

Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Vertical roof outlet with integrated bitumen sleeve

An average product including sub-products of the same type.

from

TOPWET s.r.o.

TOPWET®

SYSTÉMY ODVODNĚNÍ
PLOCHÝCH STŘECH

Programme:

Programme operator:

Typ EPD

EPD registration number:

Publication date:

Valid until:

"National Environmental Labeling Program" - Czech Republic (NPEZ)

Ministry of the Environment of the Czech Republic

EPD of multiple products from a given company – average product

3015-EPD-030068949

2025-08-15

2030-08-15

An EPD should provide current information and may be updated if conditions change.



General information

Programme information

Programme:	"National Environmental Labeling Program" - Czech Republic (NPEZ)
Address:	Ministry of the Environment of the Czech Republic Department of Voluntary Instruments 100 10 Praha 10, Vršovická 1442/65
Website:	www.mzp.cz , www.cenia.cz
E-mail:	info@mzp.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)

Product Category Rules (PCR): *EN 15804:2012+A2:2019/AC:2021*

Life Cycle Assessment (LCA)

LCA accountability: *TOPWET s.r.o.*

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☒ EPD verification by accredited certification body

Third-party verification: **Technický a zkušební ústav stavební Praha, s.p.** is an approved certification body accountable for the third-party verification.
190 00 Praha 9, Prosecká 811/76a, CZ

The certification body is accredited by: **Českým institutem pro akreditaci, o.p.s., Osvědčení č. 456/2024**

Verifier: Ing. Lenka Vrbová



Procedure for follow-up of data during EPD validity involves third party verifier:

☐ Ano ☒ ne

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.

Company information

Owner of the EPD: TOPWET s.r.o.

Náměstí Viléma Mrštíka 62, 664 81 Ostrovačice, CZ

IČO: 27377377

Contact:

Martin Pánek, martin.panek@topwet.cz, +420 720 970 740

Description of the organisation:

TOPWET s.r.o. is a Czech family-owned company with a long-standing tradition in the production of building elements and accessories. As the leading Czech manufacturer of drainage systems for flat roofs, TOPWET offers a comprehensive system for the drainage of flat roofs, terraces, and related components. A major highlight is their range of two-stage roof drains with integrated waterproofing membranes and scuppers with a lowered discharge edge.

TOPWET's products outperform competing solutions due to their optimal materials, particularly the use of polyamide PA6 for drain bodies, and innovative technical designs. This has earned the company international recognition, with products exported to markets like Germany and the USA.

The company's long-term collaboration with research departments at Brno University of Technology (VUT Brno), especially the Faculty of Civil Engineering (FAST VUT Brno), has led to the development of numerous proprietary products and technologies, some of which are protected by industrial design rights or patents.

Product-related or management system-related certifications:

The quality of products is ensured by an effective quality management system in accordance with EN ISO 9001 and complies with the technical regulations related to the specific type of product. A Declaration of Conformity is issued for each product.

Name and location of production site(s):

TOPWET s.r.o.

Náměstí Viléma Mrštíka 62, 664 81 Ostrovačice, CZ

Product information

Product name: Vertical roof outlet with integrated bitumen sleeve

Product identification:

An average product including sub-products of the same type.

TW 75 S BIT	TWTE 125 S BIT	TWOP TUR 160 BIT	TW SAN BZ 110 BIT	TWJ 125 BIT
TW 110 S BIT	TWT 50 V BIT	TWP 50 BIT	TW SAN BZ 125 BIT	TWJ 160 BIT
TW 125 S BIT	TWT 75 V BIT	TWP 75 BIT	TWP SAN 50 BIT	TWJE 50 BIT
TW 160 S XL BIT	TWT 110 V BIT	TWP 110 BIT	TWP SAN 75 BIT	TWJE 75 BIT
TWE 75 S BIT	TWT 125 V BIT	TWP 125 BIT	TWP SAN 90 BIT	TWJE 90 BIT
TWE 110 S BIT	TWTE 50 V BIT	TWP 160 BIT	TWP SAN 110 BIT	TWJE 110 BIT
TWE 125 S BIT	TWTE 75 V BIT	TW SAN 50 BIT	TWP SAN 125 BIT	TWJE 125 BIT
TWE 160 S XL BIT	TWTE 110 V BIT	TW SAN 63 BIT	TWP SAN 160 BIT	TWJE 160 BIT
TW 75 V BIT	TWTE 125 V BIT	TW SAN 75 BIT	TWOP SAN 50 BIT	TWJ BZ 50 BIT
TW 110 V BIT	TWO 50 BIT	TW SAN 90 BIT	TWOP SAN 75 BIT	TWJ BZ 75 BIT
TW 125 V BIT	TWO 75 BIT	TW SAN 110 BIT	TWOP SAN 90 BIT	TWJ BZ 90 BIT
TWE 75 V BIT	TWO 110 BIT	TW SAN 125 BIT	TWOP SAN 110 BIT	TWJ BZ 110 BIT
TWE 110 V BIT	TWO 125 BIT	TW SAN 140 BIT	TWOP SAN 125 BIT	TWJ BZ 125 BIT
TWE 125 V BIT	TWO 160 BIT	TW SAN 160 XL BIT	TWOP SAN 160 BIT	TWJ UNI 50 BIT
TWN V220 BIT	TWO 160 XL BIT	TWE SAN 50 BIT	TWB 50 S BIT	TWJ UNI 75 BIT
TWN V300 BIT	TWO TUR 160 BIT	TWE SAN 63 BIT	TWB 75 S BIT	TWJ UNI 90 BIT
TWN V500 BIT	TWOD 50 BIT	TWE SAN 75 BIT	TWBE 50 S BIT	TWJ UNI 110 BIT
TWN V300 XL BIT	TWOD 75 BIT	TWE SAN 90 BIT	TWBE 75 S BIT	TWJ UNI 125 BIT
TWN V500 XL BIT	TWOD 110 BIT	TWE SAN 110 BIT	TWB 50 V BIT	TWC 50 BIT
TWNE V500 BIT	TWOD 125 BIT	TWE SAN 125 BIT	TWB 75 V BIT	TWC 75 BIT
TWNE V500 XL BIT	TWOD 160 BIT	TWE SAN 140 BIT	TWBE 50 V BIT	TWC 110 BIT
TWT 75 S BIT	TWOP 50 BIT	TWE SAN 160 XL BIT	TWBE 75 V BIT	TWC 125 BIT
TWT 110 S BIT	TWOP 75 BIT	TW SAN BZ 50 BIT	TWJ 50 BIT	TWC 160 BIT
TWT 125 S BIT	TWOP 110 BIT	TW SAN BZ 75 BIT	TWJ 75 BIT	TWCE 50 BIT
TWTE 75 S BIT	TWOP 125 BIT	TW SAN BZ 90 BIT	TWJ 90 BIT	TWCE 75 BIT
TWTE 110 S BIT	TWOP 160 BIT	TW SAN BZ 100 BIT	TWJ 110 BIT	TWCE 110 BIT

TWCE 125 BIT	TWC 150x150 BIT	TWPP 125 BIT	TWPP 100x300 BIT	TWC 125x0 BIT
TWCE 160 BIT	TWC 100x300 BIT	TWPP 50x100 BIT	TWC 40 MINI BIT	TWC 160x0 BI
TWC 50x100 BIT	TWPP 50 BIT	TWPP 50x150 BIT	TWC 50x0 BIT	
TWC 50x150 BIT	TWPP 75 BIT	TWPP 100x100 BIT	TWC 75x0 BIT	
TWC 100x100 BIT	TWPP 110 BIT	TWPP 150x150 BIT	TWC 110x0 BIT	

Product description:

TOPWET roof drain with integrated modified asphalt strip sleeve, vertical design, outer diameter 110 mm, thermally insulated - double-walled with protective basket.

Used for drainage of flat roofs and terraces. The integrated bitumen sleeve ensures a safe and reliable connection to the roof waterproofing layer.

The heated version of the roof drain prevents freezing and clogging, thus ensuring reliable water drainage from the roof even at sub-zero temperatures.

The drains are equipped with a protective basket against clogging with dirt.

Standard: EN 1253-2 Floor drains and roof inlets - Part 2: Roof inlets and floor drains without odor trap.

Product link: <https://www.topwet.com/produkt/tw---s-bit>

UN CPC code:

36320 Pipes, hoses and their fittings, of plastics

Geographical scope:

The generic data used from the Ecoinvent database are used with validity for the Czech Republic (e.g. energy inputs) and in the event that data for the Czech Republic are not available, data valid for the EU or according to the location of the supplier are used. Based on the evaluation according to EN 15804+A2, Annex E, tab. E.1 the generic data used meet the quality level - medium.

Product packaging:

Each drain is packed in an LDPE bag. In the case of a larger quantity of pieces, they are placed in a cardboard box of 5 pieces. When sold on pallets, 12 boxes are placed on a pallet.

Environment and health during use

During the entire production process, it is not necessary to take any special health protection measures beyond the legally specified industrial protection measures for production employees.

LCA information

Functional unit / declared unit:

The declared unit is 1 kg of the average manufactured product – Vertical roof outlet with integrated bitumen sleeve.

An average product including sub-products of the same type.

Designation	Unit	Value
Declared unit	kg	1
Conversion factor to 1 kg	kg	1

Reference service life:

The reference service life is not declared. However, considering the high-quality materials used and the emphasis on durability, it can be expected that TOPWET roof drains will have a service life comparable to or even longer than the roof covering itself, i.e. several decades, provided proper installation and maintenance are ensured. It can therefore be stated that the service life of the drain is limited by the service life of the structure in which the product is installed.

Time representativeness:

For specific data, the manufacturer's data for the **year 2024** is used. For generic data, data from the Ecoinvent database version 3.11 is used. Based on the evaluation according to EN 15804+A2, Annex E, tab. E.1 the generic data used meet the quality level - very good.

Database(s) and LCA software used:

SimaPro Craft calculation software, version 10.2, Ecoinvent database version 3.11.

GWP-GHG from electricity production: 0.526 kg CO₂ eq/kWh (CZ residual mix).

Description of system boundaries:

“Cradle to gate with options, modules C1–C4, module D and with optional modules”

The production phase includes the following modules:

- **A1 - extraction and processing of raw materials** and production of packaging from input raw materials
- **A2 - transport of input raw materials** from the supplier to the manufacturer, waste removal
- **A3 - production of products**, production of auxiliary materials and semi-finished products, energy consumption, including waste processing until reaching a state where it ceases to be waste or after removal of the last material residues during the production phase.
Results A1-A3 include a “**compensation report**” of biogenic CO₂ from packaging released in module A5, as module A5 is not fully included.

The construction phase includes the following modules:

- **A4 - transport to the construction site.** Transport is carried out by truck with a capacity of 16-24 t (EURO 6). Transport of the declared product unit over a distance of 1 km is considered.

The end-of-life phase includes modules:

- **C1**, deconstruction, demolition; of a product from a building including its dismantling or demolition, including the initial sorting of materials at the construction site. The decomposition and/or dismantling of the product is part of the demolition of the entire building. In this case, the environmental impact is assumed to be very small and can be neglected.
- **C2**, transport to the waste processing site; transport of the discarded product as part of waste processing, e.g. to a recycling site, and transport of waste, e.g. to a final disposal site.
Transport from the dismantled building is carried out by a truck with a load capacity of 7.5 - 16

t (EURO 6) to an inert material landfill as a demolition of a mixed building, estimated transport distance according to calculations: 25 km to the recycling center or landfill.

- **C3**, waste treatment for reuse, recovery and/or recycling; e.g. collection of waste fractions from deconstruction, and treatment of waste from material streams intended for reuse, recycling and energy recovery. A scenario is assumed where 100% of the product after disassembly and sorting is used for energy recovery (ZEVO). The costs of crushing mixed plastic and emissions from combustion are included. The burdens from the treatment and disposal of product packaging are also included.
- **C4**, Waste disposal including pre-treatment and management of the disposal site. Landfilling of the product is not expected.

Benefits and costs beyond the product system boundary are presented in module D.

Module D includes:

- **D**, potential for reuse, recovery and/or recycling, expressed in net impacts or benefits. In the module D scenario, the heat from combustion is taken into account (without considering emissions).

Production:

Semi-finished Roof Drain

PA6 granulate is poured into a hopper. From the hopper, the material enters a heated barrel containing a rotating screw. The screw conveys the granulate forward while melting and homogenizing it through friction and the heat of the barrel's heating bands. The molten plastic is then injected under pressure into the mold cavity. Injection speed and pressure are critical for properly filling the mold and ensuring the quality of the part. After the mold is filled, the holding pressure phase follows. Since plastic shrinks as it cools, pressure must be maintained on the melt in the mold cavity to compensate for shrinkage and to prevent sink marks or incomplete filling.

The mold is equipped with cooling channels through which water flows, ensuring rapid and uniform cooling of the plastic, which is essential for dimensional stability and minimizing internal stresses. The plastic in the mold cavity solidifies and takes its final shape. The mold opens, the semi-finished product is ejected, and the cycle repeats.

Preparation of the Semi-finished Product for Membrane Application

Before the actual assembly of the roof drain, the semi-finished products must be carefully sanded with sandpaper. This applies to all contact surfaces where the waterproofing membrane will be placed or where pipe sections will be fitted. All semi-finished products must be dry, degreased, and their anchoring holes covered with temporary adhesive labels. Pipe contact surfaces are not sanded. Pipe ends must be flat, free of burrs, and cleared of any cutting residues.

Application of a modified asphalt strip collar

An asphalt penetrating varnish is applied to the contact surfaces of the semi-finished product, followed by a technological break. The sleeve is placed on the semi-finished product and connected to it by gradual melting with a hot air gun. Another technological break follows.

Assembly and Completion of the Flange

Adhesive is applied again along the entire perimeter of the semi-finished product already bonded with the membrane. The edge of the membrane that will be under the flange is heated with a hot air gun. Adhesive (Sika) is also applied along the entire perimeter of the flange contact surface. The flange is then placed onto the semi-finished product and centered using protruding pins or dowels. In a pneumatic press, the flange is pressed using a pressing fixture.

An ultrasonic welding machine is then used to create a weld on all protruding pins. Excess material created during welding is removed with a chisel. Finally, paint is applied along the entire perimeter of the flange to seal the joint with the membrane.

The finished part is then labeled with a production tag. Before packaging, a technological pause of at least 12 hours is required to ensure complete curing and stabilization of all joints.

More information:

Information module **A5** from the construction phase was not included in the LCA due to the difficult availability of input data and is therefore not declared.

Information modules from the use phase **B1 to B7** are also not declared, as these types of products, assuming correct use, do not require maintenance, repair or replacement during the normal life time in the use phase. They also do not require energy or water consumption during the use phase.

For the study, all operational data related to the consumption of main and auxiliary materials for the production of the product, energy data, diesel consumption and the distribution of annual waste production and emissions according to plant records were taken. In terms of produced waste, only those wastes that are clearly related to production activities were included in the analysis.

The processes required for the installation of production equipment and the construction of infrastructure were not included in the analysis. Also, administrative processes are not included – inputs and outputs are balanced per production phase.

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	x	ND	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x
Geography	GLO	GLO, EU	EU, CZ	EU									EU	EU	EU	EU	GLO, EU
Specific data used	> 95 %					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	< 10 %					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0 %					-	-	-	-	-	-	-	-	-	-	-	-

The data used to calculate the EPD conforms to the following principles:

Technological point of view: Data corresponding to the current production of individual types of partial products of the plant and corresponding to the current state of the technologies used are used.

Based on the evaluation according to EN 15804+A2, Annex E, tab. E.1 the generic data used meet the quality level - very good.

The aspect of completeness and completeness: Most of the input data is based on consumption balances, which are precisely recorded in the manufacturer's information system. The reliability of the source of specific data is determined by the uniformity of the collection methodology of the information system.

Consistency point of view: Uniform points of view are used throughout the report (allocation rules, age of data, technological scope of validity, temporal scope of validity, geographical scope of validity).

Credibility aspect: All important data were checked for adherence to cross-comparison of mass balances.

The GWP-GHG variability between the sub-products included (see Product Description) is less than 10%. Production takes place at only one production site.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Content information

Product components	Weight %	Post-consumer material, weight-%	Biogenic carbon content in kg C/DU
Polyamide	53,2	0	0
Bitumen	45,8	0	0
Elastomer	0,6	0	0
Chemical components	0,2	0	0
Other components (steel)	0,2	0	0
TOTAL	100	0	0
Packaging materials	Weight %	Weight-% (versus the product)	Biogenic carbon content in kg C/DU
Paper and cardboard	28,0	9,0	4,06E-02
Packaging foil	6,7	2,2	0
Pallets	65,4	21,1	1,20E-01
TOTAL	100	32,3	1,60E-01
Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit (DU)
They are not	-	-	-

Substances listed on the list of substances of very high concern subject to authorization by the European Chemicals Agency are not contained in the product in declarable quantities.

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804:2012+A2:2019/AC:2021 (characterisation factors based on EF 3.1 package)

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ ekv.	6,68E+00	1,84E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,89E-03	3,46E-01	0,00E+00	-1,51E+00
GWP-biogenic	kg CO ₂ ekv.	3,00E-02	8,43E-07	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,70E-06	1,00E+00	0,00E+00	-7,61E-04
GWP-luluc	kg CO ₂ ekv.	3,48E-03	5,74E-07	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,84E-06	1,11E-05	0,00E+00	-1,06E-04
GWP - total	kg CO ₂ ekv.	6,71E+00	1,84E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,90E-03	1,35E+00	0,00E+00	-1,51E+00
ODP	kg CFC 11 ekv.	1,49E-07	4,04E-11	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,29E-10	3,20E-10	0,00E+00	-6,48E-08
AP	mol H ⁺ ekv.	1,96E-02	3,73E-06	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,20E-05	1,01E-03	0,00E+00	-1,25E-03
EP-freshwater	kg P ekv.	3,17E-03	1,24E-07	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,96E-07	5,01E-05	0,00E+00	-3,12E-05
EP-marine	kg N ekv.	5,01E-03	8,82E-07	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,83E-06	8,47E-04	0,00E+00	-4,36E-04
EP-terrestrial	mol N ekv.	4,76E-02	9,52E-06	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,05E-05	5,35E-03	0,00E+00	-4,59E-03
POCP	kg NMVOC ekv.	1,56E-02	5,97E-06	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,91E-05	1,30E-03	0,00E+00	-2,43E-03
ADP-minerals&metals*	kg Sb ekv.	8,34E-06	6,28E-09	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,01E-08	4,56E-08	0,00E+00	-4,82E-07
ADP-fossil*	MJ	1,24E+02	2,59E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,31E-02	2,63E-01	0,00E+00	-2,33E+01
WDP*	m ³	-4,63E+00	9,21E-05	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,95E-04	4,43E-03	0,00E+00	-2,33E-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.
Disclaimer: If module C is included then when assessing the results of A1-A3, also take into account the results of modules C.

Additional mandatory and voluntary impact category indicators

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ¹	kg CO ₂ ekv.	6,71E+00	1,84E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,90E-03	3,46E-01	0,00E+00	-1,51E+00
PM	Disease incidence	1,26E-07	1,16E-10	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,71E-10	9,30E-09	0,00E+00	-6,48E-09
IRP	kBq U235 ekv.	1,06E+00	3,77E-05	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,21E-04	1,45E-03	0,00E+00	-1,13E-02
ETP- fw	CTUe	1,33E+01	3,77E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,21E-02	1,42E+00	0,00E+00	-6,96E-01
HTP-c	CTUh	1,72E-09	2,84E-13	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,10E-13	1,47E-10	0,00E+00	-1,88E-10
HTP- nc	CTUh	1,06E-07	1,50E-11	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,82E-11	4,97E-09	0,00E+00	-1,59E-09
SQP	dimensionless	3,66E+01	1,32E-02	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,23E-02	2,70E-01	0,00E+00	-3,35E-01
Acronyms	GWP-GHG = this indicator includes all greenhouse gases except biogenic uptake and emissions of carbon dioxide 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, PM = Potential incidence of disease due to PM emissions, IRP = Potential Human exposure efficiency relative to U235, ETP-fw = Potential Comparative Toxic Unit for ecosystems, HTP-c = Potential Comparative Toxic Unit for humans, HTP-nc = Potential Comparative Toxic Unit for humans, SQP = Potential soil quality index															

¹ 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 CO₂ is set to zero.

Resource use indicators

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	8,59E+00	4,74E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,52E-03	1,35E-02	0,00E+00	-1,33E-01
PERM	MJ	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	8,59E+00	4,74E-04	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,52E-03	1,35E-02	0,00E+00	-1,33E-01
PENRE	MJ	6,94E+01	2,00E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,40E-03	5,81E-02	0,00E+00	-4,71E-01
PENRM	MJ	1,82E+01	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	8,76E+01	2,00E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,40E-03	5,81E-02	0,00E+00	-4,71E-01
SM	kg	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	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															

Additional environmental information - Waste indicators

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,08E-03	1,05E-03	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,94E-06	3,59E-01	0,00E+00	-1,51E-04
Non-hazardous waste disposed	kg	1,61E-01	6,04E-07	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,37E-03	3,93E-02	0,00E+00	-1,46E-02
Radioactive waste disposed	kg	1,03E-05	9,37E-09	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,00E-08	3,69E-07	0,00E+00	-2,79E-06

Additional environmental information - Output flow indicators

Results per functional or declared unit

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	8,31E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	1,12E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	9,78E-03	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	2,11E-01	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-4,50E-01
Exported energy, thermal	MJ	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,28E+00

The result tables shall only contain values or the letters "ND" (Not Declared). It is not possible to specify ND for mandatory indicators. ND shall only be used for voluntary parameters that are not quantified because no data is available.

Other environmental performance indicators

Additional environmental information

Differences versus previous versions

This is the first version of the EPD.

ABBREVIATIONS

Abbreviation	Definition
General abbreviations	
EN	European standard
EPD	Environmental product declaration
EF	Environmental footprint
GPI	General guidelines for the environmental labelling program (in the Czech Republic – NPEZ)
ISO	International Organization for Standardization
LCA	Life cycle assessment
LCI	Life cycle inventory analysis
LCIA	Life cycle impact assessment
DJ / DU	Declared unit
ILCD	International Reference Life cycle data system
PCR	Product category rules
c-PCR	Additional rules for product categories
PRICE	European Committee for Standardization
CPC	Central Product Classification (Central Product Classification)
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
GRI	Global Reporting Initiative
National	Undeclared
Environmental impact indicators (EN 15804)	
Greenhouse gas	a gas in the atmosphere that absorbs and emits infrared radiation, thereby contributing to the warming of the planet (CO ₂ , CH ₄ , N ₂ O and others)
GWP	Global warming potential (kg CO ₂ eq.)
GWP-fossil	Global warming potential from fossil fuels (kg CO ₂ eq.)
GWP-biogenic	Global warming potential from biogenic sources (kg CO ₂ eq.)
GWP- luluc	Global warming potential due to land use and land use change (kg CO ₂ (eq.))
ODP	Stratospheric ozone depletion potential (kg CFC-11 equivalent)
AP	Acidification potential, cumulative exceedance (mol H ⁺ (eq.))
EP	Eutrophication potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-seawater	Seawater eutrophication potential (kg N eq.)
EP-soils	Land eutrophication potential (mol N eq.)
POCP	Ground-level ozone formation potential (kg NMVOC equivalent)
ADP	Potential for resource/raw material depletion
ADP - minerals and metals	Potential for depletion of non-fossil resources/raw materials (kg Sb equivalent)
ADP-fossil	Fossil resource/raw material depletion potential (MJ)
WDP	Water shortage potential (m ³)
Additional environmental impact indicators (EN 15804)	
GWP-GHG	Global warming potential for greenhouse gases (kg CO ₂ eq.). The indicator includes all greenhouse gases except biogenic uptake and emissions of carbon dioxide 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.

Abbreviation	Definition
PM	Potential incidence of diseases due to particulate matter emissions
IRP	Potential effect of human exposure to the isotope U235
ETP- fw	Potential toxicity benchmark for ecosystems
HTP-c	Potential human toxicity comparator – carcinogenic effects
HTP- oc	Potential human toxicity comparator - non-carcinogenic effects
SQP	Potential Soil Quality Index
Resource utilization indicators	
PERE	Renewable primary energy consumption excluding energy sources used as raw materials (MJ)
PERM	Consumption of renewable primary energy sources used as raw materials (MJ)
PERT	Total consumption of renewable primary energy sources (primary energy and primary energy sources used as raw materials) (MJ)
PENRE	Consumption of non-renewable primary energy excluding energy sources used as raw materials (MJ)
PENRM	Consumption of non-renewable primary energy sources used as raw materials (MJ)
PENRT	Total consumption of non-renewable primary energy sources (primary energy and primary energy sources used as raw materials) (MJ)
SM	Consumption of secondary raw materials (kg)
RSF	Consumption of renewable secondary fuels (MJ)
NRSF	Consumption of non-renewable secondary fuels (MJ)
FW	Net drinking water consumption (m ³)
Waste indicators	
HWD	Hazardous waste removed (kg)
NHWD	Other waste removed (kg)
RWD	Radioactive waste removed (kg)
Output flow indicators	
CRU	Reusable building elements (kg)
MR	Materials to be recycled (kg)
MER	Materials for energy recovery (kg)
EEE	Exported energy, electricity (MJ)
EET	Exported thermal energy (MJ)
Lifecycle phases/modules	
A1	Mining and processing of raw materials, processing of input secondary raw materials
A2	Transport to the manufacturer
A3	Production
A4	Transport to the construction site
A5	Installation in a building
B1	Use or application of the installed product
B2	Maintenance
B3	Repair
B4	Exchange
B5	Reconstruction
B6	Operating energy consumption

Abbreviation	Definition
B7	Operating water consumption
C1	Deconstruction / Demolition
C2	Transportation to the waste processing site
C3	Waste treatment for reuse, recovery and/or recycling
C4	Removal
D	Reuse, recovery and recycling potential
Other relevant terms	
Substances of Very High Concern (SVHC)	Substances of very high concern
CAS number	An internationally recognized unique numerical code used in chemistry for chemical substances
CF	Characterization factor
RSL	Reference life span
MJ	Megajoule
kg	Kilogram
m ³	Cubic meter
NM VOC	methane volatile organic compounds
Sat eq .	Antimony equivalents
P eq .	Phosphorus equivalents
Not equal .	Nitrogen equivalents
Equivalent to CFC-11	Chlorofluorocarbon-11 equivalents
CO ₂ equivalent	Carbon dioxide equivalents
kg C	Kilograms of carbon
kg CO ₂ eq .	Kilograms of carbon dioxide equivalent
OTE	OTE, as (in the Czech Republic) – energy market operator

References

EN 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 ISO 14063:2020 Environmental management - Environmental communication - Guidelines and examples

EN 15643:2021 Sustainability of construction works - Framework for assessment of buildings and civil engineering works

EN 15941:2024 Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data

EN 15942:2021 Sustainability of construction works - Environmental product declarations - Communication format business-to-business

EN 17672:2022 Sustainability of construction works - Environmental product declarations - Horizontal rules for business-to-consumer communication

EN 16908:2017+A1:2022 Cement and building lime - Environmental product declarations - Product category rules complementary to EN 15804

EN 16449:2014 Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide

ILCD General guide for Life Cycle Assessment (2010) - JRC EU

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives; CZ - 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)

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

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

Ecoinvent Centre, www.Ecoinvent.org

EU PEF (EF reference package) - <https://eplca.jrc.ec.europa.eu/LCDN/EN15804.html>

Explanatory documents are available from the head of Technical Support of the EPD owner.