

TATA STEEL



Optemis® Evolve Metallic Coated Steel

Environmental Product Declaration



Optemis®
Evolve

Environmental
Product
Declaration

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Optemis® Evolve Metallic Coated Steel
Environmental Product Declaration

This EPD is representative and valid for the specified (named) product

Declaration number: EPD-TS-2026-022
Date of issue: 10/08/2026
Valid until: 09/08/2031

Owner of the Declaration: Tata Steel UK
Programme Operator: Tata Steel UK Limited, 18 Grosvenor Place, London, SW1X 7HS

Independent verification of the declaration and data, according to ISO 14025

Internal ☐ External ☒

Author of the Life Cycle Assessment: Tata Steel UK
Third party verifier: Chris Foster, EuGeos Ltd.

1 General information

Owner of EPD	Tata Steel UK
Product & module	Optemis® Evolve Metallic Coated Steel
Manufacturer	Tata Steel UK
Manufacturing sites	Port Talbot, Llanwern, and Shotton
Product applications	Construction & infrastructure, engineering, and automotive
Declared unit	1 tonne of metallic coated steel
Date of issue	10/08/2026
Valid until	09/08/2031



This Environmental Product Declaration (EPD) is for all galvanised steel coil sold by Tata Steel UK. The environmental indicators are for products manufactured at Port Talbot, Llanwern, and Shotton with feedstock supplied externally.

The information in this Environmental Product Declaration is based on production data from 2021 and 2022. The LCA model version used was version 2 (10.9.6.1, 2025.2).

EN 15804 serves as the core PCR, supported by Tata Steel's EN 15804 verified EPD programme Product Category Rules documents, and this declaration has been independently verified according to ISO 14025.

Third party verifier

Chris Foster, EuGeos Ltd, Suite 11, The Old Fuel Depot,
Twemlow Lane, Twemlow, CW4 8GJ, UK

2 Product information

2.1 Product description

Tata Steel UK offers a wide choice of galvanised steels. Our product line comprises forming and structural grades and high-strength and advanced high-strength steels. Our steels deliver benefits including weight savings and improved component performance. You can choose from a range of metallic coatings including Tata Steel UK’s innovative MagiZinc® coating. MagiZinc delivers improved corrosion resistance with up to half the thickness of a conventional zinc coating. The thinner, lighter coating means increased yield per tonne of steel.

Figure 1 metallic coated steel coil

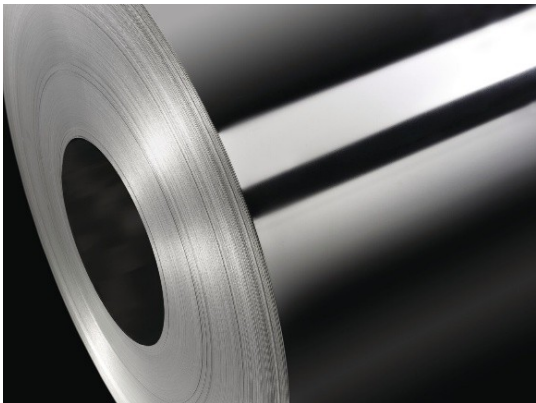
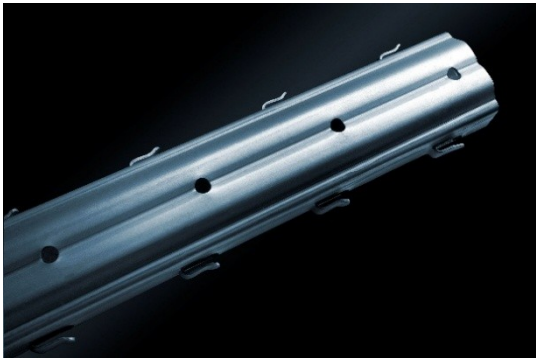


Figure 2 product made from metallic coated steel coil



2.2 Manufacturing

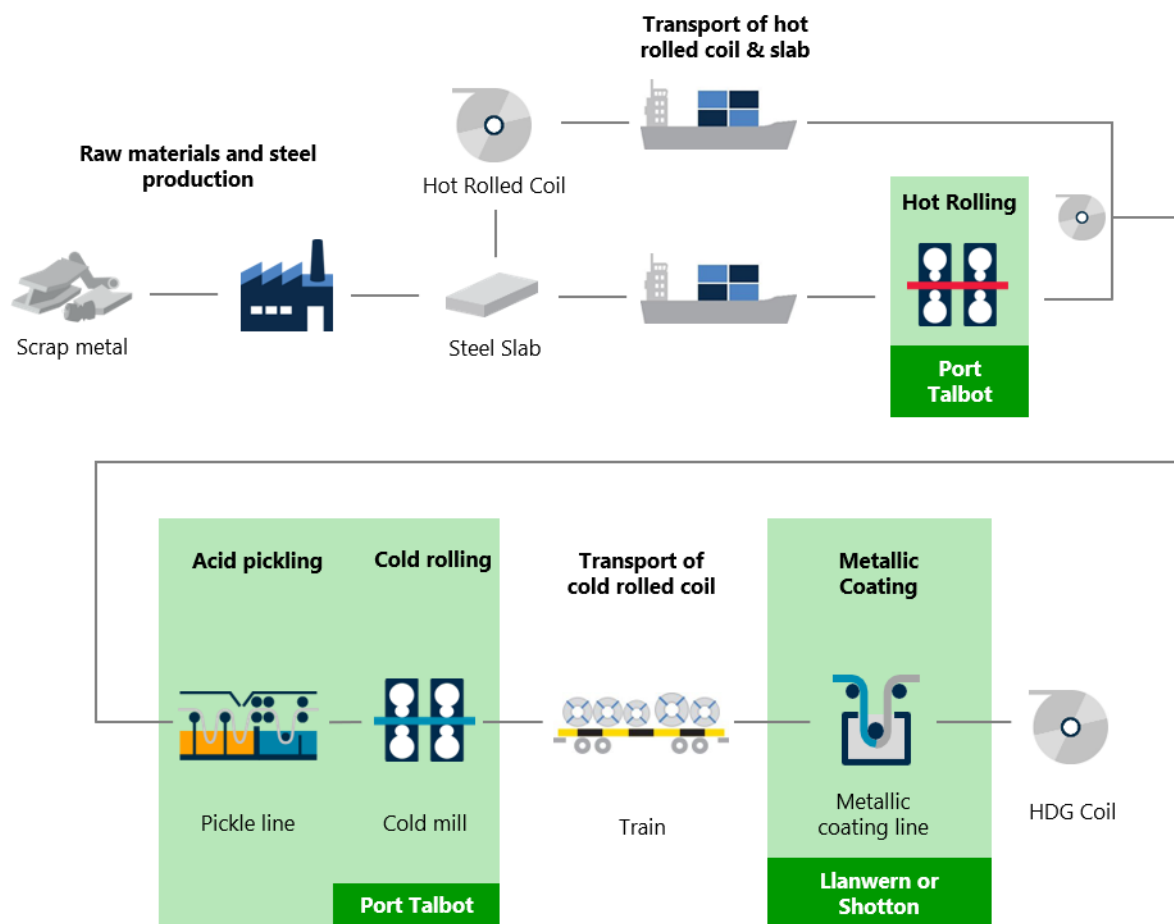
The manufacturing sites included in the EPD are listed in Table 1 below.

Table 1 Participating sites

Site name	Product	Manufacturer	Country
Port Talbot	Cold-rolled coil	Tata Steel	United Kingdom
Llanwern	Galvanised steel	Tata Steel	United Kingdom
Shotton	Galvanised steel	Tata Steel	United Kingdom

The process of steel coil manufacture using the electric arc furnace (EAF) route begins with steel scrap, the primary raw material, being melted in an electric arc furnace. The liquid steel is then transferred to a ladle furnace, where it is refined and alloying elements are added to achieve the required steel specifications. The refined steel is continuously cast to produce semi-finished slabs. The slabs are reheated and hot-rolled into coil before being pickled and cold-rolled. Afterwards, the coil is then transported by train to Llanwern and Shotton where the strip is galvanised.

Figure 3 Process overview from raw materials to metallic coated steel coil



Process data for the reheating and hot rolling of steel slab at Port Talbot were gathered as part of the latest worldsteel data collection. For metallic coated steel coil manufacture at Llanwern and Shotton, the data collection was organised by site for each coating line.

2.3 Technical data and specifications

Optemis® Evolve metallic coated steel coils are conformant to EN 10346. Metallic coating types include pure zinc, MagiZinc®, and GalvAlloy®.

Table 2 Technical specification of metallic coated steel coil

Metallic coated steel coil	
Metallic Coating	Coating types include pure zinc, MagiZinc, and GalvAlloy metallic coatings that conform to EN 10346 [8]
Certifications	ISO 9001 [9], ISO 14001 [10], BES 6001 certification [11]

According to ISO 14021:2016, the average recycled content, which includes external pre- and post-consumer recycled scrap, is approximately 80%. The figures provided represent our best estimate at the time of publication.

2.4 Packaging

Per tonne of metallic coated steel coil, the following packaging materials are used: 1.24 kg steel banding; 0.25 plastic banding; 0.32 kg cardboard; and 0.05 kg timber. These packaging materials are used for transport between Tata Steel UK’s sites only. Packaging to the customer is excluded from the EPD.

2.5 Reference service life

Metallic coated steel coil is used in a wide range of industrial and commercial buildings, providing long term durability. A reference service life for metallic coated steel coil is not declared because the construction application is not part of the LCA study. To determine the full service life of pre-finished steel, all factors would need to be included, such as details of the final product, and its location and environment.

2.6 Biogenic carbon content

There is no biogenic carbon in metallic coated steel coil.

Table 3 Biogenic carbon content at the factory gate

Optemis Evolve metallic coated steel coil	
Biogenic carbon content (product) (kg)	0
Biogenic carbon content (packaging) (kg)	0.187

Note: 1 kg biogenic carbon is equivalent to 44/12 kg of CO₂

3 LCA methodology

3.1 Declared unit

The unit being declared is 1 tonne of Optimis® Evolve Metallic Coated Steel Coil.

The life cycle stages are explained in more detail in Figure 4, but where the text is in light grey, the impacts from this part of the life cycle are not considered for this particular product.

3.2 Scope

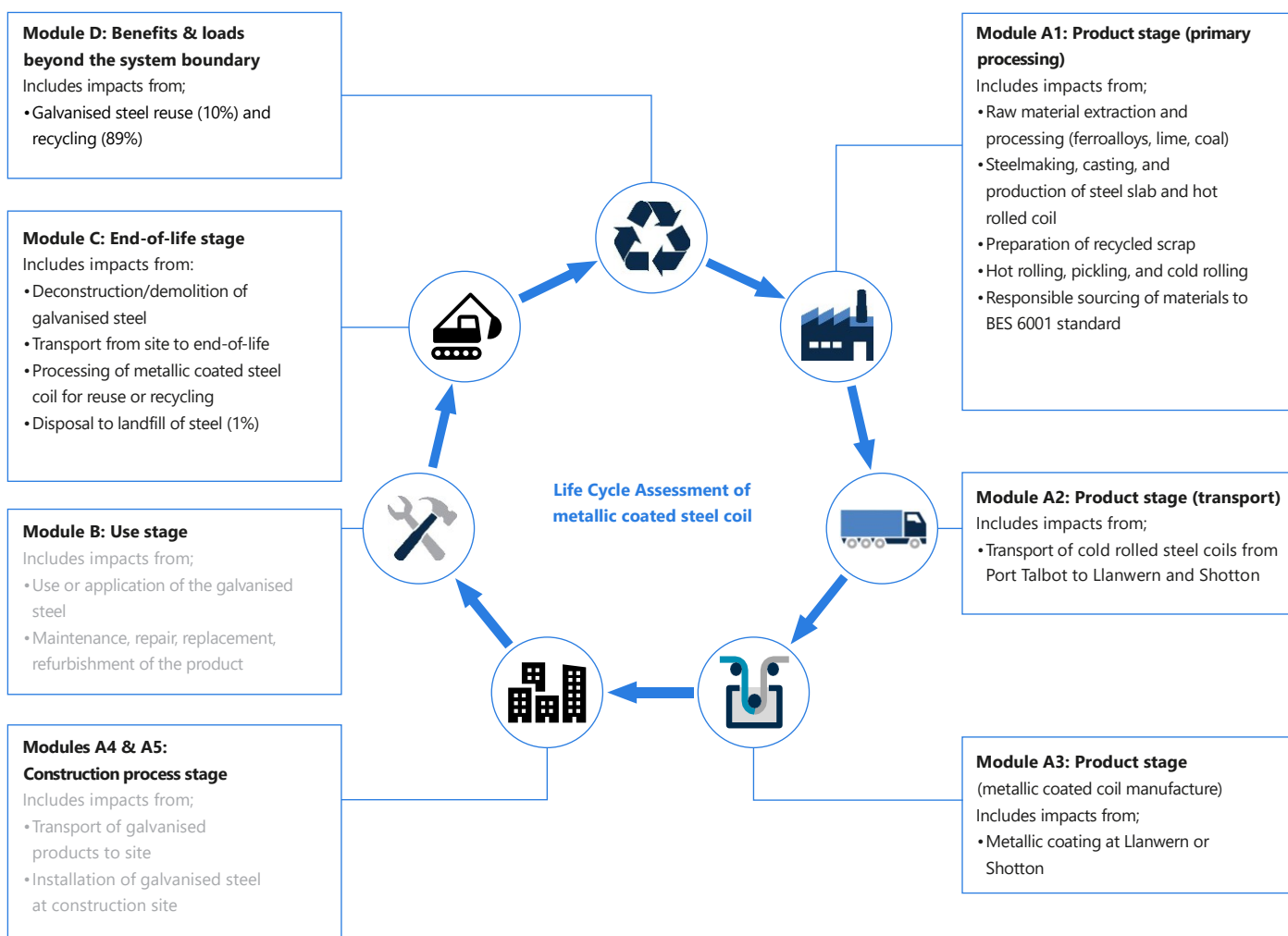
This EPD can be regarded as cradle-to-gate with modules C1-C4 and module D. The specific modules considered in the LCA are;

A1-A3: Production stage (raw material supply, transport to production site, manufacturing)

C1-C4: End-of-life (demolition/deconstruction, transport, processing for recycling and disposal)

D: Reuse, recycling and recovery

Figure 4 Life Cycle Assessment of metallic coated steel coil



3.3 Cut-off criteria

All information from the data collection process has been considered, covering all used materials, and all fuel and energy consumption. On-site emissions were measured and those emissions have been considered. Data for all relevant sites were thoroughly checked and also cross-checked with one another to identify potential data gaps. No processes, materials or emissions that are known to make a significant contribution to the environmental impact of the steel product have been omitted. On this basis, there is no evidence to suggest that input or outputs contributing more than 1% to the overall mass or energy of the system, or that are environmentally significant, have been omitted. It is estimated that the sum of any excluded flows contribute less than 5% to the impact assessment categories. The manufacturing of required machinery and other infrastructure is not considered in the LCA.

3.4 Background data

For life cycle modelling of the steel product, the Sphera® LCA for Experts (LCAfE) Software-System for Life Cycle Engineering (formerly GaBi) is used ^[12]. The LCAfE database contains consistent and documented datasets which can be viewed in the online Managed LCA Content (MLC) documentation ^[13].

Where possible, specific data derived from Tata Steel's own production processes were the first choice to use where available. Specific data were also obtained directly from the relevant suppliers in the form of an EPD.

To ensure comparability of results in the LCA, the basic data of the Sphera® MLC database were used for energy, transportation and auxiliary materials.

3.5 Data quality

The data from Tata Steel's own production processes are from 2021 and 2022, and the technologies on which these processes were based during that period, are those used at the date of publication of this EPD. All relevant background datasets are taken from the Sphera® MLC, and the last revision of all but one of these data sets took place less than 10 years ago. However, the contribution to impacts of this one dataset is small and therefore, the study is considered to be based on good quality data.

3.6 Allocation

The primary steel supply is modelled using a supplier specific EPD as a proxy in LCAfE. Consequently, it is not possible to apply a methodology to assign impacts to the production of slag, dust, and hot metal from the EAF, be that physical and chemical partitioning of the manufacturing process, or economic allocation. Therefore, no allocation was applied to the primary steel production processes in this study.

End-of-life assumptions for recovered steel and steel recycling are accounted for as per the current methodology from the World Steel Association 2017 Life Cycle Assessment methodology report ^[14]. A net scrap approach is used to avoid double accounting, and the net impacts are reported as benefits and loads beyond the system boundary (module D).

3.7 Additional technical information

The main scenario assumptions used in the LCA are detailed below in Table 4. The end-of-life percentages are taken from a Tata Steel/ EUROFER recycling and reuse survey of UK demolition contractors carried out in 2012^[15].

For all indicators the characterisation factors from the EC-JRC are applied, identified by the name EN_15804, and based upon the EF Reference Package 3.1. In LCAfE, the corresponding impact assessment is used, denoted by EN 15804+A2.

3.8 Comparability

Care must be taken when comparing EPDs from different sources. EPDs may not be comparable if they do not have the same functional unit or scope (for example, whether they include installation allowances in the building), or if they do not follow the same standard such as EN 15804. The use of different generic data sets for upstream or downstream processes that form part of the product system may also mean that EPDs are not comparable.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks

Comparisons should ideally be integrated into a whole building assessment, in order to capture any differences in other aspects of the building design that may result from specifying different products. For example, a more durable product would require less maintenance and reduce the number of replacements and associated impacts over the life of the building, or, a higher strength product may require less material for the same function.

Table 4 Main scenario assumptions

Module	Scenario assumptions
A1 to A3 – Product stage	Supplier-specific EPD data from hot-rolled coil producer and manufacturing data from Tata Steel's site(s) at Port Talbot, Llanwern, and Shotton are used.
A2 – Transport to the hot-dip galvanised steel manufacturing site	Cold-rolled steel coils are transported 84 and 268 km by rail from Port Talbot to the metallic coating lines at Llanwern and Shotton, respectively. For both journeys, a utilisation capacity of 45% was assumed utilisation (including empty returns).
C1 – Deconstruction & demolition	Energy consumption estimated based upon published data for the dismantling of steel constructions in Germany ^[17] .
C2 – Transport for recycling, reuse, and disposal	Transport is modelled with a 25 tonne load capacity lorry. A transport distance of 100 km to landfill or to a recycling site is assumed with a utilisation capacity of 35%. A transport distance of 250 km is assumed to the site of reuse with a utilisation capacity of 35%. There is also an additional transport distance of 100 km with a utilisation capacity of 40% assumed for transport to steel-making site from a recycling site. All utilisation factors include empty returns.
C3 – Waste processing for reuse, recovery and/or recycling	Steel that is recycled is processed in a shredder. There is no additional processing of material for reuse.
C4 - Disposal	At end-of-life, 1% of the steel is disposed in a landfill, in accordance with the findings of an NFDC survey ^[15] .
D – Reuse, recycling, and energy recovery	At end-of-life, 89% of the steel is recycled and 10% is reused, in accordance with the findings of an NFDC survey ^[15] .

Please note that in the LCAfE software, an empty return journey is accounted for by halving the load capacity utilisation of the outbound journey.

4 Results of the LCA

Description of the system boundary

Product stage			Construction stage		Use stage								End-of-life stage				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse Recovery Recycling	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X	

X = Included in LCA; ND = module not declared

Environmental impacts

1 tonne of metallic coated steel coil

Parameter	Unit	A1 – A3	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	1.35E+03	4.61E+01	2.58E+01	1.06E+01	-3.41E+00	-3.29E+02
GWP-fossil	kg CO ₂ eq	1.34E+03	4.54E+01	2.55E+01	1.06E+01	1.53E-01	-3.29E+02
GWP-biogenic	kg CO ₂ eq	3.45E+00	1.77E-01	5.20E-02	-1.09E-01	-3.56E+00	8.05E-01
GWP-luluc	kg CO ₂ eq	1.62E+00	4.47E-01	2.68E-01	5.11E-02	6.27E-04	-1.87E-01
ODP	kg CFC11 eq	7.25E-09	2.41E-11	4.32E-12	2.45E-10	4.25E-13	-4.63E-10
AP	mol H ⁺ eq	6.45E+00	1.20E-01	4.55E-02	3.47E-02	1.08E-03	-1.12E+00
EP-freshwater	kg P eq	9.63E-04	1.19E-04	7.02E-05	3.74E-05	2.27E-07	-1.42E-04
EP-marine	kg N eq	1.59E+00	5.52E-02	1.90E-02	6.44E-03	2.83E-04	-2.35E-01
EP-terrestrial	mol N eq	1.80E+01	5.89E-01	2.04E-01	6.89E-02	3.08E-03	-2.49E+00
POCP	kg NMVOC eq	4.56E+00	1.62E-01	4.11E-02	1.85E-02	8.46E-04	-7.67E-01
ADP-minerals&metals	kg Sb eq	6.06E-02	3.07E-06	1.73E-06	3.88E-06	9.46E-09	-7.17E-03
ADP-fossil	MJ net calorific value	1.59E+04	5.91E+02	3.34E+02	2.18E+02	2.00E+00	-3.53E+03
WDP	m ³ world eq deprived	8.20E+01	3.97E-01	1.19E-01	2.10E+00	1.65E-02	-2.14E+01
PM	Disease incidence	ND	ND	ND	ND	ND	ND
IRP	kBq U235 eq	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	ND	ND	ND	ND	ND	ND
SQP		ND	ND	ND	ND	ND	ND

GWP-total Global Warming Potential total
 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 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

ADPE Abiotic depletion potential for non-fossil resources
 ADPF Abiotic depletion potential for fossil resources
 WDP Water (user) deprivation potential, deprivation-weighted water consumption
 PM Potential incidence of disease due to PM emissions
 IRP Potential Human exposure efficiency relative to U235
 ETP-fw Potential Comparative Toxic Unit for ecosystems
 HTP-c Potential Comparative Toxic Unit for humans
 HTP-nc Potential Comparative Toxic Unit for humans
 SQP Potential soil quality index

The following indicators should be used with care as the uncertainties on these results are high or as there is limited experience with the indicator:
 ADP-minerals&metals, ADP-fossil, and WDP.

Resource use

1 tonne of metallic coated steel coil

Parameter	Unit	A1 – A3	C1	C2	C3	C4	D
PERE	MJ	5.08E+03	5.21E+01	2.52E+01	6.23E+01	3.87E-01	-4.32E+02
PERM	MJ	9.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-9.23E-02
PERT	MJ	5.08E+03	5.21E+01	2.52E+01	6.23E+01	3.87E-01	-4.32E+02
PENRE	MJ	1.59E+04	5.91E+02	3.34E+02	2.18E+02	2.00E+00	-3.53E+03
PENRM	MJ	6.03E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-6.03E-01
PENRT	MJ	1.59E+04	5.91E+02	3.34E+02	2.18E+02	2.00E+00	-3.53E+03
SM	kg	8.64E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-8.64E+01
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	2.68E+00	2.90E-02	1.24E-02	8.96E-02	4.84E-04	-2.00E+01

PERE Use of renewable primary energy excluding renewable primary energy resources used as raw materials

PERM Use of renewable primary energy resources used as raw materials

PERT Total use of renewable primary energy resources

PENRE Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials

PENRM Use of non-renewable primary energy resources used as raw materials

PENRT Total use of non-renewable primary energy resources

SM Use of secondary material

RSF Use of renewable secondary fuels

NRSF Use of non-renewable secondary fuels

FW Use of net fresh water

Output flows and waste categories

1 tonne of metallic coated steel coil

Parameter	Unit	A1 – A3	C1	C2	C3	C4	D
HWD	kg	1.01E-02	4.25E-08	1.34E-08	2.00E-06	4.38E-10	-1.02E-03
NHWD	kg	1.33E+02	9.33E-02	4.66E-02	1.20E-01	2.00E+01	1.02E+01
RWD	kg	3.09E-01	3.43E-03	6.30E-04	2.76E-02	2.12E-05	-3.07E-02
CRU	kg	0.00E+00	0.00E+00	0.00E+00	1.00E+02	0.00E+00	0.00E+00
MFR	kg	1.88E+00	0.00E+00	0.00E+00	8.90E+02	0.00E+00	-1.88E-01
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

HWD Hazardous waste disposed
 NHWD Non-hazardous waste disposed
 RWD Radioactive waste disposed
 CRU Components for reuse

MFR Materials for recycling
 MER Materials for energy recovery
 EEE Exported electrical energy
 EET Exported thermal energy

5 Interpretation of results

Figure 5 shows the relative contribution per life cycle stage for selected environmental impact categories for 1 tonne of Optimis® Evolve Metallic Coated Steel Coil. Each column represents 100% of the total impact score, which is why all the columns have been set with the same length. A burden is shown as positive (above the 0% axis) and a benefit is shown as negative (below the 0% axis). The main contributions to the burdens across modules A1-C4 come from A1-A3, while the benefits obtained for module D are also significant.

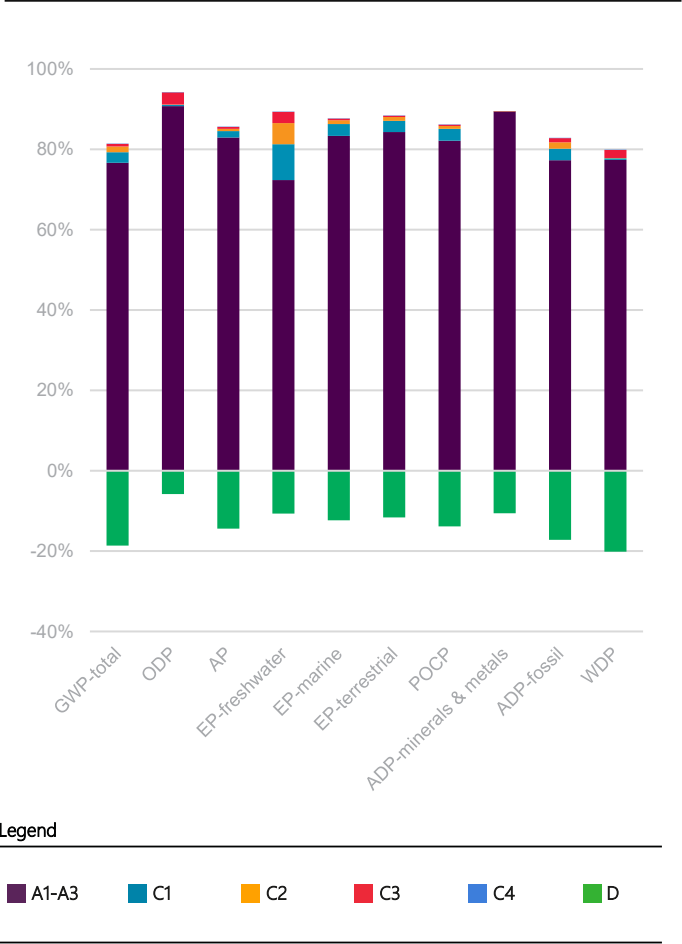
The majority of emissions come from the steelmaking processes during A1-A3. The manufacture of cold-rolled coil during stage A1-A3 is responsible for the majority of each impact in most of the categories.

Figure 5 clearly indicates the relatively small contribution to each impact from the other life cycle stages, which are C1, C2, C3, and C4. Of these stages, the most significant contributions are from stages C1 (deconstruction) and C2 (transport to end-of-life) in the global warming potential (GWP), abiotic depletion potential - fossil (ADP) and eutrophication potential (EP) indicators.

Module D values are largely derived using worldsteel’s value of scrap methodology which is based upon many steel plants worldwide, including both BF/BOF and EAF steel production routes. At end-of-life, the recovered steel is modelled with a credit given as if it were re-melted in an electric arc furnace and substituted for the same amount of steel produced in a blast furnace. The specific emissions that represent the burden in A1-A3, are essentially the same as those responsible for the impact reductions in module D.

The magnitude of the module D credit is modest relative to the manufacturing stages because EAF steelmaking is scrap intensive, leaving limited net scrap available for export and therefore smaller benefits beyond the system boundary.

Figure 5 LCA results for metallic coated steel coil



6 References and product standards

1. Tata Steel's EN 15804 verified EPD programme, General programme instructions, version 3, 2026
2. Tata Steel's EN 15804 verified EPD programme, Product Category Rules Part 1, version 3, 2026
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4. ISO 14025:2026, Environmental labels and declarations - Type III environmental declarations - Principles and procedures
5. ISO 14040:2006, Environmental management - Life Cycle Assessment - Principles and framework
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7. EN 15804:2012+A2:2019, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
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11. BES 6001, Responsible sourcing of construction products
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18. EN 15804 reference package based on EF 3.1, 2026, [EN 15804 reference package | Knowledge for policy](#)

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