Environmental Product Declaration

Acciaierie d'Italia
Steel Forward

In accordance with
ISO 14025 and EN 15804:2012+A2:2019 for:

Plates and Profile Slabs

Quarto rolling mill products

from

Acciaierie d'Italia S.p.A.

EPD®

ECO PLATFORM EPD VERIFIED

RINA

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-11797
Publication date:	2023-12-19
Valid until:	2028-12-19

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

Content

1. General information

1.1. EPD, PCR, LCA Information

EPD Information	
Programme	The International EPD® System www.environdec.com info@environdec.com
Programme operator	EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden
Declaration holder	Acciaierie d'Italia Viale Certosa 239, Milan, Italy www.acciaierieditalia.com
Product	Plates and Profile Slabs from Quarto Plates
CPC Code	412 Products of iron or steel
Geographical Scope	Global
Reference standards	ISO 14025:2006; EN 15804:2012+A2:2019
Reference period	2022-01-01 – 2022-12-31

Product Category Rules (PCR)	
Reference PCR	"Construction Products" 2019:14, Version 1.2.5
Data of Issue	2022-11-01 (VALID UNTIL 2024-12-20)

Third-party verification	
Demonstration of verification	External, accredited certification body
Third party verifier	RINA Services S.p.A, accredited by Accredia (Registration number 0002VV)
Follow-up procedure	Follow-up procedure of data during EPD validity does not involve third-party verifier

Life cycle assessment (LCA)	
Title	Plates and Profile Slabs
Reference standards	ISO 14040/44 standard
LCA accountability	Maria Chiara Caruso, Marcello Casa, Vincenzo Lariccia – Rina Consulting S.p.A.

The 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.

2. Company information

2.1. Owner of the EPD

Acciaierie d'Italia S.p.A.
sostenibilita@acciaierieditalia.com

2.2. Contact

To get more information regarding this product declaration and/or related configurations to contact sostenibilita@acciaierieditalia.com

2.3. Description of the organization

Acciaierie d'Italia is one of the largest Italian industrial groups and one of the most important integrated-cycle steel producers at European level.
Our mission is to produce the steel for the leading sectors of Italian and European industry: automotive, buildings and bridges, construction, furniture, packaging, ship.

At the Taranto plant the complete steel manufacturing cycle is carried out for most of the products of the portfolio. Hot rolled heavy plates, hot rolled coils and hot dip galvanized thin coils are prepared for the customer. Important sites, due to their strategic location in the north of Italy namely Genoa, Novi Ligure and Racconigi, are also terminals of high quality verticalized products like tin coated cold rolled strip for packaging and beverage, hot dip galvanized cold rolled strips specialized for the automotive sector and structural pipes.

Taranto plant is strictly connected with the most important merchant harbor in the south of Italy from which the steel products can be delivered around all the Mediterranean Sea and to the world.
Steel production is based on the use of iron ore as a raw material. However, ADI uses approximately 19% of scrap steel in conjunction with steel production.
When scrap steel is used instead of virgin raw materials in steelmaking, the carbon dioxide emissions originating in steel production decrease accordingly. Steelmaking at Acciaierie d'Italia uses scrap material from ADI's own production processes and material sourced on the scrap steel market.
At AdI, steelmaking processes have been continuously improved and the latest state of the art equipment has been installed for improving the environmental impact of the production processes. Most of the energy used in ore-based steel production comes from coal, which is used as a reducing agent in iron-making. The mineral products formed in s iron and steel production processes and the by-products generated in the coking process are recycled as industrial raw material or material to replace virgin resources. A high percentage of the dust originating in various processes is returned to the process to reduce waste and improve material efficiency.

Steel is a fully recyclable material for infinite times without losing any of its original properties. Therefore, it is never consumed but continuously transformed through recycling processes that make it a permanent material, contributing substantially to the development of a circular economy.

2.4. Product-related or management system-related certifications

Acciaierie d'Italia has a management system certified according to ISO 14001 (Environment), ISO 50001 (Energy) (only Taranto plant), ISO 9001 & IATF 16949:2016 (Quality), ISO 45001 (Health and Safety) and SA8000 (Social Responsibility).

2.5. Name and location of production site

Plates and Profile slabs are manufactured at:

- Taranto Plant: Via Appia SS km 648, 74123 Taranto TA

3. Product information

Plates and Profile Slabs from Quarto Plates are manufactured in Carbon-Manganese unalloyed or low alloyed steel, obtained by Thermomechanical Rolling or Normalizing rolling depending on use. The plates have thickness ranging from 8 to 153 mm, while Profile Slabs have thickness between 154 to 225 mm. Plates can be supplied with widths and lengths ranging from 1 300 to 4 500 mm and from 4 000 mm to 18 000 mm respectively. Shorter lengths can be obtained by cutting.
The Quarto Plates main applications are structural, shipbuilding and pressure equipment.
Steel grades have yield strength from 235 MPa to 460 MPa, and tensile test from 340 MPa to 550 MPa, sometimes even with impact tests at temperature between -50°C and +20°C.
The plates can be supplied with a black surface or with shot-blasting & primering surfaces treatments.

Facilities Quarto Plates & Profile Slabs	
Production lines (nr.):	1
Production site:	Taranto
Production capability (mt/year):	1 500 000

Dimensional ranges		
	Quarto Plates	Profile Slabs
Thickness (mm)	8 ÷ 153	154 ÷ 225
Width (mm)	1 300 ÷ 4 500	1 300 ÷ 2 800
Length (mm)	4 000 ÷ 18 000	4 000 ÷ 6 000

Main reference quality standard			
Product description	**Standard**	**Grade**	**Thickness (mm)**
Structural steels	EN 10025-2	S235; S275 JR +N/+AR S235; S275 J0, J2 +N/+AR S355JR +AR S355JR +N S355J0, J2, K2 +AR S355 J0, J2, K2 +N	8 ÷ 153 8 ÷ 80 8 ÷ 120 8 ÷ 100 8 ÷ 80 8 ÷ 60
	ASTM A36		8 ÷ 153
	ASTM A283	Grade B, C Grade D	8 ÷ 80 8 ÷ 20
	ASTM A572	Grade 42 Grade 50	10 ÷ 100 10 ÷ 60
	ASTM A573	Grade 70	8 ÷ 40
Normalized rolled weldable fine grain structural steels	EN 10025-3	S275N S275NL; S355NL S355N S420N; S420NL	8 ÷ 60 10 ÷ 40 8 ÷ 50 10 ÷ 30
Thermomechanical rolled weldable fine grain structural steels	EN 10025-4	S275M; S355M S275ML; S355ML S420M; S460M S420ML S460ML	8÷80 10÷60 10÷60 10÷60 10÷40
Structural steel with improved atmospheric corrosion resistance	EN 10025-5	S355J0W, J2W, K2W +N S355J0W, J2W, K2W +AR	10÷60 10÷80
Non-alloy and alloy steels for pressure purposes with elevated temperature properties	EN 10028-2	P235GH; P265GH; P295GH	8÷60
Weldable fine grain steels for pressure purpose, normalized	EN 10028-3	P275NH; P355N; P355NH P275NL1; P275NL2 P355NL1; P355NL2	10÷60 8÷30 10÷30
Weldable fine grain steels for pressure purpose, thermomechanically rolled	EN 10028-5	P355M P355ML1; P355ML2 P420M; P460M P420ML1; P420ML2 P460ML1; P460ML2	10÷80 10÷60 10÷60 10÷60 10÷40
Pressure vessel plates, carbon steel, low and intermediate tensile strength	ASTM A285	Grade C	8÷50
Pressure vessel plates, carbon steel, for moderate and lower temperature service	ASTM A516	Grade 55; Grade 60; Grade 65 Grade 70	8÷40 8÷30
Plates for shipbuilding	R.I.NA. LLOYD'S REGISTER AMERICAN BUREAU OF SHIPPING BUREAU VERITAS DNV	A; B; D; E; AH32; DH32; AH36; DH36E; EH32; EH36	8÷80
Plates for pipeline	API 5L EN ISO 3183	up to X70 PSL1, PSL2 up to X70 PSL2E	8÷40
Profile Slabs	EN 10025-2 ASTM A36	S275; S355 JR+AR (Chemical composition only)	154÷225

- On request, different qualities from above can be supplied or in accordance with the customer's technical specifications.
- Where applicable, suitability for galvanizing and lamellar tearing resistance may be required.

Supply conditions:

- Size and shape tolerances according to EN 10029, ASTM A6, ASTM A20 and special tolerances when required;
- Certificates and technical documents according to EN 10204 and ISO 10474;
- Plates supplied according to EN 10025, are delivered with the CE/UKCA conformity marking and relative Declaration of Performance (DoP);
- Plates supplied according to EN 10028 may be used for the manufacture of Pressure Vessels (Directive EU - PED).

4. LCA information

Functional unit / declared unit: 1000 kg of Plates and Profile Slabs

Reference service life: Not applicable

Time representativeness: Data input was collected in May 2023-July 2023, based on data related to the year 2022.

Database(s) and LCA software used: Ecoinvent v3.8, GaBi database, GaBi Software v.10.6

Description of system boundaries:

Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D).
Plates and Profile Slabs are used for multiple applications; for this reason, Modules A4 and A5 have not been considered, together with Modules B.
The Plates and Profile Slabs are produced in the AdI plants according to the production process shown in Figure 1 and described hereafter.

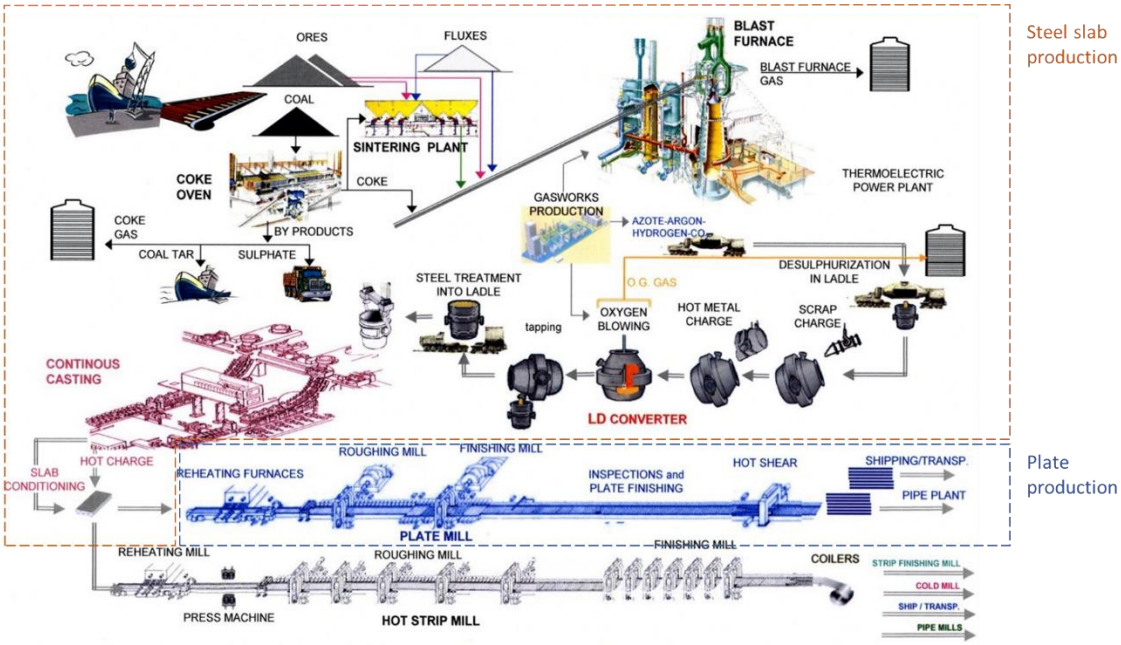


Figure 1: Steel slab and Plate production in Taranto plant

All the steel products realized in Taranto plant derive from the production of the steel slab, which is the result of the steel-making process; therefore, the manufacturing process starts with the production of the steel slabs according to the following process:

1) **Raw materials**, such as iron ores and coals, reach Taranto Port and are sent to Taranto plant, where they are stored and handled in primary stockyards;
2) Before being utilized in blast furnaces, coals picked up from parks and properly mixed go through a distillation process that transform them into **carbon coke**, that is then used in blast furnace for production of hot metal or pig iron from the iron ores;
3) The iron ores, along with other materials is treated in the **sintering plant** and transformed into sinter to feed the blast furnace, the heart of the steel cycle;

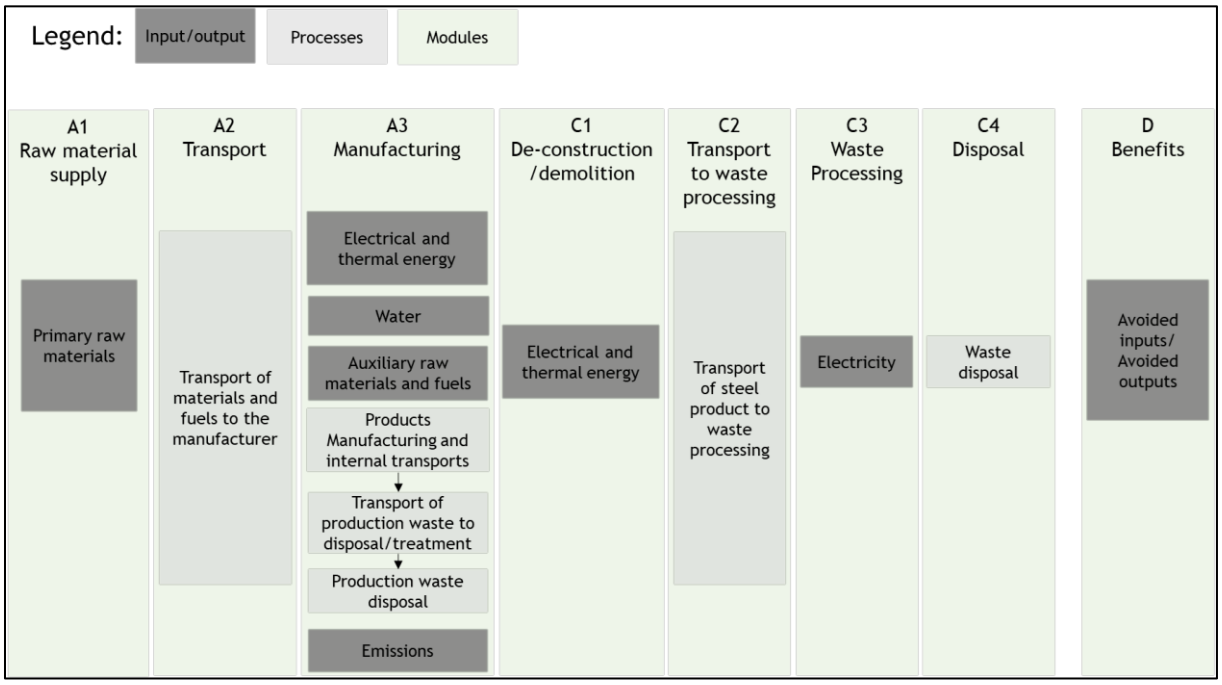
4) Blast furnaces produce **hot metal or pig iron**, the metal alloy of iron and carbon (Fe-C), that in the same plant are made subservient to process and automation control systems, which allow supervision and process control;

5) Pig iron is an iron alloy, composed of iron and a small percentage of carbon. The hot metal (liquid pig iron) is transferred into the steel mill, to be transformed into **steel**, through a process that uses huge converters into which the hot metal is poured. Oxygen insufflation allows then the reduction of the carbon content;

6) The liquid steel is transferred to the continuous casting plants where it is poured into **ingot molds**, inside which the solidification process gests started. The obtained semi-finished product is called slab.

Finally, **Plates and Profile Slabs** are produced in dedicated quarto plate mills – PLA. Steel slabs are firstly subjected to a roughing process, then they are preheated in order to be rolled. The process ends with finishing mill and cutting steps.

System diagram:



Module A1 includes the supply of all raw materials, considering their extraction and processing. Raw materials are completely used for the production of the steel slabs and can be listed as follows:

- Iron ores
- Solid Pig iron
- Fluxes
- Ferroalloys
- Materials for treatment in BOF
- Lime
- Limestone
- Fossils
- Coke
- PCI
- Iron scrap

Module A2 includes the data on transportation of the materials to the manufacturing site, by means of different transport typologies, i.e., ship, train, lorry. Transports by ships are exclusively made for the raw materials supply, whilst auxiliary materials are supplied by lorry, except for a small number of refractories coming from China by ship.

Module A3 regards the entire manufacturing process of the product. This module includes all the inputs/outputs related to the activities and processes taking place in the manufacturing site and is modelled through specific data.
For each production step, data referred to Module A3 include: the list of ancillary and gaseous materials utilized, the electrical and thermal energy inputs, the water consumption, other materials internally used, steel industry gases outputs, emissions into air, water and soil, waste. Machines, infrastructure, construction, production equipment, and tools, as well as input and output flows related to their scheduled maintenance and repair activities, have not been included in the system boundary. All the machines are powered by electrical and thermal energy. Electrical energy is modelled considering that 6,6% of electricity is purchased by the national grid and 93,4% of electricity is produced within the AdI group plant in Taranto by AdI Energy (ADIE), which converts steel-making process gases (i.e., Blast Furnace Gas, Coke Oven Gas and Oxygen Converter Gas) into electrical energy. The energy conversion process has also been modelled as a stand-alone production step.

Module C1 concerns the deconstruction phase of the product after its usage. The product can have multiple applications and it is generally removed through the use of a gas torch. In particular, this stage has been modelled considering the amount of acetylene and oxygen used to cut the steel plate. Consumptions are referred to the cutting of a 1 square meter of plate and width, equal to 20mm.
A recovery percentage of the material at its end of life equal to 95% has been assumed.

Module C2 includes the data on transportation of dismantled product to the waste treatment site. Considering that the product can have multiple applications, the transports to waste processing or disposal are different for each use. Therefore, C2 stage is modelled assuming that 1000 kg of steel product is sent to waste processing site, which is assumed to be 100km far. Assumed truck is a Euro 5, 28 - 32t gross weight truck.

Module C3 is included in the system boundary. Waste treatment of steel basically consists in steel sorting and shredding, before sending the steel scrap to further recycling treatments. For this reason, even if this is an activity AdI has no control over it, energy consumptions related to steel sorting and shredding has been considered. In particular, a value of electric consumption equal to 0,075 kWh/kg of treated steel has been assumed according to Norgate T. (2013)[1].

Regarding the disposal and the recycling potential, the proportion of the steel material in the product that is recycled in a subsequent system is equal to 95% w/w[2]. Therefore, **Module C4** is modelled considering that 5% w/w of steel waste is not reused or recycled, but it is sent to landfill as inert material.

Module D includes the reuse, recovery and/or recycling potentials, expressed as net impacts and benefits.
In particular, Module D has been modelled by considering the environmental benefits deriving from 4 different contributions:

1. post-consumer steel waste
2. Gas by-products for energy production
3. Sold by-products
4. Waste to recovery/reuse

[1] Norgate T. (2013) Metal recycling: The need for a life cycle approach. EP135565, CSIRO, Australia
[2] Product Environmental Footprint Guidance: Annex C – List of Default Values for A, R1, R2, R3 and Qs/Qp available at https://ec.europa.eu/environment/eussd/smgp/pdf/PEFCR_guidance_v6.3.pdf
https://ec.europa.eu/environment/eussd/smgp/pdf/2019-06-28_PEFCR_Metal_Sheets_final.pdf

More information: Purchased and self-produced electricity used in the manufacturing process of module A3 accounts for around 27% of the GWP-GHG results of modules A1-A3.

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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO, EU, IT	GLO, EU, IT	-	-	-	-	-	-	-	-	-	IT, GLO	IT, GLO	IT, GLO	EU, GLO	IT, EU, GLO
Specific data used	>90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not relevant					-	-	-	-	-	-	-	-	-	-	-	-
(X = declared module; ND = module Not Declared)																	

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Fe	993,82	99,38	0
C	0,64	0,06	0
Mn	3,84	0,38	0
Others	1,69	0,17	0
TOTAL	1 000	100	-

No packaging materials are here presented because the Plates and Profile Slabs are sold unpacked.

The list of components does not include products included in the “Candidate List of Substances of Very High Concern for Authorizations” by European Chemicals Agency (ECHA).

4.1. Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per 1000 kg of Plates and Profile Slabs										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	3,68E+02	2,37E+02	2,68E+03	3,28E+03	1,09E+00	6,56E+00	3,04E+01	2,63E-01	-1,74E+03
GWP-biogenic	kg CO_2 eq.	6,68E-01	2,79E-01	2,10E+00	3,04E+00	3,65E-03	2,30E-02	4,89E-01	1,72E-04	-1,13E+00
GWP-luluc	kg CO_2 eq.	1,07E+00	4,83E-02	5,55E-02	1,18E+00	1,16E-03	4,40E-02	1,08E-02	2,54E-04	-2,67E-01
GWP-total	kg CO_2 eq.	3,70E+02	2,37E+02	2,68E+03	3,28E+03	1,09E+00	6,62E+00	3,09E+01	2,63E-01	-1,74E+03
ODP	kg CFC 11 eq.	7,91E-05	1,39E-11	6,39E-06	8,55E-05	2,52E-08	6,42E-13	6,22E-10	1,07E-07	-6,04E-05
AP	mol H^+ eq.	3,05E+00	8,45E+00	3,09E+00	1,46E+01	2,83E-03	2,12E-02	4,21E-02	2,48E-03	-6,20E+00
EP-freshwater	kg P eq.	6,45E-01	7,54E-05	3,86E-02	6,84E-01	4,88E-04	2,34E-05	1,48E-04	2,41E-05	-6,05E-01
EP-marine	kg N eq.	5,47E-01	2,24E+00	7,16E-01	3,50E+00	4,94E-04	9,65E-03	1,24E-02	8,62E-04	-1,42E+00
EP-terrestrial	mol N eq.	5,49E+00	2,45E+01	7,99E+00	3,80E+01	4,39E-03	1,08E-01	1,33E-01	9,42E-03	-1,54E+01
POCP	kg NMVOC eq.	1,50E+00	6,25E+00	3,26E+00	1,10E+01	1,44E-03	1,90E-02	3,28E-02	2,74E-03	-7,40E+00
ADP-minerals & metals*	kg Sb eq.	5,13E-04	9,08E-06	3,74E-04	8,96E-04	3,28E-06	6,59E-07	8,83E-06	6,01E-07	-2,34E-02
ADP-fossil*	MJ	2,68E+04	2,86E+03	8,76E+03	3,84E+04	1,27E+01	8,58E+01	4,30E+02	7,38E+00	-2,55E+04
WDP*	m^3	1,23E+02	4,87E-01	2,11E+02	3,34E+02	1,18E+00	7,31E-02	1,23E+01	3,39E-01	-1,50E+02
Acronyms	**GWP-fossil** = Global Warming Potential fossil fuels; **GWP-biogenic** = Global Warming Potential biogenic; **GWP-luluc** = Global Warming Potential land use and land use change; **ODP** = Depletion potential of the stratospheric ozone layer; **AP** = Acidification potential, Accumulated Exceedance; **EP-freshwater** = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; **EP-marine** = Eutrophication potential, fraction of nutrients reaching marine end compartment; **EP-terrestrial** = Eutrophication potential, Accumulated Exceedance; **POCP** = Formation potential of tropospheric ozone; **ADP-minerals & metals** = Abiotic depletion potential for non-fossil resources; **ADP-fossil** = Abiotic depletion for fossil resources potential; **WDP** = Water (user) deprivation potential, deprivation-weighted water consumption									

** Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

4.2. Additional mandatory and voluntary impact category indicators

Results per 1000 kg of Plates and Profile Slabs										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[3]	kg CO_2 eq.	3,69E+02	2,37E+02	2,68E+03	3,28E+03	1,09E+00	6,60E+00	3,04E+01	2,63E-01	-1,74E+03

4.3. Resource use indicators

Results per 1000 kg of Plates and Profile Slabs										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	5,29E+02	1,71E+01	3,68E+02	9,15E+02	2,37E+00	5,95E+00	3,68E+02	6,40E-02	-9,98E+02
PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,58E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,29E+02	1,71E+01	3,68E+02	9,15E+02	2,37E+00	5,95E+00	3,68E+02	6,40E-02	-9,98E+02
PENRE	MJ	2,68E+04	2,87E+03	8,76E+03	3,84E+04	1,27E+01	8,61E+01	4,30E+02	7,38E+00	-2,55E+04
PENRM	MJ	1,31E-01	0,00E+00	4,07E-02	1,71E-01	1,02E-04	0,00E+00	0,00E+00	1,29E-03	-8,02E-01
PENRT	MJ	2,68E+04	2,87E+03	8,76E+03	3,84E+04	1,27E+01	8,61E+01	4,30E+02	7,39E+00	-2,55E+04
SM	kg	0,00E+00	0,00E+00	2,74E+02	2,74E+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	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	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,86E+00	2,38E-02	4,82E+00	7,71E+00	2,78E-02	6,87E-03	3,25E-01	7,88E-03	-3,51E+00
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									

[3] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

4.4. Waste indicators

Results per 1000 kg of Plates and Profile Slabs										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	8,35E-13	1,18E-08	2,11E-06	2,12E-06	8,19E-11	4,56E-10	9,09E-08	0,00E+00	-2,00E-06
Non-hazardous waste disposed	kg	4,38E-06	2,76E-01	1,64E+00	1,92E+00	7,16E-04	1,40E-02	4,77E-01	0,00E+00	-1,20E+00
Radioactive waste disposed	kg	1,77E-07	3,33E-03	3,35E-02	3,69E-02	1,51E-04	1,60E-04	1,93E-02	0,00E+00	-9,63E-04

4.5. Output flow indicators

Results per 1000 kg of Plates and Profile Slabs										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	2,23E+02	2,23E+02	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	2,04E-02	2,04E-02	0,00E+00	0,00E+00	9,50E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	8,99E-01	8,99E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	7,80E+03	7,80E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

4.6. Other environmental performance indicators

Results per 1000 kg of Plates and Profile Slabs										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Particulate matter	Disease incidences	2,39E-05	1,44E-04	1,75E-05	1,86E-04	8,99E-09	1,23E-07	3,65E-07	4,85E-08	-8,75E-05
Ionising radiation, human health	kBq U235 eq.	3,99E+01	4,89E-01	9,14E+00	4,96E+01	3,08E-01	2,41E-02	3,57E+00	3,27E-02	4,02E+01
Ecotoxicity, freshwater	CTUe	4,55E+04	1,99E+03	2,54E+03	5,00E+04	7,01E+00	6,08E+01	2,40E+02	4,67E+00	-4,93E+04
Human toxicity, cancer	CTUh	2,20E-06	3,70E-08	3,83E-07	2,62E-06	2,16E-10	1,25E-09	7,23E-09	1,18E-10	1,08E-05
Human toxicity, non-cancer	CTUh	4,53E-06	1,75E-06	3,75E-05	4,38E-05	6,71E-09	7,68E-08	2,08E-07	3,05E-09	-3,58E-05
Land Use	Pt	3,08E+03	4,57E+01	5,37E+02	3,66E+03	2,08E+00	3,63E+01	2,33E+02	1,54E+01	-4,01E+03

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