered by one of the following names: XCarb<sup>®</sup> RRP Hot Dip Galvanized steel coils with Magnelis<sup>®</sup> coating; XCarb<sup>®</sup> recycled and renewably produced Hot Dip Galvanized steel coils with Magnelis<sup>®</sup> coating. These products have the XCarb<sup>®</sup> recycled and renewably produced steel brand name and the associated certificates to prove the traceability.

Product description:

This Environmental Product Declaration refers to XCarb<sup>®</sup> recycled and renewably produced Hot Dip Galvanized steel with Magnelis<sup>®</sup> Coating. The product is a double-sided hot-dip galvanized carbon steel coated on both sides with a zinc-aluminium-magnesium alloy. This alloy, composed of 93,5% zinc, 3,5% aluminium and 3% magnesium, is applied by means of a continuous hot dip galvanizing process.

XCarb<sup>®</sup> recycled and renewably produced Hot Dip Galvanized steel coils with Magnelis<sup>®</sup> Coating are compliant to EN 10346.

This EPD covers a very wide range of galvanized steel grades:

- Steels for cold forming: DX51D, DX52D,
- Steels for construction: S220GD, S250GD...,
- High Strength Low Alloy steels: HX260LAD, HX300LAD...,
- Hyper steel grades for Construction: S420GD Hyper, S450GD Hyper, S550GD Hyper,

in thicknesses from 0,36 to 6mm and coating masses from 70 up to 800 g/m<sup>2</sup>.

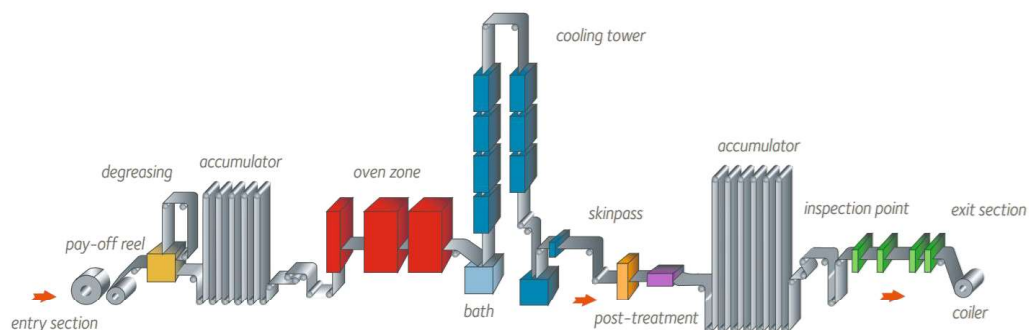
ZM is the symbol used in EN 10346 to refer to Zinc Aluminium Magnesium coatings to which Magnelis® coated steel belongs.

A post-treatment (passivation, thin organic coating and/or oiling) can also be applied on the product.

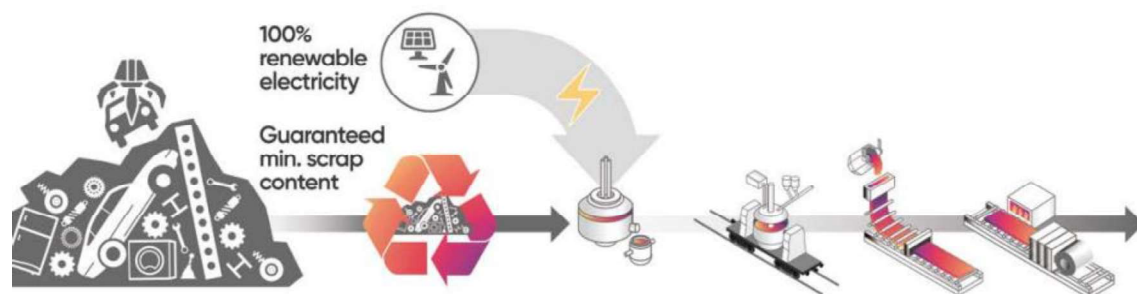
For the application and use, the respective national provisions apply.

Manufacturing process:

XCarb® RRP Hot Dip Galvanized steel coils with Magnelis® coating are manufactured on continuous production lines where a steel strip passes through a bath of molten zinc alloy. To produce XCarb® RRP Hot Dip Galvanized steel coils with Magnelis® coating, ArcelorMittal uses as steel strip XCarb® RRP Hot Rolled or Cold Rolled Coils.



This product comes from a production process flow which only uses XCarb® recycled and renewably produced Hot Rolled Coil. This pre-material will only be transported by sea or train to the ArcelorMittal finishing mills outside Spain. XCarb® recycled and renewably produced Hot Rolled Coils are produced at ArcelorMittal Sestao in Spain; their production is based on Electric Arc Furnace and Compact Strip Production processes with renewable electricity supply with Guarantee of Origins.



Applications:

XCarb<sup>®</sup> recycled and renewably produced Hot Dip Galvanized Coils with Magnelis<sup>®</sup> coating can be used in various applications, such as:

- Construction: structural or non-structural profiles, roofing & cladding, decking, cable trays, expanded metal, gratings, composite flooring, heating, ventilating and air conditioning systems, heat pumps.
- Road and railway infrastructure: safety barriers, protection equipment, sound insulation wall panels, walls providing protection against hail.
- Agriculture and farming: barns, greenhouse structures, agricultural equipment.
- Solar energy generation: mounting structures for photovoltaic plants.
- Tubular applications: structural tubes for scaffolding, road signals, poles.

The coated steel is delivered in wide coils, slit coils, blanks or sheets. It can be processed by all conventional processing operations used for hot dip galvanized steel: bending, drawing, clinching, profiling, stamping, welding, etc.

UN CPC code: 412 Products of iron or steel.

Geographical scope: Europe.

## LCA information

Functional unit / declared unit:

1 metric tonne of XCarb<sup>®</sup> recycled and renewably produced Hot Dip Galvanized steel coils with Magnelis<sup>®</sup> coating. The results are calculated based on a 1,5 mm steel thickness with 310 g/m<sup>2</sup> Magnelis<sup>®</sup> coating.

Reference service life:

A reference service life for XCarb<sup>®</sup> recycled and renewably produced Hot Dip Galvanized steel coils with Magnelis<sup>®</sup> coating is not declared. Hot dip galvanized coils are used in construction with many different application purposes. The lifetime therefore will be limited by the application and corresponding service. 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 2021.

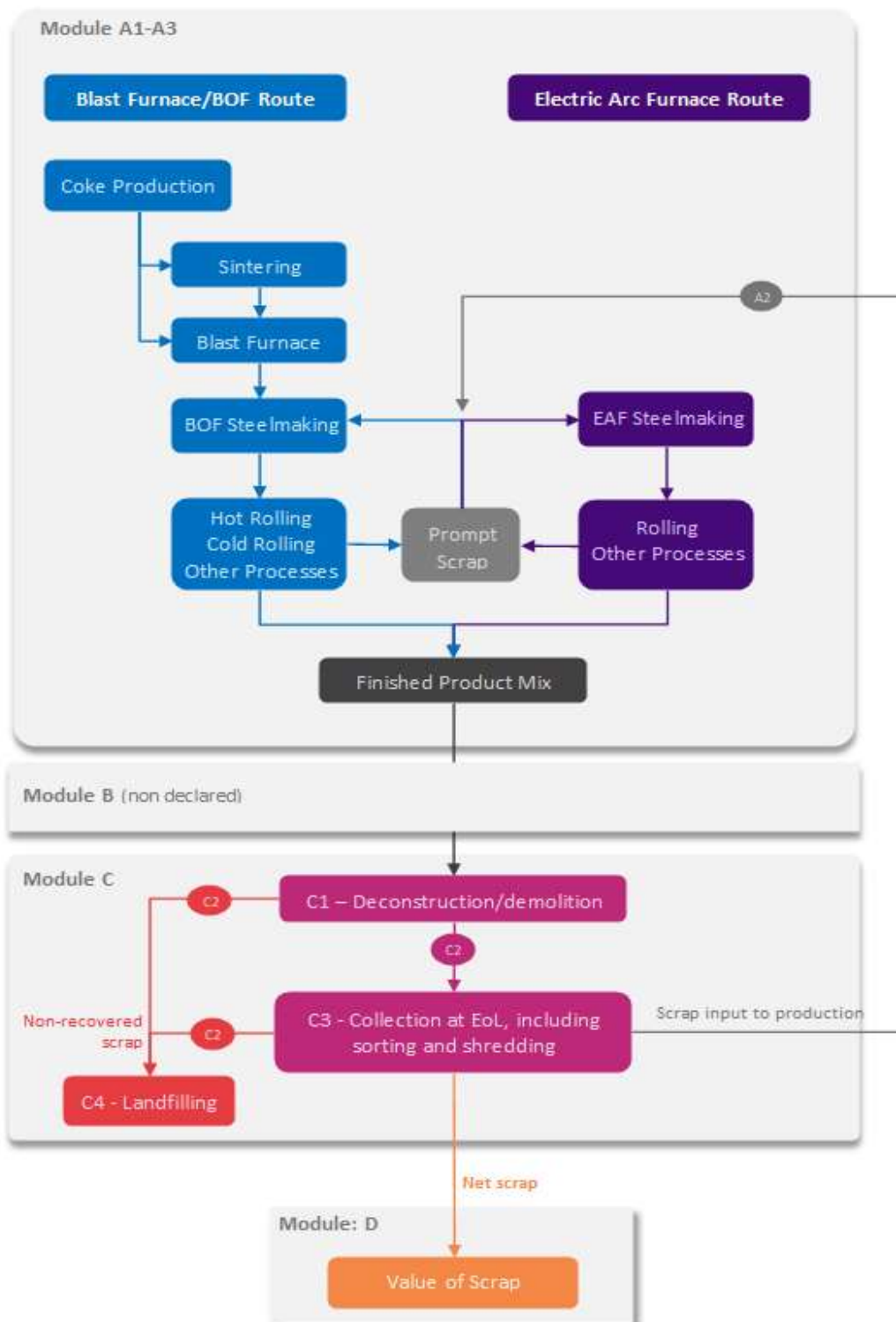
Database(s) and LCA software used:

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 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 at the site ArcelorMittal Sestao, in Spain and the transport to ArcelorMittal finishing lines for pickling, cold rolling and hot dip galvanizing process. XCarb® recycled and renewably produced Hot Dip Galvanized steel coils packaging is tailored to the needs of the clients. In general, the finished product is strapped with steel and wrapped with cardboard.

For the modelling, the electricity supply was based on a renewable electricity grid mix (1kV-60kV) from the 2023.2 Managed LCA Content (Sphera) database. The emission factor for the GWP-GHG indicator is 25,88g CO<sub>2</sub>eq./kWh and concerns only the production of ArcelorMittal Sestao. ArcelorMittal Krakow uses 30% of renewable electricity mix for its downstream process, the emission factor for the GWP-GHG indicator is 12,08 gCO<sub>2</sub>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 and total loss of coating.

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 XCarb<sup>®</sup> HRC, 280,4 kgs of external post-consumer scrap were used. At the end-of-life, 980 kgs of scrap are recovered for recycling and 0 kg for reuse. This means that the system has a net output of 699,6 kg of scrap (980 + 0 – 280,4), which is shown in module D as an environmental credit or burden depending on the impact category.

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. No packaging was considered for the final product, while packaging materials and their transportation for intermediate products have been neglected due to their low contribution to the overall life cycle results. The production of capital equipment, facilities, and infrastructure required for manufacture has not been considered.

Data quality and sources: Data quality is compliant with ISO 14025:2006. All primary data were collected for 2021. All background data come from the Sphera LCA FE (GaBi) 2023.2 databases and are representative for the years 2018-2023.

Allocation: No allocation was applied for coproducts generated in the processes under ArcelorMittal ownership. This includes materials such as slag, dust and sludge. Scrap inputs in module A1-A3, including pre-consumer scrap, are treated as 'burden free'. Scrap produced and used internally within the company but in a different product system has been considered without any value (economic allocation, with a value of zero). Externally sourced pre-consumer scrap was treated as post-consumer scrap meaning that the only burdens considered are a transport burden, taken into account in A2, and a burden on the end-of-life scenarios (waste processing, transport and destination). For such scraps, economic allocation was deemed not feasible. For all background data used in the model, the standard allocation assumptions of the used datasets were maintained.

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	-	-	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	>95%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	< 10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

NR- Not reported. MNR- Module not declared.

## Content information

XCarb® recycled and renewably produced Hot Dip Galvanised steel coils with Magnelis® coating

Product content	Weight, kg	Post-consumer material, weight <sup>1</sup>	Biogenic material, weight
Steel	974,3	20,6%	0% and 0 kg C / kg
Metallic coating	25,6	0%	0% and 0 kg C / kg
HDG Steel coil	1000	20,1%	0% and 0 kg C / kg
Chemical composition of the steel only			
Iron	> 974		
Manganese	< 14,5		
Silicon	< 2,5		
Carbon	< 1,6		
Other	< 7,1		

<sup>1</sup> The recycled content according to this PCR excludes pre-consumer scrap. According to ISO 14021:2016, the average recycled content, which includes pre- and post-consumer recycled scrap and additional sources of Fe (such as Ferro alloys), is approximately 85%. The figures provided represent our best estimate at the time of publication.

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. Also, no packaging is considered in the scenario.

## Results of the environmental performance indicators

The environmental performance of the functional unit of 1 metric tonne of XCarb® recycled and renewably produced Hot Dip Galvanised steel coils with Magnelis® coating are reported below using the parameters and units as specified in PCR 2019:14 v1.3.1.

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.

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

Results per 1 metric tonne of XCarb® recycled and renewably produced Hot Dip Galvanised steel coils with Magnelis® coating							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	8,98E+02	4,16E+01	2,60E+01	1,34E+00	2,96E-01	-1,39E+03
GWP-biogenic	kg CO <sub>2</sub> eq.	9,41E-01	2,22E-02	1,04E-02	9,82E-03	0,00E+00	2,20E+00
GWP-luluc	kg CO <sub>2</sub> eq.	5,28E-01	3,73E-01	2,45E-01	1,04E-03	9,33E-04	-5,83E-01
GWP-total	kg CO <sub>2</sub> eq.	9,00E+02	4,20E+01	2,63E+01	1,36E+00	2,97E-01	-1,38E+03
ODP	kg CFC 11 eq.	8,74E-08	1,54E-11	3,45E-12	2,20E-11	7,64E-13	4,12E-09
AP	mol H <sup>+</sup> eq.	3,33E+00	2,95E-01	1,92E-01	3,30E-03	2,13E-03	-3,16E+00
EP-freshwater	kg P eq.	1,28E-03	1,50E-04	9,69E-05	4,80E-06	6,05E-07	-1,04E-04
EP-marine	kg N eq.	9,01E-01	1,45E-01	9,51E-02	9,70E-04	5,51E-04	-7,59E-01
EP-terrestrial	mol N eq.	9,82E+00	1,61E+00	1,05E+00	1,04E-02	6,06E-03	-8,22E+00
POCP	kg NMVOC eq.	2,53E+00	2,79E-01	1,82E-01	2,63E-03	1,66E-03	-2,53E+00
ADP-minerals&metals*	kg Sb eq.	3,50E-02	2,77E-06	1,76E-06	1,95E-07	1,39E-08	-1,46E-05
ADP-fossil*	MJ	1,12E+04	5,81E+02	3,61E+02	2,71E+01	4,00E+00	-1,04E+04
WDP*	m <sup>3</sup>	2,20E+02	6,23E-01	3,20E-01	2,66E-01	3,30E-02	-2,00E+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						

\* 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 XCarb® recycled and renewably produced Hot Dip Galvanised steel coils with Magnelis® coating

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	2,01E+04	4,68E+01	2,63E+01	1,51E+01	6,52E-01	1,73E+03
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,01E+04	4,68E+01	2,63E+01	1,51E+01	6,52E-01	1,73E+03
PENRE	MJ	1,12E+04	5,83E+02	3,62E+02	2,71E+01	4,00E+00	-1,05E+04
PENRM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,12E+04	5,83E+02	3,62E+02	2,71E+01	4,00E+00	-1,05E+04
SM	kg	9,47E+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 <sup>3</sup>	6,26E+00	4,96E-02	2,88E-02	1,22E-02	1,01E-03	-8,97E-01
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 XCarb® recycled and renewably produced Hot Dip Galvanised steel coils with Magnelis® coating

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	4,42E-04	9,53E-10	1,12E-09	-1,96E-09	8,72E-11	-2,65E-08
Non-hazardous waste disposed	kg	9,75E+01	9,69E-02	5,52E-02	1,87E-02	2,00E+01	-2,09E+01
Radioactive waste disposed	kg	3,71E-01	2,88E-03	6,78E-04	3,99E-03	4,56E-05	1,84E-01

### Output flow indicators according to EN 15804+A2:2019

#### Results per 1 metric tonne of XCarb® recycled and renewably produced Hot Dip Galvanised steel coils with Magnelis® coating

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

### Other environmental performance indicators according to EN 15804+A2:2019

#### Results per 1 metric tonne of XCarb® recycled and renewably produced Hot Dip Galvanised steel coils with Magnelis® coating

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	[kg CO <sub>2</sub> -Eq.]	8,99E+02	4,17E+01	2,61E+01	1,36E+00	2,97E-01	-1,38E+03
Biogenic carbon content in product	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biogenic carbon content in packaging	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

## References

- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:14. Construction Products, Version 1.3.1
- 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 10346: EN 10346:2015 Continuously hot-dip coated steel flat products for cold forming - Technical delivery conditions.

## 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 XCarb® recycled and renewably produced Hot Dip Galvanized Coils with Magnelis® coating following the version EN 15804+A1. The end-of life scenario for steel is 98% recycling and 2% losses and coating is totally lost.

Results per 1 metric tonne of XCarb® recycled and renewably produced Hot Dip Galvanized Coils with Magnelis® coating							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Global warming potential	kg CO <sub>2</sub> eq,	8,92E+02	4,14E+01	2,59E+01	1,34E+00	2,84E-01	-1,38E+03
Depletion potential of stratospheric ozone layer	kg CFC 11 eq,	1,03E-07	1,82E-11	4,06E-12	2,59E-11	8,99E-13	4,85E-09
Acidification potential of land and water	kg SO <sub>2</sub> eq,	2,63E+00	2,01E-01	1,31E-01	2,57E-03	1,70E-03	-2,56E+00
Eutrophication potential	kg(PO <sub>4</sub> ) <sub>3</sub> eq,	3,17E-01	5,07E-02	3,31E-02	4,06E-04	1,92E-04	-2,48E-01
Formation potential of tropospheric ozone photochemical oxidants	kg ethene-eq,	1,52E-01	-7,71E-02	-5,10E-02	2,30E-04	1,28E-04	-3,85E-01
Abiotic depletion potential for non-fossil resources	kg Sb eq,	3,50E-02	2,77E-06	1,75E-06	2,22E-07	1,41E-08	-1,35E-05
Abiotic depletion potential for fossil resources	MJ	9,82E+03	5,67E+02	3,55E+02	1,56E+01	3,84E+00	-1,07E+04



