ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	voestalpine AG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-VOE-20240511-IBC1-EN
Issue date	28/01/2025
Valid to	27/01/2030

Roll-bonded clad plates with UNS N06625 / 2.4856 cladding

voestalpine Grobblech GmbH

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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1. General Information

voestalpine Grobblech GmbH

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-VOE-20240511-IBC1-EN

This declaration is based on the product category rules:

Structural steels, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

28/01/2025

Valid to

27/01/2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

Roll-bonded clad plates with UNS N06625 / 2.4856 cladding

Owner of the declaration

voestalpine AG
voestalpine-Straße 3
4020 Linz
Austria

Declared product / declared unit

1 tonne of roll-bonded clad plate with UNS N06625 / 2.4856 cladding [average]

Scope:

This Environmental Product Declaration refers to a declared unit of 1 tonne of average roll-bonded clad plate with UNS N06625 / 2.4856 layer produced at the Linz site.

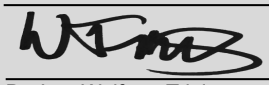
Heavy plates without cladding materials are declared in a separate EPD and are not within the scope of this EPD.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally



Dr.-Ing. Wolfram Trinius,
(Independent verifier)

2. Product

2.1 Product description/Product definition

A roll-bonded clad plate made by voestalpine Grobblech GmbH consists of a slab produced in the blast furnace route that is rolled into a heavy plate. Cladding material is rolled onto the plate in a second process step. Applicable national regulations regulate product use at any given site. In Austria, for example, the building regulations of individual provinces and the technical stipulations based on these regulations are applicable.

2.2 Application

The clad plates manufactured by voestalpine Grobblech GmbH are found in the following applications:

- Piping systems for large oil and gas pipelines
- Boilers and pressure vessels

The clad plates produced by voestalpine Grobblech GmbH are supplied in various grades. Additional treatment steps (heat treatment, tempering) are performed to meet customer-specific product requirements. The mechanical and processing properties of the declared product are defined by the selected chemical composition as well as the hot-rolling and heat treatment parameters.

2.3 Technical Data

The data listed in the declaration of performance are decisive:

Structural data

Name	Value	Unit
Density	7800 - 7850	kg/m^3
Thermal conductivity	48	W/(mK)
Minimum yield strength (for sheets)	165	N/mm^2
Minimum tensile strength (for sheets)	270	N/mm^2
Minimum elongation (for sheets)	14	%

Performance values of the base material according to the declaration of performance in relation to essential characteristics in accordance with the following norms:

- DIN *EN 10025*:2011, parts 2 to 6, Hot-rolled products of structural steels - Technical delivery conditions and CE marking
- DIN *EN 10225*:2019-11, Weldable structural steels for fixed offshore structures
- DIN *EN 10028*:2010, parts 2-7, Flat products made of steels for pressure equipment
- *ASTM (S)A 36*
- *ASTM (SA) 283 Grade C*
- *ASTM (S)A 572 Grade 50 Type 1*
- *ASTM (S)A 588 Grade A*
- *ASTM (SA) 516*
- *ASTM (SA) 537*
- *ASTM (SA) 841*
- *ASTM (SA) 709*
- *ISO 9001*, Quality Management System Requirements

2.4 Delivery status

In contrast to hot-rolled steel strips, the products of voestalpine Grobblech GmbH are not supplied as coils, but as plates. The maximum length and width dimensions are 15 by 3.8 meters.

2.5 Base materials/Ancillary materials

The starting material of the product is a steel slab produced at the Linz site of voestalpine Stahl GmbH. The basic material is produced of crude steel comprising roughly 75 % crude iron and 25 % scrap. Depending on the alloy, the cladding material is purchased as a sheet or slab.

Auxiliary materials

- Ceramic separation layer
- Welded frame structure

This product/article/at least one partial article contains substances listed in the *candidate list* (14 July 2021) exceeding 0.1 percentage by mass: **No.**

TThis product/article/at least one partial article contains other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: **No.**

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): **No.**

2.6 Manufacture

The starting material for the production of heavy plates at voestalpine is crude steel made via the primary route (blast furnace, LD steelmaking plant) at the Linz site. The molten crude steel is cast into slabs using a continuous casting method. After cooling, the slabs are reheated in pusher-type furnaces to 1100–1250 °C.

As opposed to hot-rolled steel strip, a four-high rolling configuration, a type of reversing rolling, is used for heavy plates. The four-high mill stand consists of two work rolls and two backup rolls, in total four rolls. The material is rolled back and forth until it reaches the desired width and length.

Examples of the ways that roll-bonded clad plates are further processed at the Linz site of voestalpine Grobblech GmbH are as follows:

Clad plates consist of a base material (steel produced by voestalpine Stahl GmbH) and a high-quality cladding material. During the cladding process, the two material layers are rolled together under high pressure and high temperature to create a permanent bond. The primary purpose of the cladding layer is substantially improved corrosion protection. The final product exhibits the properties of the high-quality cladding layer, while beeing substantialy more cost-efficient.

2.7 Environment and health during manufacturing

The production site of the voestalpine Steel Division in Linz is certified pursuant to *EMAS 2009*, *ISO 9001* and *ISO 14001*. In compliance with EMAS provisions, voestalpine continually publishes environment-related facts and figures pertaining to the production site. Investments are being made continually in the expansion of environmental protection measures at the Linz site in an effort to reduce air and water emissions to a minimum. Compliance with all statutory emission limits is verified.

All production systems approved in accordance with applicable environmental impact analyses are inspected on a regular basis as part of environmental audits in accordance with the state of the art.

2.8 Product processing/Installation

Heavy plates produced by voestalpine can be further processed using conventional plate treatment methods such as roll forming, edging, mechanical and thermal cutting, welding and sand blasting. Protective measures (extraction, noise

protection) prevent any emissions or other harmful effects from the declared product during such processing.

2.9 Packaging
The declared product is supplied as unpackaged plate.

2.10 Condition of use
No changes to the material grade are to be expected while heavy plates are being used. Maintenance and inspection requirements are dependent on the material design and its place of application.

2.11 Environment and health during use
No adverse effects are expected on human health or the environment during use, nor are any harmful emissions expected from the declared product.

2.12 Reference service life
Heavy plates produced by voestalpine Grobblech GmbH can be used in such a wide variety of applications that a reference useful life is not indicated. The useful life of the product is generally limited by the maintenance intervals of the end user.

2.13 Extraordinary effects
Fire
Not relevant.

Water
No negative effects are to be expected on the environment under the influence of water.

Mechanical destruction
Unforeseeable mechanical effects on the declared product would have no negative environmental impact because of the plasticity of steel.

2.14 Re-use phase
The declared product can be reused, recycled and reintroduced in the steel industry as a secondary raw material by recycling companies.

2.15 Disposal
The declared product can be entirely recycled.
The waste code is in accordance with European Waste Catalog (EWC): 17 04 05. The type of waste is to be equated with waste catalog code 35103 pursuant to the *Waste Catalog Ordinance* applicable on a national level.

2.16 Further information
Further information on the product can be found at https://www.voestalpine.com/stahl/Gesellschaften/voestalpine-Grobblech-GmbH.

3. LCA: Calculation rules

3.1 Declared Unit
This Environmental Product Declaration refers to a declared unit of 1 tonne of average roll-bonded clad plate with cladding material consisting of nickel-base alloys UNS N06625 / 2.4856.

Declared Unit

Name	Value	Unit
Declared unit	1	t
Ratio Clad:Base = 13 %, e.g. 3 mm of cladding material UNS N06625 / 2.4856, 23 mm base material carbon steel (Clad:Base)	13	%

Other declared units are allowed if the conversion is shown transparently.

The present EPD declares roll-bonded clad plates with a cladding material consisting of nickel-base alloys UNS N06625 / 2.4856. The declared results refer to a weighted average of the entire product group.
The base material is heavy plates from voestalpine Stahl GmbH (see separate IBU-EPD).
Roll-bonded clad plates with other clad materials are declared in separate EPDs. The ratio of base material to cladding material in the product can vary due to the different thicknesses offered. The declared average was found to be highly representative when analyzing the range of results (see further details in Chapter 6).

Heavy plates without cladding are declared in a separate EPD and are not within the scope of this EPD.

3.2 System boundary
The life cycle assessment of average roll-bonded clad plates refers to a cradle-to-gate analysis of the environmental impacts with modules C1–C4 and module D (A1–A3 + C + D). The following life cycle phases are taken into consideration in the analysis:

Modul A1–A3 | Production stage
The production stage includes the upstream burdens of raw material supply (base material, cladding, etc.) and their transports to the manufacturing plant. Material and energy flows for the sinter plant, the coking plant, the blast furnaces, the steelworks as well as the heavy plate rolling mill are considered. Electricity is provided at Linz from a power station where process gases are used as fuel. Since more energy is used than is supplied by this company-owned power station, natural gas and electricity is additionally procured from Austrian networks. voestalpine heavy plates are delivered without packaging.

Modul C1 | Destruction and demolition
It is assumed that the product is not connected with other materials and can therefore be dismantled. Associated efforts are negligible, no environmental impacts from the deconstruction of the products are declared.

Modul C2 | Transport to disposal
Module C2 includes the transport to disposal. For this purpose, transport by truck over a distance of 50 km is assumed as a scenario.

Modul C3 | Waste processing
Product flows that reach Module D for recycling leave the product system in C3. Environmental impacts resulting from the grinding and sorting of steel scrap are not included due to the negligible expected environmental impact.

Modul C4 | Landfilling
Module C4 declares the environmental impacts incurred by landfilling (5 % of the product)

Modul D | Benefits and loads beyond the system boundary
The potential for substituting primary steel with a recycling scenario (95 % of the product) is contained in Module D.

3.3 Estimates and assumptions
All assumptions are verified through detailed documentation and correspond to the best possible representation of reality based on the available data. Regional applicability of the used

background data refers to average data under European or German conditions taken from the *GaBi* database. German data were used for the Austrian market whenever European or Austrian average data were not available.

3.4 Cut-off criteria

All inputs and outputs for which data are available are included in the LCA model. Data gaps are filled with conservative assumptions from average data (when available) or with generic data and are documented accordingly. Only data with a contribution of less than 1 % were cut off. Ignoring such data is justified based on the irrelevance of the expected effect. Processes, materials, or emissions known to make a significant contribution to the environmental effects of the products under examination have not been neglected. Data were collected from the models and recommendations developed by *worldsteel 2017* and tested using available comparable values. It is assumed that the data have been completely recorded and the overall total of ignored input flows do not amount to more than 5 % of total energy and mass flows. Environmental impacts of machines, plant and infrastructure were not included.

3.5 Background data

This study uses generic background data for the evaluation of upstream environmental impacts from *GaBi* database 2021.1 and is modelled in *GaBi* software version 10.

3.6 Data quality

The foreground data collected from voestalpine are based on the quantities used and volumes produced annually.
All process data were collected by voestalpine in the course of reporting to official agencies. Data on material and energy use originate from material-specific throughput measurements of various processes as well as from controlling. Data were collected in compliance with *worldsteel 2017* provisions and were subjected to a supplementary plausibility check using material flow analyses of individual process steps. The technological, geographical and time-related representativeness of the data base was kept in mind when selecting background data. Whenever specific data were missing, either generic datasets or representative average data were used instead. The implemented *GaBi* background datasets are not more than ten years old.

3.7 Period under review

Foreground data were collected in the 2019 production year, and the data are based on the volumes produced on an annual basis.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Austria

3.9 Allocation

The primary data are allocated using the partitioning approach developed by *worldsteel 2014* for calculating life cycle inventories of coproducts in steel production, which is in line with the provisions of *EN 15804*. The so-called partitioning approach provides for the allocation of environmental effects on the steelmaking process and the emerging byproducts based on physical relations. Material-inherent flow properties are thus taken into account.

Externally recycled iron and steel waste products were cut off as a result of their low contribution to company revenue. Economic allocation is not considered to be expedient because the byproducts and coproducts are not directly tradable goods. Furthermore, long-term contracts for the sale of the byproducts exist, and the negotiated prices are therefore not subject to market dynamics.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The *GaBi* background database was used to calculate the LCA (*GaBi* 10; 2021.1).

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

The declared product does not contain any biogenic carbon. The product is delivered entirely unpacked.

The end-of-life scenario used in this LCA study is based on the following assumptions and thus complies with the specifications published in *ökobaudat 2022*:

End-of-life (C1–C4)

Name	Value	Unit
Collected separately waste type (Steel)	1000	kg
Recycling 95 %	950	kg
Landfilling 5 %	50	kg

Re-Use, recovery and recycling potential (D), relevant scenario information

Name	Value	Unit
Net flow of steel scrap	747	kg

This scenario contains a recycling rate of 95 %. Since voestalpine externally purchases scrap for steel production, this is offset against the steel scrap for recycling (net flow).

5. LCA: Results

The following table contains the LCA results for a declared unit of 1 tonne of average roll-bonded clad plate with cladding material consisting of nickel-base alloys UNS N06625 / 2.4856.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

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

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 tonne of roll-bonded clad plate (nickel-base alloys UNS N06625 / 2.4856)

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO_2 eq	5.06E+03	0	3.16E+00	0	2.44E+00	-1.27E+03
Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq	5.04E+03	0	3.13E+00	0	2.44E+00	-1.27E+03
Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq	1.44E+01	0	0	0	0	-8.2E-01
Global Warming Potential luluc (GWP-luluc)	kg CO_2 eq	2.13E+00	0	2.44E-02	0	2.44E-03	1.83E-01
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	6.31E-06	0	5.9E-16	0	5.77E-15	-2.11E-12
Acidification potential of land and water (AP)	mol H^+ eq	1.72E+02	0	9.92E-03	0	7.78E-03	-2.27E+00
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	1.71E-02	0	8.88E-06	0	1.86E-06	-2.59E-04
Eutrophication potential aquatic marine (EP-marine)	kg N eq	3.51E+00	0	4.55E-03	0	1.93E-03	-3.39E-01
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	3.76E+01	0	5.08E-02	0	2.12E-02	-3.3E+00
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	2.02E+01	0	8.94E-03	0	6.08E-03	-1.73E+00
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	3.35E-01	0	2.65E-07	0	1.68E-07	-2.76E-03
Abiotic depletion potential for fossil resources (ADPF)	MJ	5.36E+04	0	3.98E+01	0	3.56E+01	-1.1E+04
Water use (WDP)	m^3 world eq deprived	5.97E+02	0	2.77E-02	0	-2.89E-02	-2.48E+02

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 tonne of roll-bonded clad plate (nickel-base alloys UNS N06625 / 2.4856)

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	6.43E+03	0	2.29E+00	0	2.57E+00	1.01E+03
Renewable primary energy resources as material utilization (PERM)	MJ	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	6.43E+03	0	2.29E+00	0	2.57E+00	1.01E+03
Non renewable primary energy as energy carrier (PENRE)	MJ	5.41E+04	0	4E+01	0	3.56E+01	-1.1E+04
Non renewable primary energy as material utilization (PENRM)	MJ	0	0	0	0	0	0
Total use of non renewable primary energy resources (PENRT)	MJ	5.41E+04	0	4E+01	0	3.56E+01	-1.1E+04
Use of secondary material (SM)	kg	2.04E+02	0	0	0	0	7.47E+02
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0
Use of net fresh water (FW)	m^3	3.38E+01	0	2.62E-03	0	3.67E-04	-5.58E+00

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 tonne of roll-bonded clad plate (nickel-base alloys UNS N06625 / 2.4856)

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	5.41E-05	0	2.11E-09	0	6.3E-09	3.07E-06
Non hazardous waste disposed (NHWD)	kg	1E+03	0	6.27E-03	0	5.01E+01	1.33E+02
Radioactive waste disposed (RWD)	kg	1.36E+00	0	7.25E-05	0	4.05E-04	3.99E-04
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	9.5E+02	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	0	0	0	0	0	0
Exported thermal energy (EET)	MJ	0	0	0	0	0	0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 tonne of roll-bonded clad plate (nickel-base alloys UNS N06625 / 2.4856)

Parameter	Unit	A1-A3	C1	C2	C3	C4	D

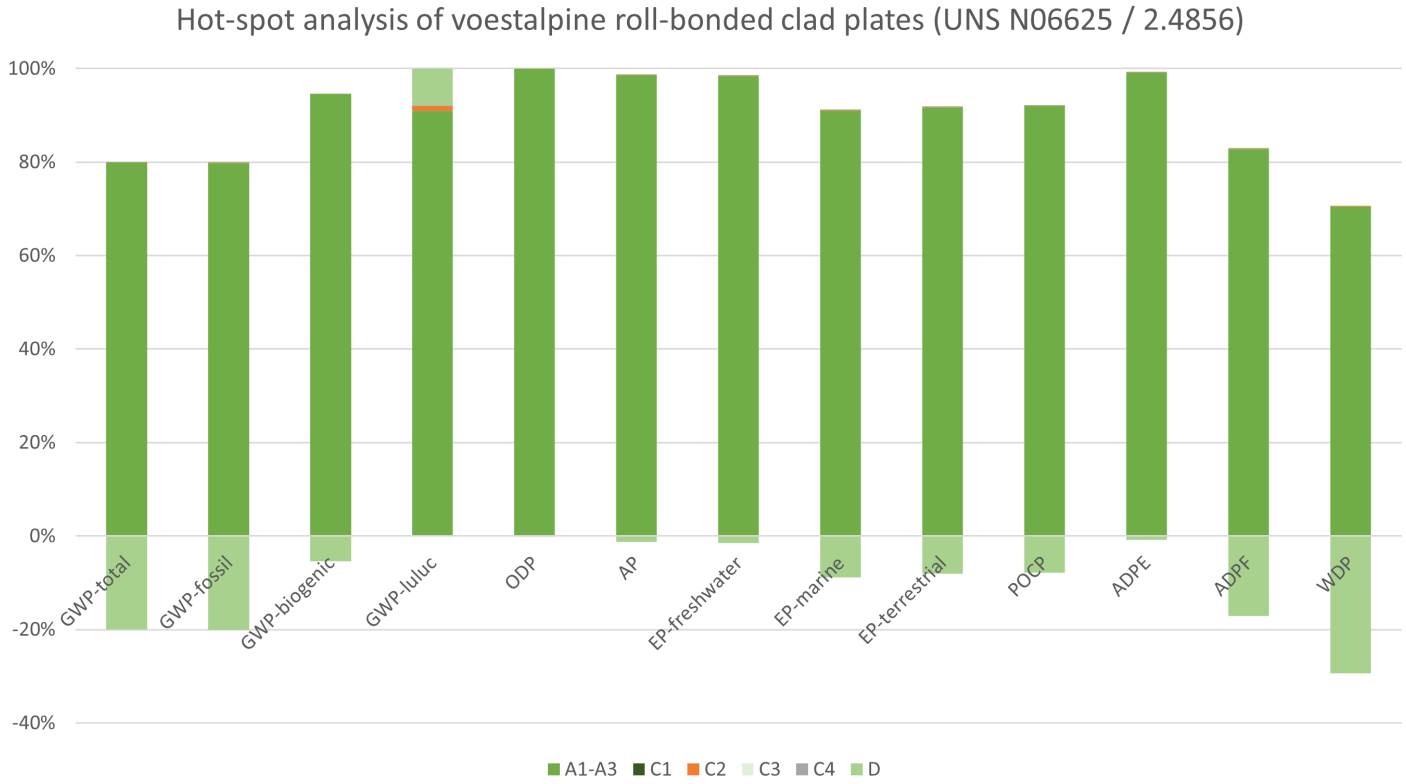
Incidence of disease due to PM emissions (PM)	Disease incidence	ND	ND	ND	ND	ND	ND
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	ND	ND	ND	ND	ND	ND
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	ND	ND	ND	ND	ND	ND
Soil quality index (SQP)	SQP	ND	ND	ND	ND	ND	ND

The additional and optional impact categories according to *EN 15804*+A2 are not declared, as the uncertainty of these indicators is to be classified as high.

Disclaimer – for the indicators 'abiotic depletion potential for non-fossil resources', 'abiotic depletion potential for fossil resources', 'water (user) deprivation potential, deprivation-weighted water consumption', 'potential comparative toxic unit for ecosystems', 'potential comparative toxic unit for humans – cancerogenic', 'Potential comparative toxic unit for humans - not cancerogenic', 'potential soil quality index'.
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.

6. LCA: Interpretation

The following interpretation contains a summary of the LCA results referenced to a declared unit of **1 tonne of average roll-bonded clad plate with UNS N06625 / 2.4856 cladding.**



A comparison of the individual lifecycle phases results in a clear dominance of the production phase (Modules A1–A3). The environmental effects in the production phase are mainly dominated by the direct process emissions of steel production and the supply chain of purchased raw materials and energy carriers, in particular for cladding.

As a result of product recyclability, the material removed at the end of life can substitute primary steel. Module D shows the recycling potential of steel at the end of its product life. This results in benefits from the substitution of primary steel.

The environmental impact of the transport of the products to recycling (C2) as well as landfilling of the losses at the end of life (C4) represents a minor contribution to the overall environmental impact of the product.

In summary, the supply chains of the base and cladding material and their combination are the most important drivers in the environmental impact of the products. In case of the base material, the raw material and energy input in the production phase as well as the direct emissions at the site can be identified as important factors in the environmental impact of the heavy plates. The direct carbon dioxide emissions from the individual process steps, in particular the blast furnaces and the energy recovery of the metallurgical gases in the network, have a large impact on the global warming potential.

In addition to the base material, the cladding material can be identified as a dominant factor in the life cycle assessment of roll-bonded clad plates. The cladding materials are purchased externally. Due to a lack of supplier-specific information, the uncertainty in the representation of the associated supply chains must be classified as higher, compared to the base material.
The cladding process itself represents a subordinate factor in the results.

The declared results refer to a weighted average of roll-bonded clad plates with cladding material made of nickel-base alloy UNS N06625 / 2.4856 (Clad:Base = 13 %, i.e. e.g. 3 mm cladding UNS N06625 / 2.4856, 23 mm base material made of carbon steel). At product level, the ratio of cladding material to base material (Clad:Base) has a significant influence on the LCA results. The potential contribution to climate change from module A1–A3 (cradle-to-gate) can be converted to other designs as follows:

- **Clad:Base = 5 %** | GWP-total = **-22 %**
- **Clad:Base = 33 %** | GWP-total = **+54 %**

Due to the update of the underlying methodology in accordance with *EN 15804*+A2, and a change in the grouping of the declared products, the results of the previous EPD for roll-bonded clad plates is not directly comparable with the present, updated version.

7. Requisite evidence

Not relevant for this EPD.

8. References

Standards

ASTM (S)A 36
Standard specification for carbon structural steel.

ASTM (SA) 283 Grade C
Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

ASTM (SA) 516
Standard Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service.

ASTM (SA) 537
Standard Specification for Pressure Vessel Plates, Heat-Treated, Carbon-Manganese-Silicon Steel.

ASTM (S)A 572 Grade 50, Type 1
Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.

ASTM (S)A 588 Grade A
Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi [345 MPA] Minimum Yield Point, with atmospheric Corrosion Resistance.

ASTM (SA) 709
Standard Specification for Structural Steel for Bridges.

ASTM (SA) 841
Standard Specification for Steel Plates for Pressure Vessels, Produced by Thermo-Mechanical Control Process (TMCP).

EN 10025
DIN EN 10025:2011, Hot rolled products of structural steels.

EN 10028
DIN EN 10028:2010, Flat products made of steels for pressure purposes.

EN 10225
DIN EN 10225:2019-11, Weldable structural steels for fixed offshore structures.

EN 15804
DIN EN 15804:2012-04+ A2:2019+AC:2021, Sustainability of construction works - Environmental Product Declarations-Corerules for the product category of construction products.

ISO 9001
DIN EN ISO 9001:2015, Quality management systems Requirements.

ISO 14001
DIN EN ISO 14001:2015, Environmental management systems Requirements with guidance for use.

ISO 14025
DIN EN ISO 14025:2011-10, Environmental labels and declarations Type III environmental declarations Principles and procedures.

ISO 14044
DIN EN ISO 14044:2006, Environmental management Requirements and guidelines.

Further literature:

Candidate List
Candidate List of Substances of Very High Concern (ECHA Candidate List) of 02.12.2020, published in accordance with Article 59 (10) of the REACH Regulation Helsinki: European Chemicals Agency.

EMAS 2009
Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a community ecomanagement and audit scheme (EMAS).

GaBi
GaBi 10, Software-System and Database for Life Cycle Engineering. DB 2021.1. Sphera, 1992-2021. Verfügbar in: http://documentation.gabi-software.com

IBU 2021
Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021 www.ibu-epd.com

ökobaudat 2022
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PCR Part A
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