ENVIRONMENTAL PRODUCT DECLARATION

according to the standards EN ISO 14025:2010 and EN 15804:2012+A2:2019/AC:2021

Organization	**VÍTKOVICE STEEL, a. s.**
Programme holder	CENIA, Czech Environmental Information Agency, executive function of the Agency NPEZ
The document was processed by	Technical and Test Institute for Construction Prague, SOE
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Valid to	2028-06-30 according to EN 15804:2012+A2:2019/AC:2021

VÍTKOVICE STEEL

SHEET PILES

General information

Programme information

Programme:	'National programme of environmental labelling' – CZ (NPEZ) CENIA, Czech Environmental Information Agency executive function of the Agency NPEZ
Address:	CENIA, Czech Environmental Information Agency Moskevská 1523/63 101 00 Praha 10, CZ
Website:	www.cenia.cz

Accountabilities for PCR, LCA and independent, third-party verification			
Product Category Rules (PCR)			
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)			
Life Cycle Assessment (LCA)			
Product: **SHEET PILES**		Declared unit: **1t of manufactured products – SHEET PILES**	
LCA accountability: Technický a zkušební ústav stavební Praha, s.p.>			
Third-party verification			
Independent third-party verification of the declaration and data, according to **ČSN ISO 14025:2010**			
The ČSN EN 15804+A2 standard prepared by CEN serves as the basic PCR			
☐	internal	☒	external
Third party verifier [b]:			
Elektrotechnický zkušební ústav, s.p. Pod lisem 129/2, Troja, 182 00 Praha 8 Česká republika		Mgr. Miroslav Sedláček *Head of the certification body*	
Certification body for EPD, accredited by ČIA, Czech Accreditation Institute under No. 3018			
[a] Product Category Rules [b] *Optional for business-to-business communications, mandatory for business-to-consumer communications (see ISO 14025:2010, clause 9.4).*			

The EPD owner has the sole ownership, liability, and responsibility for the EPD.
EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:

VÍTKOVICE STEEL, a. s.

Contact: Gabriela DYLOVÁ, Českobratrská 3321/46, 702 00 Ostrava, CZ

Description of the organisation:

VÍTKOVICE STEEL, a.s. is a leading European manufacturer of rolled steel products and the biggest manufacturer of steel plates in the Czech Republic. Its core production programme is formed by heavy plates and cut shapes which are made at sheet rolling mill and sheet piles which are made at heavy section rolling mill.

The present EPD provides quantified environmental information on a construction product on harmonized and scientifically reasoned basis. It is also intended to provide basic information on the product regarding assessment of life cycle of buildings and other structures and contribute to identification of products with a lower impact on the environment.

To enable comparison of products in the building life cycle assessment process based on their EPD which is made by determination of their contribution to the environmental properties of the building, the EPD for the concerned construction products must be drawn up in accordance with the requirements of EN 15804+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.

Product-related or management system-related certifications:

The company applies an integrated EN ISO 9001 quality management system, EN ISO 14001 environmental management system and ČSN ISO 450001 occupational health and safety management system certified by TÜV NORD CERT GmbH.

Name and location of production site(s):

VÍTKOVICE STEEL, a. s., Českobratrská 3321/46, 702 00 Ostrava, CZ

Product information

Product name:

SHEET PILES

Product identification:

The sheet piles are provided with holes with diameter between 30 and 70 mm based on order. The maximum hole distance from the sheet pile face is 700 mm. Double sided perforation (on TOP and BOTTOM sides) as well as other perforation types can also be made, if required by the customer. The interlocks can be filled with a sealant, if required, to achieve a higher water tightness (not covered by the LCA study).

Product description:

If required by the customer, the paired sheet piles can be secured against displacement by interlock pressed-in or by welds with 200 – 600 mm standard spacing with guaranteed minimum strength of 75 kN at up to 5 mm sheet pile displacement per the pressed-in area (formed by 3 press-in points) or per one weld. The pressing quality is periodically examined on test device.

Sheet pile perforation: The sheet piles are provided with holes with diameter between 30 and 70 mm based on order.

The maximum hole distance from the sheet pile face is 700 mm.

Weight	25 – 136 kg/m
Maximum shipping length	24 000 mm
Type	single, double, triple
Technical delivery conditions	EN 10 248-1
Tolerances	EN 10 248-2
Available lenghts	6 – 24 m, other lengths, if agreed
Paired lenghts	6 – 22 m, other lengths, if agreed
Packing	crane bundles up to 5 000 kg
Marking	as required by the customer and on attached nameplate

For more information on the products see the SHEET PILES – PRODUCT CATALOGUE/ PRODUKTOVÝ KATALOG ŠTĚTOVNIC / PRODUKTKATALOG SPUNDBOHLEN / КАТАЛОГ ПРОДУКЦИИ ШПУНТОВЫЕ СВАИ КАТАЛОГ ПРОДУКЦИИ ШПУНТОВЫЕ СВАИ 2019.

Following Act No. 22/1997/Coll. and Government Regulation No. 163/2002, as amended by Government Regulation No. 312/2005/Coll. and Government Regulation No. 215/2016/Coll. a declaration of conformity is issued for the rolled sheet piles confirming that the products comply with the requirements of technical regulations.

The conformity assessment is conducted separately for each EU Member State pursuant to applicable national regulations. For example, it is conducted by authorized body Strojírenský zkušební ústav, s.p. for product placing on the Czech market, by ZETOM Katowice for product placing on the Polish market (in accordance with Act Dz.U. 2016 r. poz. 1966), by TÜV NORD for product placing on the German market and by CONSIGLIO SUPERIORE DEI LAVORI PUBBLICI – Attestto di Qualificazione for product placing on the Italian market (in accordance with standard D.M. 17. 01. 2018: Norme tecniche per le costruzioni).

Application

- Flood protection
- Port structures
- Bridge cofferdams
- Deep foundations
- Underground structures
- Retaining walls

UN CPC code:412 “Products of iron or steel”

Geographical scope:

Module A1, A2, C, D: EU, Global

Module A3: Czech

LCA information

Functional unit / declared unit:

Declared unit is **1t** of manufactured products **– SHEET PILES**

Reference service life: Not applicable

Time representativeness: Data input based on data related to the year 2019. All generic data refer to the Ecoinvent v3.8 database

Database(s) and LCA software used: SimaPro 9.4, Ecoinvent 3.8

Description of system boundaries:

[a) Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)

Module A1-A3 includes the supply of steel slab, which is the only material input of the production process. The modules also include the data on transportation of raw materials to the manufacturing site, in terms of type of transport (trucks or ship, etc.), the distances and the overview of the trucks. In particular, the steel slabs are bought and sent to the manufacturing site via ship and via truck.

The modules A1-A3 also include the inputs and outputs related to the processes taking place in the manufacturing site and modelled through specific data provided by VÍTKOVICE STEEL a.s.. The data collected from the producer include: the list of material inputs needed for the production process and their transport to the manufacturing site; the electricity and fuel consumption; the water consumption, which is mainly used in the machine cooling system; the production waste, including the disposal code, the transport to waste treatment in terms of truck capacity and distances and their disposal.

The entire process has been modelled by including energy consumptions, involved materials, wastes, water and emissions. Machines, infrastructure, construction, production equipment, and tools have not been included in the system boundary. Regarding the data on the waste produced during the manufacturing process, VÍTKOVICE STEEL a.s. provided information specifying the types and amount of waste produced. In particular, metal scraps coming from the oxy-fuel cutting, the descaling and the final cut processes are fully recycled.

Modules A4 and A5 have not been considered, together with module B.

C1 – Deconstruction of demolition

Electricity consumption for dismantling is assumed to be 37 kWh/t.

C2 – Transport

An average distance of 100 km has been assumed for the transport to recycling facility.

C3 – Waste processing

Regarding the disposal and the recycling potential, the proportion of the steel material in the product that is recycled in a subsequent system is assumed to be equal to 100 % on a weight basis.

C4 – Disposal

A landfill percentage of 0 % was assumed.

D – Benefits and loads beyond the system boundary

Module D considers the potential environmental benefit of putting recycled steel back on the market. The advantage is considered as the difference between the impacts of a blast furnace, in which virgin ores are used, and steel mill, using scraps. In calculating the environmental advantage, the melting yield is considered and the content of recycled material already present in the purchased slabs is deducted.

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	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	EU	GLO, EU	CZ										EU	EU	EU	EU	EU
Specific data used						-	-	-	-	-	-	-	-	-	-	-	-
Variation – products						-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites						-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	**Weight, kg**	**Post-consumer material, weight-%**	**Biogenic material, weight-% and kg C/kg**
Low alloyed steel	970,4	40 %	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Steel handle	0,00112	<0,1 %	0
Wooden slats	0,009	<0,1 %	6,71

Dangerous substances from the candidate list of SVHC for Authorisation	**EC No.**	**CAS No.**	**Weight-% per functional or declared unit**
-	-	-	-

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).

VÍTKOVICE STEEL

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	1,51E+03	2,10E+02	1,66E+02	1,88E+03	1,97E-01	2,14E+01	0,00E+00	0,00E+00	-1,01E+03
GWP-biogenic	kg CO_2 eq.	3,15E+00	-7,77E-01	-5,54E+00	-3,16E+00	4,20E-02	1,95E-02	0,00E+00	0,00E+00	3,18E+00
GWP-luluc	kg CO_2 eq.	1,11E+00	1,09E-01	1,41E-01	1,36E+00	1,73E-04	1,01E-02	0,00E+00	0,00E+00	-2,87E-01
GWP-total	kg CO_2 eq.	1,51E+03	2,09E+02	1,60E+02	1,88E+03	2,40E-01	2,15E+01	0,00E+00	0,00E+00	-1,01E+03
ODP	kg CFC 11 eq.	6,96E-05	4,11E-05	3,85E-05	1,49E-04	2,61E-08	4,82E-06	0,00E+00	0,00E+00	-4,05E-05
AP	mol H^+ eq.	6,60E+00	5,80E+00	7,80E-01	1,32E+01	1,64E-03	8,52E-02	0,00E+00	0,00E+00	-3,68E+00
EP-freshwater	kg P eq.	7,18E-01	5,08E-03	1,99E-01	9,22E-01	8,88E-05	1,61E-03	0,00E+00	0,00E+00	-4,00E-01
EP-marine	kg N eq.	1,41E+00	1,39E+00	1,78E-01	2,98E+00	4,83E-04	2,48E-02	0,00E+00	0,00E+00	-8,73E-01
EP-terrestrial	mol N eq.	1,48E+01	1,54E+01	1,38E+00	3,16E+01	5,23E-03	2,71E-01	0,00E+00	0,00E+00	-9,26E+00
POCP	kg NMVOC eq.	6,36E+00	3,98E+00	4,65E-01	1,08E+01	1,45E-03	8,33E-02	0,00E+00	0,00E+00	-5,09E+00
ADP-minerals&metals*	kg Sb eq.	2,10E-02	2,09E-04	1,94E-04	2,14E-02	8,49E-06	9,77E-05	0,00E+00	0,00E+00	-7,64E-04
ADP-fossil*	MJ	1,58E+04	2,93E+03	4,37E+03	2,31E+04	8,93E+00	3,20E+02	0,00E+00	0,00E+00	-1,03E+04
WDP	m^3	4,00E+02	8,09E+00	3,18E+01	4,40E+02	7,33E-02	1,06E+00	0,00E+00	0,00E+00	-5,39E+01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

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

VÍTKOVICE STEEL

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Occurrence of the disease	1,25E-04	9,01E-06	1,77E-06	1,36E-04	2,82E-08	1,60E-06	0,00E+00	0,00E+00	-6,78E-05
IRP	kBq U235 eq.	9,89E+01	2,21E+01	4,11E+01	1,62E+02	4,54E-01	1,70E+00	0,00E+00	0,00E+00	-1,81E+01
ETP-fw	CTUe	4,46E+04	1,52E+03	9,43E+02	4,71E+04	6,26E+00	2,61E+02	0,00E+00	0,00E+00	-3,03E+04
HTP-c	CTUh	1,84E-05	9,68E-08	3,74E-08	1,86E-05	6,58E-10	9,54E-09	0,00E+00	0,00E+00	-5,42E-06
HTP-nc	CTUh	3,62E-05	1,06E-06	9,13E-07	3,82E-05	6,48E-09	2,64E-07	0,00E+00	0,00E+00	-2,08E-05
SQP	dimensionless	5,58E+03	2,86E+02	5,00E+02	6,37E+03	1,59E+01	1,89E+02	0,00E+00	0,00E+00	-2,00E+03
Acronyms	**PM**=Potential occurrence of disease due to particulate matter emissions, **IRP**=Potential effect of human exposure to the isotope 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									

Resource use indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	1,69E+03	5,91E+01	2,18E+02	1,96E+03	7,06E+00	5,40E+00	0,00E+00	0,00E+00	-2,11E+02
PERM	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
PERT	MJ	1,69E+03	5,91E+01	2,18E+02	1,96E+03	7,06E+00	5,40E+00	0,00E+00	0,00E+00	-2,11E+02
PENRE	MJ	1,67E+04	3,10E+03	4,77E+03	2,46E+04	9,10E+00	3,40E+02	0,00E+00	0,00E+00	-1,08E+04
PENRM	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
PENRT	MJ	1,67E+04	3,10E+03	4,77E+03	2,46E+04	9,10E+00	3,40E+02	0,00E+00	0,00E+00	-1,08E+04
SM	kg	9,70E-01	0,00E+00	0,00E+00	9,70E-01	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	1,63E+00	0,00E+00	0,00E+00	1,63E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+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									

Waste indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	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
Non-hazardous waste disposed	kg	0,00E+00	0,00E+00	4,90E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	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

Output flow indicators

Results per functional or declared unit										
Indicator	**Unit**	**A1**	**A2**	**A3**	**Tot.A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	2,49E-03	2,49E-03	0,00E+00	0,00E+00	1,00E+03	0,00E+00	1,00E+03
Materials for energy recovery	kg	0,00E+00	0,00E+00	4,10E+00	4,10E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Information on biogenic carbon content

Results per functional or declared unit		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	6,71E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO_2.

Other environmental performance indicators

The company applies an integrated EN ISO 9001 quality management system, EN ISO 14001 environmental management system and ČSN ISO 450001 occupational health and safety management system certified by TÜV NORD CERT GmbH.

References

‘National programme of environmental labelling’ – CZ (NPEZ)

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures

EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

EN ISO 14040:2006 Environmental management - Life Cycle Assessment - Principles and Framework

EN ISO 14044:2006 Environmental management - Life Cycle Assessment – Requirements and guidelines

EN 15643-2:2011 Sustainability of construction works - Assessment of buildings - Part 2: Framework for the assessment of environmental performance

TNI CEN/TR 15941:2012 Sustainability of construction works - Environmental product declarations - Methodology for selection and use of generic data

Act. No. 541/2020 Coll., as amended (Waste Act)

Decree No. 8/2021 Coll. Waste catalogue – Waste catalogue

Regulation (EC) No 1907/2006 of the European Parliament concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and establishing a European Chemicals Agency - REACH (Registration, Evaluation and Authorisation of Chemicals

SimaPro LCA Package, Pré Consultants, the Netherlands, www.pre-sustainability.com

Ecoinvent Centre, www.Ecoinvent.org