ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	Salzgitter AG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-SMM-20210289-IBB1-EN
Issue date	11.02.2022
Valid to	10.02.2027

Heavy Plate
BRINAR®
MAXIL®
RESTIL®

Ilsenburger Grobblech GmbH
Salzgitter Mannesmann Grobblech GmbH

Institut Bauen und Umwelt e.V.

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ECO PLATFORM
EPD
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1. General Information

Salzgitter AG	Heavy Plate
Programme holder IBU – Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany	**Owner of the declaration** Salzgitter AG Eisenhüttenstraße 99 38239 Salzgitter Germany
Declaration number EPD-SMM-20210289-IBB1-EN	**Declared product / declared unit** This Declaration refers to the manufacture of 1 tonne heavy plate.
This declaration is based on the product category rules: Structural steels, 07.2014 (PCR checked and approved by the SVR)	**Scope:** This Environmental Product Declaration applies for heavy plate from the rolling mills at Ilsenburger Grobblech in Ilsenburg and Salzgitter Mannesmann Grobblech in Mülheim an der Ruhr. It concerns thermomechanically-rolled, heat-treated, normalized and high-strength heavy plates from both mills. The heavy plate products are made from slabs that come from a primary steel-making route (blast furnace route). This EPD was drawn up in accordance with the specifications of the EN 15804+A2. This standard is referred to as EN 15804 hereinafter. 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*.
Issue date 11.02.2022	**Verification** The standard *EN 15804* serves as the core PCR Independent verification of the declaration and data according to *ISO 14025:2011* ☐ internally ☒ externally
Valid to 10.02.2027	
 Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)	 Dr.-Ing. Wolfram Trinius (Independent verifier)
 Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.))	

2. Product

2.1 Product description/Product definition

This EPD relates to all products of Ilsenburger Grobblech, including the heavy plates of the BRINAR®, MAXIL® and RESTIL® brands as well as the products of Salzgitter Mannesmann Grobblech. *(EU) Directive No. 305/2011* (CPR) applies for placing the product on the market in the EU/EFTA (with the exception of Switzerland). The product requires a declaration of performance taking into account EN 10025 (*Hot rolled products of structural steels*) and CE marking.

The respective national regulations apply for usage.

2.2 Application

The areas of application for heavy plate from Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech include the following:

- Steel and bridge construction
- Tank and plant construction
- Wind industry (onshore and offshore constructions)
- Boiler and pressure vessel engineering
- Yellow Goods (high-strength and wear-resistant steels for vehicle and crane construction)
- Mechanical engineering and metal construction
- Shipbuilding
- Pipelines

2.3 Technical Data

This EPD covers all products of Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech in various steel

grades, dimensions, shapes and delivery states. It also includes heavy plates of the brands BRINAR®, MAXIL® and RESTIL® of Ilsenburger Grobblech.

The quality-specific information on tolerance specifications can be found in the standards defined for the area of application, for example *EN 10029* and *EN 10025*.
Furthermore, the respective information in the Declaration of Performance applies.

Technical construction data

Name	Value	Unit
Density	7850	kg/m^3
Modulus of elasticity	210000	N/mm^2
Coefficient of thermal expansion	11	$10^{-6}K^{-1}$
Thermal conductivity	48	W/(mK)
Melting point	1535	°C
Minimum yield strength (for sheet steel)	165	N/mm^2
Minimum tensile strength (for sheet steel)	270	N/mm^2
Minimum elongation (for sheet steel)	14	%

The product's performance values correspond with the Declaration of Performance in terms of its essential properties in accordance with EN 13956:

- DIN EN 10029:2011-02, Hot-rolled steel sheet of 3 mm thickness – Tolerances on dimensions and form

and

- DIN EN 10163-1:2005-03, Delivery conditions for surface finish of hot rolled steel products (sheet, wide flats and sections) – Part 1: General requirements.

Product standards

- *EN 10025* Parts 2–6 "Hot rolled products of structural steels – Technical delivery conditions" and CE marking
- *EN 10225* "Weldable structural steels for fixed offshore structures"
- *EN 10028* Parts 2–7 "Flat products made from pressure vessel steels"
- Non-European standards in accordance with the delivery ranges of Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech.

The technical parameters from the standards are ensured on the basis of *EN ISO 9001*.

2.4 Delivery status
The products of Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech are delivered as rolled sheets. The dimensions vary depending on the application. The maximum deliverable dimensions for the lengths and widths are 24 metres x 4.8 metres.

2.5 Base materials/Ancillary materials
Heavy plate from Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech consists of 100% hot-rolled primary steel (approx. 75-80% pig iron, approx. 20-25% scrap and alloying elements). The specific composition depends on the steel grade and the future area of application.

2.6 Manufacture
The starting material for heavy plate from the rolling mills of Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech are slabs produced via the primary route (blast furnace with converter). The slabs are reheated in the rolling mills' heating furnaces to temperatures between 1,000 °C and 1,250 °C and rolled out in a reversing rolling process to produce heavy plate in the lengths and widths individually defined by the customer. The rolling stands of Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech are so-called quarto rolling stands, consisting of four rolls: two work rolls and two back-up rolls.

2.7 Environment and health during manufacturing
The integrated management systems of both Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech include the quality management systems according to *ISO 9001* and *ISO 14001*. The occupational safety and energy management systems meet the requirements of the international standards *ISO 45001* and *ISO 50001*.

Supported by continuous investment in environmental protection measures, emissions to air and water are kept to a minimum. Legal requirements are complied with and in many cases significantly undercut.

All operating facilities are periodically inspected by the authorities to ensure environmental compatibility.

2.8 Product processing/Installation
The material is processed in accordance with the relevant standard with regard to its future intended use.

2.9 Packaging
Heavy plate is delivered unpacked and in compliance with legally prescribed transport safety measures.

2.10 Condition of use
If used for its intended purpose, no change is to be expected with regard to the material quality during use. Maintenance and inspection times depend on the design of the material and the place of use.

2.11 Environment and health during use
In connection with the intended use of the heavy plates, there are no known effects on human and animal health or harmful emissions to air, soil or water.

2.12 Reference service life
There is no information on a possible reference service life for heavy plate from Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech due to the wide variety of applications.

As a rule, the service life is limited by the user's maintenance intervals.

2.13 Extraordinary effects

Fire
Heavy plate is non-flammable according to *EN 13501*. No flammable gases or vapours escape. The fire resistance depends strongly on the area of application and the load.

Fire Protection

Name	Value
Building material class	A1
Burning droplets	d0
Smoke gas development	s1

Water
Under the influence of water, no negative consequences for the environment are to be expected due to the low solubility of steel in water. In combination with oxygen and water, steel can corrode.

Mechanical destruction
Unforeseeable mechanical impacts on the declared product have no consequences for the environment due to the plastic deformability of steel.

2.14 Re-use phase
Heavy plate from Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech is 100% recyclable and can either be reused or introduced into the steel industry as a valuable secondary raw material. Steel is a permanent material that can be recycled as often as desired.

2.15 Disposal
Heavy plates can be used as valuable recycling raw materials. The waste code according to the *European Waste List* is: 17 04 05 – Iron and steel

2.16 Further information
Further information on heavy plate from Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech is available online:

www.ilsenburger-grobblech.de
www.smgb.de

3. LCA: Calculation rules

3.1 Declared Unit
As a representative of the heavy plate product group, one tonne heavy plate serves as the declared unit.

Declared Unit

Name	Value	Unit
Declared unit	1	t
Density	7850	kg/m^3

3.2 System boundary
Type of EPD: cradle to gate with Modules C1–C4 and Module D.

The EPD comprises the following life cycle phases:

- A1: Blast furnace-based steel production on the basis of iron ore
- A2: Transport of the slabs to the heavy plate producers
- A3: Heavy plate production
- C3-C4: End-of-life stage
- D: Benefits and loads beyond the system boundaries

In all modules, in addition to direct consumption, the costs for the production of raw materials, auxiliary materials, energy sources and wastewater and residue disposal are also considered.

It is assumed for Modules C3-C4 that there are no other material or energetic expenses for waste processing and that no materials need to be disposed of.

Module D takes consideration of the re-use and recycling potential. Recycling credits are allocated in line with the "theoretically 100% primary furnace route" approach, in accordance with *Worldsteel 2017*.

3.3 Estimates and assumptions
Estimates and assumptions were documented in detail and are based on real production data.

3.4 Cut-off criteria
The end-of-life scenario involves product losses of 3.1%. Landfilling is not considered. Likewise, the manufacture and utilisation of packaging material (steel bands, wooden beams) are not considered. Nor is the use of lubricants taken into consideration.

In their entirety, these unconsidered flows significantly comply with the cut-off criterion of max. 5% of energy and mass expenditure while also adhering to the criterion of 1% in relation to individual processes, (*PCR, Part A*).

3.5 Background data
The LCA results of the declared product are based on process modelling in the *GaBi 10* software environment. Modelling is based on primary production data for billet manufacturing and the energy and media consumption values for the year under review.

The primary production data was supplemented by secondary data from the GaBi LCI database (*GaBi 10)*.

3.6 Data quality
All primary production data on steel and heavy plate production refers to fiscal 2018. The annual volumes have been examined for representativity in relation to previous financial years.

The current GaBi LCI database (GaBi version 10.5.1.124, database 2021.2) was used as background data sets.
The assessment model of the Product Environmental Footprint (PEF) approach of the EC Joint Research Centre 2012 was used to assess the quality of the primary data (see *PEF 2012*). Accordingly, the overall quality of the primary data can be rated as “very good”. The quality of secondary data is evaluated by the manufacturer of the LCI database (*GaBi 10*).

3.7 Period under review

The period under review is fiscal 2018. The quantities of heavy plate produced by Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech in 2018 were used to average the declaration.

3.8 Allocation

As methods for the allocation of co-products, the physical allocation based on the calorific value and a partitioning approach based on the product energy contents were used in the modelling of primary steel production (Module A1) (according to the recommendation of *Worldsteel 2014*).

The use of steel scrap for the production of steel slabs in Module A1 is considered unencumbered. However, a large part of the scrap demand is already covered by the offcuts in heavy plate production.
The remaining residual quantity is fed into Module A1 before the end-of-life scenario is considered and deducted from the scrap material flow for recycling. The difference is the net scrap quantity that is transferred to the recycling process. The respective proportions were taken from *Helmus 2019*. Recycling credits are allocated in line with the “theoretically 100% primary furnace route” approach, (*Worldsteel 2017*). If reused, this material flow is credited to heavy plate production (Modules A1-A3).

3.9 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 background database used involves the *GaBi 10* database, version 2021.2

4. LCA: Scenarios and additional technical information

Characteristic product properties
Information on biogenic Carbon

End of life (C1-C4)

Name	Value	Unit
Collected separately (Waste type)	969	kg
Reuse	53	kg
Recycling	916	kg

Reuse, recovery and recycling potential (D), relevant scenario information

Name	Value	Unit
Collection Rate	96,6	%
Recycling	91,6	%
Reuse	5,3	%
Loss	3,1	%

5. LCA: Results

Important:
EP freshwater: This indicator was calculated as “kg P equiv.” in accordance with the characterisation model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml).

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	ND	ND	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 t Heavy Plate

Core Indicator	Unit	A1-A3	C3	C4	D
Global warming potential - total	[kg CO_2-Eq.]	2.28E+3	0.00E+0	0.00E+0	-1.53E+3
Global warming potential - fossil fuels	[kg CO_2-Eq.]	2.28E+3	0.00E+0	0.00E+0	-1.53E+3
Global warming potential - biogenic	[kg CO_2-Eq.]	3.56E+0	0.00E+0	0.00E+0	1.81E+0
GWP from land use and land use change	[kg CO_2-Eq.]	1.19E+0	0.00E+0	0.00E+0	-2.55E-1
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	2.88E-8	0.00E+0	0.00E+0	-2.65E-8
Acidification potential, accumulated exceedance	[mol H^+-Eq.]	6.09E+0	0.00E+0	0.00E+0	-4.47E+0
Eutrophication, fraction of nutrients reaching freshwater end compartment	[kg P-Eq.]	2.06E-3	0.00E+0	0.00E+0	-4.73E-4
Eutrophication, fraction of nutrients reaching marine end compartment	[kg N-Eq.]	1.29E+0	0.00E+0	0.00E+0	-8.57E-1
Eutrophication, accumulated exceedance	[mol N-Eq.]	1.40E+1	0.00E+0	0.00E+0	-9.31E+0
Formation potential of tropospheric ozone photochemical oxidants	[kg NMVOC-Eq.]	3.73E+0	0.00E+0	0.00E+0	-2.29E+0
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	4.55E-4	0.00E+0	0.00E+0	-2.55E-4
Abiotic depletion potential for fossil resources	[MJ]	2.20E+4	0.00E+0	0.00E+0	-1.26E+4
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	[m^3 world-Eq deprived]	3.79E+0	0.00E+0	0.00E+0	-5.24E-1

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 t Heavy Plate

Indicator	Unit	A1-A3	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	1.28E+3	0.00E+0	0.00E+0	1.49E+3
Renewable primary energy resources as material utilization	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	1.28E+3	0.00E+0	0.00E+0	1.49E+3
Non-renewable primary energy as energy carrier	[MJ]	2.21E+4	0.00E+0	0.00E+0	-1.27E+4
Non-renewable primary energy as material utilization	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	2.21E+4	0.00E+0	0.00E+0	-1.27E+4
Use of secondary material	[kg]	2.47E+2	0.00E+0	0.00E+0	8.67E+2
Use of renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m^3]	2.90E+0	0.00E+0	0.00E+0	-1.02E+0

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 t Heavy Plate

Indicator	Unit	A1-A3	C3	C4	D
Hazardous waste disposed	[kg]	1.06E-3	0.00E+0	0.00E+0	-9.68E-4
Non-hazardous waste disposed	[kg]	2.69E+1	0.00E+0	0.00E+0	-2.30E+1
Radioactive waste disposed	[kg]	1.62E-1	0.00E+0	0.00E+0	1.76E-1
Components for re-use	[kg]	0.00E+0	0.00E+0	0.00E+0	6.07E+1
Materials for recycling	[kg]	1.46E+2	0.00E+0	0.00E+0	8.67E+2
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 t Heavy Plate

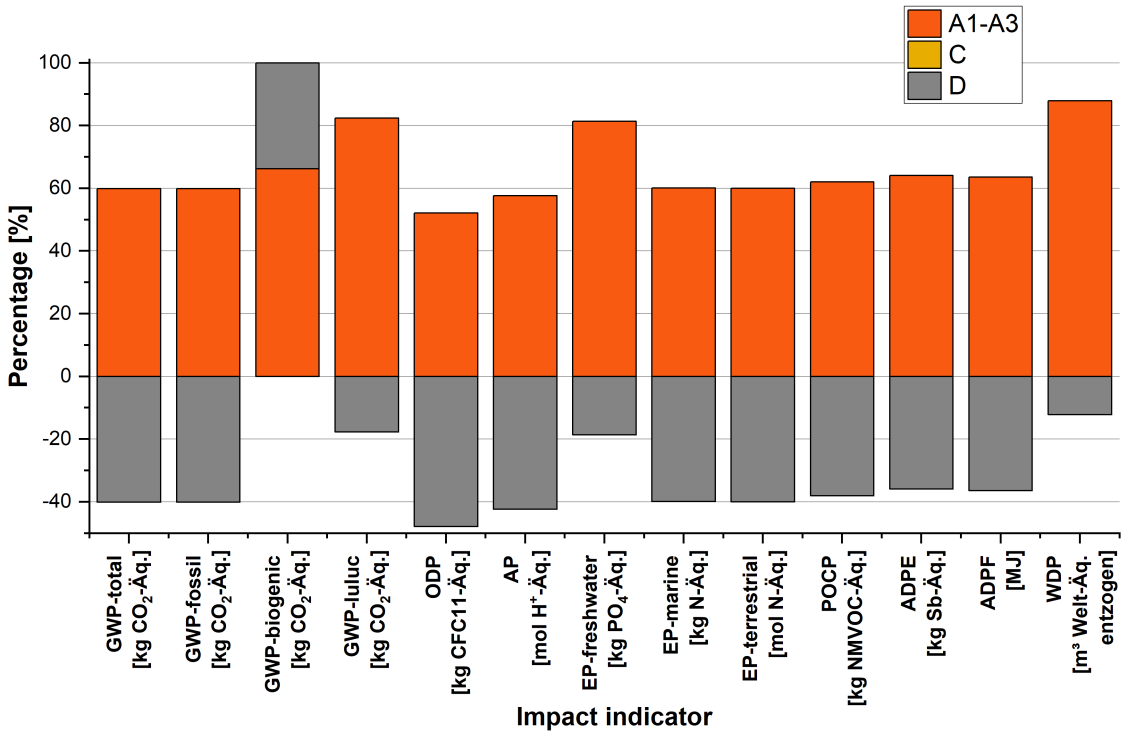
Indicator	Unit	A1-A3	C3	C4	D
Potential incidence of disease due to PM emissions	[Disease Incidence]	ND	ND	ND	ND
Potential Human exposure efficiency relative to U235	[kBq U235-Eq.]	ND	ND	ND	ND
Potential comparative toxic unit for ecosystems	[CTUe]	ND	ND	ND	ND
Potential comparative toxic unit for humans - cancerogenic	[CTUh]	ND	ND	ND	ND
Potential comparative toxic unit for humans - not cancerogenic	[CTUh]	ND	ND	ND	ND
Potential soil quality index	[-]	ND	ND	ND	ND

The additional and optional impact categories according to EN 15804+A2 are not declared, as this is not required according to the PCR, Part A.

Limitation note 1 – applies to the indicator Potential impact of exposure to people to U235:
This impact category mainly addresses the potential impact of low-dose ionising radiation on human health in the nuclear fuel cycle. This does not consider impacts due to possible nuclear accidents and occupational exposure, nor to the disposal of radioactive waste in underground facilities. Potential ionising radiation from soil, radon and some building materials is also not measured by this indicator.

Limitation note 2 – applies to the indicators Potential for Abiotic Resource Depletion – Non-Fossil Resources; Potential for Abiotic Resource Depletion – Fossil Fuels; Water Depletion Potential (User), Potential Ecosystem Toxicity Comparison Unit, Potential Human Toxicity Comparison Unit – Carcinogenic Effect; Potential Human Toxicity Comparison Unit – Non-Carcinogenic Effect; Potential Soil Quality Index.
The results of this environmental impact indicator must be used with caution, as the uncertainties in these results are high or there is only limited experience with the indicator.

6. LCA: Interpretation



The results of the environmental impact show that almost the entire greenhouse gas emissions (**GWP total**) of Modules A1-A3 come from fossil sources (cf. indicator **GWP fossil**).

As expected, the more detailed data analysis shows that the blast furnace-based slab production has a contribution of over 95% to the total GWP of the production phase. Approximately 70% of the greenhouse gas emissions come from the direct plant emissions and about 30% from the emissions of the preliminary processes for the production of the raw materials such as the alloying agents, coal, iron ore and lime.

In Module A3, the majority of greenhouse gas emissions are accounted for by direct plant emissions in the production of heavy plate.

In contrast, the absolute shares of the greenhouse potentials from biogenic sources (**GWP biogenic**) and from landscape use and landscape use change (**GWP luluc**) have only a negligible share of the total greenhouse potential. As expected, the contributions come exclusively from the upstream processes for raw material provision and electricity production.

The remaining environmental impacts from the class of core indicators are largely determined by slab production and to a significantly lesser extent by heavy plate production. The potential for stratospheric ozone depletion (**ODP**) should be emphasised. The ODP is caused exclusively by a preliminary process in which halogenated hydrocarbons are emitted.

For the remaining impact indicators, the provision of raw materials for steel production also has the greatest influence on the absolute size of the environmental indicators. As expected, the largest contributions are made by the raw materials that are used in the largest quantity flows in the processes. In addition, the impact indicators describing the acidification potential (**AP**), the eutrophication potential (**EP freshwater**, **EP marine**, **EP terrestrial**) and the ozone creation potential (**POCP**) are increased by the direct NOx and SO2 emissions.

The credits from the reuse and recycling of steel scrap in Module D result from the selected recycling approach of avoided primary steel production and the associated avoidance of emissions from this process route. The positive share of the impact indicator **GWP biogenic** of Module D comes from the biogenic shares of the electricity mixes used.

In contrast to fossil-based primary steel production, recycling in the electric arc process is predominantly based on electricity, approx. 50% of which comes from renewable sources. For this reason, Module D also leads to an increase in the use of renewable energies, while the use of fossil energies is reduced, as can be seen from the **PERE** (renewable primary energy as energy source) and **PENRE** (non-renewable primary energy as energy source) indicators.

In summary, almost all impact indicators are determined by the steel production process. In contrast, the direct and indirect emissions of the process facilities for heavy plate production account for only a small overall share. Material efficiency therefore represents the greatest lever for reducing almost all impact indicators.

7. Requisite evidence

This EPD declares heavy plate from Ilsenburger Grobblech and Salzgitter Mannesmann Grobblech. Further processing depends on the respective application. Accordingly, further documentation is not of relevance here.

The rusting rates of components made of heavy plate depend greatly on the selected area of application and any corrosion protection systems applied.

8. References

Standards

EN 10025
DIN EN 10025-1:2005-02
Hot-rolled products of structural steels – Part 1: General technical delivery conditions

EN 10025-2
DIN EN 10025-2:2019-10
Hot-rolled products of structural steels – Part 2: Technical delivery conditions for non-alloy structural steels

EN 10025-3
DIN EN 10025-3:2019-10
Hot-rolled products of structural steels – Part 3: Technical delivery conditions for normalised/normalised rolled weldable fine-grain structural steels

EN 10025-4
DIN EN 10025-4:2019-10
Hot-rolled products of structural steels – Part 4: Technical delivery conditions for thermomechanical rolled weldable fine-grain structural steels

EN 10025-5
DIN EN 10025-5:2019-10
Hot-rolled products of structural steels – Part 5: Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

EN 10025-6
DIN EN 10025-6:2020-02
Hot-rolled products of structural steels – Part 6: Technical delivery conditions for flat products of high yield strength structural steels in the quenched and tempered condition

EN 10028-2
DIN EN 10028-2:2017-10
Flat products made of steels for pressure purposes – Part 2: Non-alloy and alloy steels with specified elevated temperature properties

EN 10028-3
DIN EN 10028-3:2017-10
Flat products made of steels for pressure purposes – Part 3: Weldable fine-grain steels, normalised

EN 10028-4
DIN EN 10028-4:2017-10
Flat products made of steels for pressure purposes – Part 4: Nickel alloy steels with specified low-temperature properties

EN 10028-5
DIN EN 10028-5:2017-10
Flat products made of steels for pressure purposes – Part 5: Weldable fine-grain steels, thermomechanically rolled

EN 10028-6
DIN EN 10028-6:2017-10
Flat products made of steels for pressure purposes – Part 6: Weldable fine-grain steels, quenched and tempered

EN 10028-7
DIN EN 10028-7:2016-10
Flat products made of steels for pressure purposes – Part 7: Stainless steels

EN 10029
DIN EN 10029:2011-02
Hot-rolled steel sheet of 3 mm thickness – Tolerances on dimensions and form

EN 10163
DIN EN 10163-1:2005-03
Delivery conditions for surface finish of hot-rolled steel products (sheet, wide flats and sections) – Part 1: General requirements

EN 10225
DIN EN 10225-1:2019-11
Weldable structural steels for fixed offshore structures – Technical delivery conditions – Part 1: Plates

EN 13501
DIN EN 13501-1:2019-05
Fire classification of construction products and building elements – Part 1: Classification with the results of tests on reaction to fire of construction products

EN 15804
DIN EN 15804:2020-03
Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

ISO 9001
DIN EN ISO 9001:2015-11
Quality Management systems – Requirements

ISO 14001
DIN EN ISO 14001:2015-11
Environmental management systems – Requirements with guidance for use (ISO 14001:2015)

ISO 14044
DIN EN ISO 14044:2021-02
Environmental management – Life cycle assessment – Requirements and guidelines (ISO 14044:2006 + Amd 1:2017 + Amd 2:2020)

ISO 45001
ISO 45001:2018-03
Occupational health and safety management systems – Requirements with guidance for use (ISO 45001:2018).

ISO 50001
ISO 50001:2018-08
Energy management systems – Requirements with guidance for use (ISO 50001:2018)

European Waste Code
Commission Decision of 18 December 2014 amending Decision 2000/532/EC establishing a list of wastes pursuant to Directive 2008/98/EC of the European Parliament and of the Council

PCR, Part A
Product category guidelines for building-related products and services Part A: Calculation rules for the Life Cycle Assessment and requirements on the Background Report, in accordance with version EN 15804+A2:2019 version 1.8, Berlin: Institut Bauen und Umwelt e.V. (pub.), 01.07.2020

PCR: Structural steels
Product category guidelines for building-related products and services Part B: Requirements on the EPD for structural steels, version 1.0, Berlin: Institut Bauen und Umwelt e.V. (pub.), www.ibu-epd.com, 2014-07

PEF 2012
EC Joint Research Centre, Product Environmental Footprint (PEF) Guide, consolidated version, Ispra, Italy, 2012

(EU) Directive No. 305/2011
Directive (EU) No. 305/2011 of the European Parliament and Council establishing harmonised conditions for marketing building products and replacing Guideline 89/106/EEC, 9 March 2011

Other literature

GaBi 10
GaBi, version 10.5.1.124, database used: 2021.2 GaBi ts data set documentation for the software system and databases, LBP, University of Stuttgart and thinkstep, Leinfelden-Echterdingen, 2021 (http://documentation.gabi-software.com/)

GaBi EN 15804
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Helmus 2019
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The literature referred to in the Environmental Product Declaration must be listed in full.

Standards already fully quoted in the EPD do not need to be listed here again.
The current version of PCR Part A and PCR Part B of the PCR document on which they are based must be referenced
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