

ENVIRONMENTAL PRODUCT DECLARATION

Extruded clay roof tiles, including Profil, Rona, Classic, Casta, Austrian Biber, Hargita, Kerka and Taston

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

Products included in the EPD:

Extruded clay roof tile

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com

EPD of multiple products based on the average results of the product group

EPD Owner

swisspor Hungary SEE
Korlátolt Felelősségű
Társaság

Programme

International EPD System
www.environdec.com

Programme operator

EPD International AB

Registration number

EPD-IES-0030976:002

Version date

2026-06-25

Validity date

2031-06-25



swisspor ton

GENERAL INFORMATION

Programme information

Programme	International EPD System
Address	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website	www.environdec.com
E-mail	support@environdec.com

Product category rules

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
Product Category Rules (PCR)	2019:14 Construction products (EN 15804+A2) (version 2.0.1) 2.0.1
PCR review was conducted by	The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/support .

Verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via	☒ EPD verification through an individual EPD verification ☐ EPD verification through EPD Process Certification* ☐ EPD verification through a fully pre-verified tool
Third-party verifier	Silvia Vilčeková (SILCERT, Ltd.)
Approved by	International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier	☐ Yes ☒ No
*EPD Process Certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on www.environdec.com .	

Ownership and limitations on use of EPD

Limitations

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

Ownership

The EPD Owner has the sole ownership, liability, and responsibility for the EPD.

INFORMATION ABOUT EPD OWNER

EPD Owner	swisspor Hungary SEE Korlátolt Felelősségű Társaság
Contact person name	Dr. Gergely Meszaros
Contact person e-mail	info@swisspor.hu
Organisation address	Cserépgyár utca 1. 8960 Lenti Hungary
LCA Practitioner	Artur Szilágyi, artur@lifecycle.hu

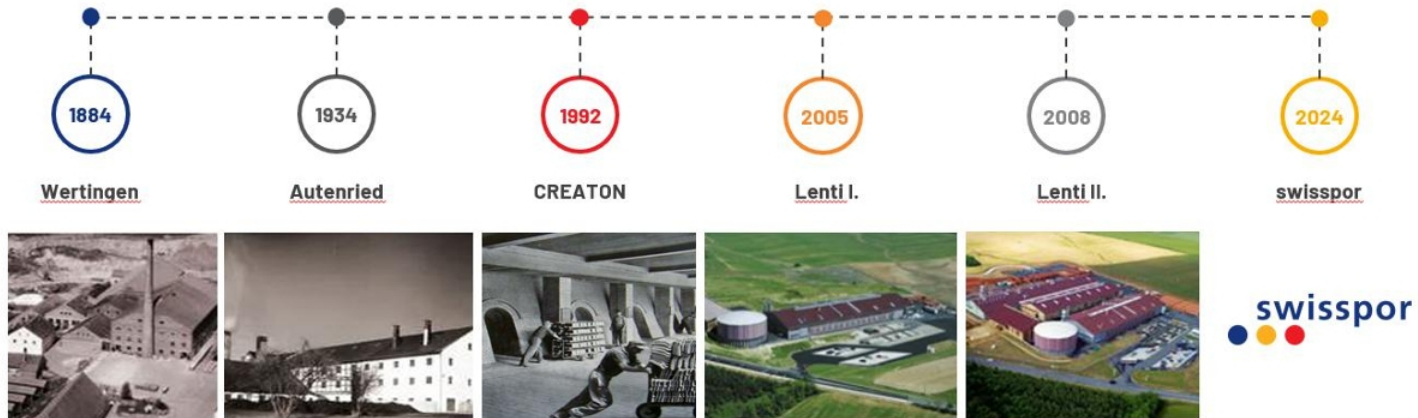
Description of the organisation of the EPD Owner

As a subsidiary of the swisspor Group, swisspor Hungary SEE Kft. operates a manufacturing facility in Lenti, Hungary. The site produces both extruded and pressed ceramic roof tiles, serving the construction markets across Europe. The company focuses on industrial efficiency and the production of durable clay building materials within the group's regional production network.



HISTORICAL OVERVIEW

A material that has been used for more than 6,000 years, more than a century of ceramic roof tile manufacturing heritage, state-of-the-art production equipment, excellent Hungarian raw materials, and the expertise of our colleagues – these are the foundations of our success.



The company's history began in 1884 in Bavaria, where a brick factory considered state-of-the-art by the standards of the time was established. From the very beginning, the factory earned an excellent reputation. As the first steps toward building an international presence, preparations began around the turn of the millennium for the construction of the company's first foreign manufacturing facility.

As part of this process, the company acquired more than 100 hectares of high-quality land in the small district belonging to Lenti, Zala County, near Hungary's western border. The site contains clay reserves sufficient for nearly 150 years of production. In addition to the outstanding raw material source, the decision was supported by the proximity of the Slovenian, Croatian, and Austrian borders, providing access not only to the domestic market but also to the markets of three neighbouring countries.

The Lenti I. plant commenced operations in 2005, focusing on the production of extruded roof tiles. Thanks to favourable market and production conditions, the company commissioned its second production unit, Lenti II. plant, in 2008, which, in terms of productivity and equipment, ranks among the most modern roof tile factories in Central and Eastern Europe.

In its highly automated plants employing industrial robots, pressed base roof tiles and their associated accessory tiles are manufactured.

In less than ten years, export activities covering the entire Southeastern European region came under the management of the Hungarian company, encompassing the following countries: Hungary, Romania, Moldova, Bulgaria, Slovenia, Croatia, Serbia, Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, and Kosovo.

CURRENT SITUATION OVERVIEW

As part of the swisspor Group, swisspor Hungary SEE Kft. currently operates as a member of the international swisspor Group, offering modern construction industry solutions. The company's core activities focus on the development, manufacturing, and sales of comprehensive roofing systems, with particular emphasis on ceramic roofing solutions.



The members of the swisspor Group throughout Europe.

The company's ceramic roof tile brand, swissporTON, was created through the combination of modern construction technology and long-standing ceramic roof tile manufacturing expertise. The brand builds on the industrial know-how and professional experience historically associated with the former operations of CREATON Polska and CREATON South-East Europe Kft., which for many years played a significant role in the European roof tile manufacturing market.

PRODUCT INFORMATION

Product name	Extruded clay roof tile
Product identification	Standard extruded clay roofing tiles and accessories produced by swisspor Hungary SEE Kft., in various colors and shapes, including Profil, Rona, Classic, Casta, Austrian Biber, Hargita, Kerka and Taston brands.
Product description	The product is used as sloped exterior roof cover. Harmonized technical specification: EN 1304:2005 The expected service life of our products (ESL – Estimated Service Life), taking into account the 50-year warranty ensured based on quality characteristics, the planned service life of building structures, and sector-specific reference data, can be estimated at 100 years, provided proper installation and use as intended. Product- and management system related certifications: ISO 9001 ISO 14001 ISO 45001 ISO 50001
Product information from external sources	https://www.swissporton.com/products/clay-roof-tiles
Technical purpose of product	The product is used as sloped exterior roof cover.
Manufacturing or service provision description	Manufacturing starts with clay extraction activities located in the immediate vicinity of the Lenti plant. First the topsoil is removed and used as a recultivation material. Once the clay layers are exposed, the material is extracted using diesel-powered hydraulic excavators. The raw clay is then transported by heavy-duty trucks to on-site aging piles (depots), where it undergoes a natural homogenization process. Once in the factory, the process starts with the forming stage, where the clay is extruded into specific geometries before entering a controlled drying phase. This is followed by engobing, where mineral-based coatings are applied for color and surface protection. Finally, the tiles are fired within refractory (chamotte) cassettes to ensure structural integrity and prevent warping. Then, after quality checks, the finished tiles are packaged and stacked on wooden pallets for transport.
Material properties	Volumetric mass density: 2000 kg/m ³
Manufacturing site	Lenti I Cserépgyár utca 1. 8960 Lenti Hungary
UN CPC code	3735. Non-refractory ceramic building bricks, flooring blocks, support or filler tiles, roofing tiles, chimney-pots, cowls, chimney liners, architectural ornaments and other ceramic construction goods
Geographical scope(s)	Europe
Geographical scope description	The product is manufactured in Hungary and sold in Europe.
Actual or technical lifespan	100 year(s)

PRODUCT IMAGES

PRODUCT PORTFOLIO

PROFIL, RONA, CLASSIC, CASTA, AUSTRIAN BIBER, HARGITA, KERKA, TASTON

ENVIRONMENTAL INDICATOR

Global Warming Potential (GWP)* result: 264 kg CO₂-eq./t = 13 kg CO₂-eq./m²

* The climate declaration reports greenhouse gas emissions expressed in CO₂ equivalents, based on verified LCA results prepared in accordance with ISO 14025

MANUFACTURING SITE DESCRIPTION

The Lenti I. manufacturing plant was established in 2004 in the clay-rich Zala region of western Hungary.

The facility is located directly adjacent to the clay quarry, providing efficient raw material supply and optimized logistics conditions.



QUALITY ASSURANCE

The products are manufactured in accordance with applicable European standards for clay roofing tiles. Continuous quality control is applied throughout the manufacturing process to ensure dimensional accuracy, mechanical strength, frost resistance, and visual consistency.

REFERENCE ROOF APPLICATIONS



TECHNICAL CHARACTERISTICS AND PERFORMANCE

Technical performance

Product name	Min. roof pitch	Useful length	Useful width	Weight / piece	Pieces/m2		Type category	Type category	Type category	Type category	Type category
PROFIL	35°	265-305 mm	180 mm	2.5 kg	18.2-21						
RONA segment cut	35°	240-280 mm	180 mm	2.6 kg	19.8-23.1						
RONA straight cut	35°	280-320 mm	180 mm	2.7 kg	17.4-19.8						
KERKA segment cut	35°	265-305 mm	180 mm	2.5 kg	18.2-21						
KERKA straight cut	35°	280-320 mm	180 mm	2.7 kg	17.4-19.8						
CLASSIC round cut	30°	145-165 mm	180 mm	1.8 kg	33.6-38.3						
CLASSIC segment cut	30°	145-165 mm	180 mm	1.9 kg	33.6-38.3						
CLASSIC straight cut	30°	145-165 mm	180 mm	1.9 kg	33.6-38.3						
CLASSIC pointed cut	30°	145-165 mm	180 mm	1.7 kg	33.6-38.3						
CASTA round cut	30°	145-165 mm	170 mm	2.1 kg	35.7-40.6						

CASTA hexagonal cut	30°	145-165 mm	170 mm	2.1 kg	35.7-40.6						
AUSTRIAN BIBER round cut	30°	155-175 mm	200 mm	2.2 kg	28.6-32.3						
AUSTRIAN BIBER straight cut	30°	155-175 mm	200 mm	2.3 kg	28.6-32.3						
TASTON	90°	110-150 mm	400 mm	2.0 kg	16.7-22.8						

CONTENT DECLARATION

Content declaration of multiple products	Content declaration represents average product
Hazardous and toxic substances	The product does not contain any substances from the SVHC candidate list in concentrations exceeding 0.1% of its weight.

PRODUCT CONTENT

Content name	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material ¹ , kg C/declared unit
Clay	1000	0	0	0
Total	1000	0	0	0
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂			

PACKAGING MATERIALS

Material name	Mass, kg	Mass-% (versus the product)	Biogenic material ¹ , kg C/declared unit
Wood and fibreboard	3.3	0.33	1.4
Plastic	1	0.1	0
Total	4.3	0.43	1.4
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂		

LCA INFORMATION

EPD based on declared or functional unit	Declared unit
Declared unit and reference flow	Extruded clay roof tile Mass: 1000 kg
Conversion factor to mass	1
Are infrastructure or capital goods included in any upstream, core or downstream processes?	☐ Yes ☒ No
Data sources used for this EPD	ecoinvent database (general) ecoinvent 3.11 database Other database ecoinvent 3.12
LCA Software	OpenLCA 2.5.0
Additional information about the underlying LCA-based information	openLCA 2.6.1
Version of the EN 15804 reference package	EF Reference Package 3.1
Characterisation methods	European Commission: Joint Research Centre, "Updated characterisation and normalisation factors for the environmental footprint 3.1 method," Publications Office of the European Union, 2023.
Technology description including background system	Product and Composition The products are durable extruded and pressed ceramic roof tiles manufactured primarily from natural clay (approx. 99% by mass), with minor additions of engobe for coloring and gypsum for molding. Manufacturing Process (A1–A3) Production begins with local open-pit clay extraction at the Lenti site (A1). The raw clay is homogenized, shaped via extrusion or mechanical pressing, and fired in natural gas-fueled kilns (A3). LCA data is based on independent mass and energy balances for each production line, with energy and water use averaged over a full year to account for seasonal variations. Construction and Use (A4–B7) Tiles are transported to sites via 16–32t trucks (A4). Installation (A5) assumes a 2% wastage rate and manual application on timber frameworks. Given the extreme longevity and inert nature of fired clay, the use stage (B1–B7) requires no material or energy inputs and is excluded. End-of-Life (C1–D) At the end of the service life, tiles are manually removed (C1) and transported 80 km (C2) for mechanical crushing (C3) and landfilling (C4). Although the crushed ceramic is 100% recyclable as secondary aggregate, no environmental benefits are claimed in Module D to maintain a conservative assessment.
Scrap (recycled material) inputs contribution level	Less than 10% of the GWP-GHG results in modules A1-A3 come from scrap inputs

Data quality assessment

Description of data quality assessment and reference years	Primary data are collected by the EPD owner for the year 2025. The amount of energy carriers and raw materials used are measured using standard meters and scales. Cross-checks concerning the plausibility of mass and energy flows are carried out on the data. There is no poor or very poor quality data used.
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DATA QUALITY ASSESSMENT					
Process name	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Clay extraction and manufacturing	Collected data, database	EPD owner	2025	Primary data	71%
Raw materials other than clay	Collected data, database	EPD owner, Ecoinvent v3.12	2025	Secondary data	0%
Downstream transport and construction	Collected data, database	EPD owner, Ecoinvent v3.12	2025	Secondary data	0%
End-of-life treatment	Collected data, database	EPD owner, Ecoinvent v3.12	2025	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					71%
Note	The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.				

Comment on the data sources and other information in the table	Since the largest contributor to the environmental impacts is natural gas combustion during manufacturing, of which primary data is used, therefore data quality is excellent.
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ELECTRICITY USED IN THE MANUFACTURING PROCESS IN A3 (A5 FOR SERVICES)		
Type of electricity mix	Specific electricity mix as generated, or purchased from an electricity supplier, demonstrated by a contractual instrument	
Energy sources	Hydro	19.01%
	Wind	0%
	Solar	0%
	Biomass	0%
	Geothermal	0%
	Waste	0%

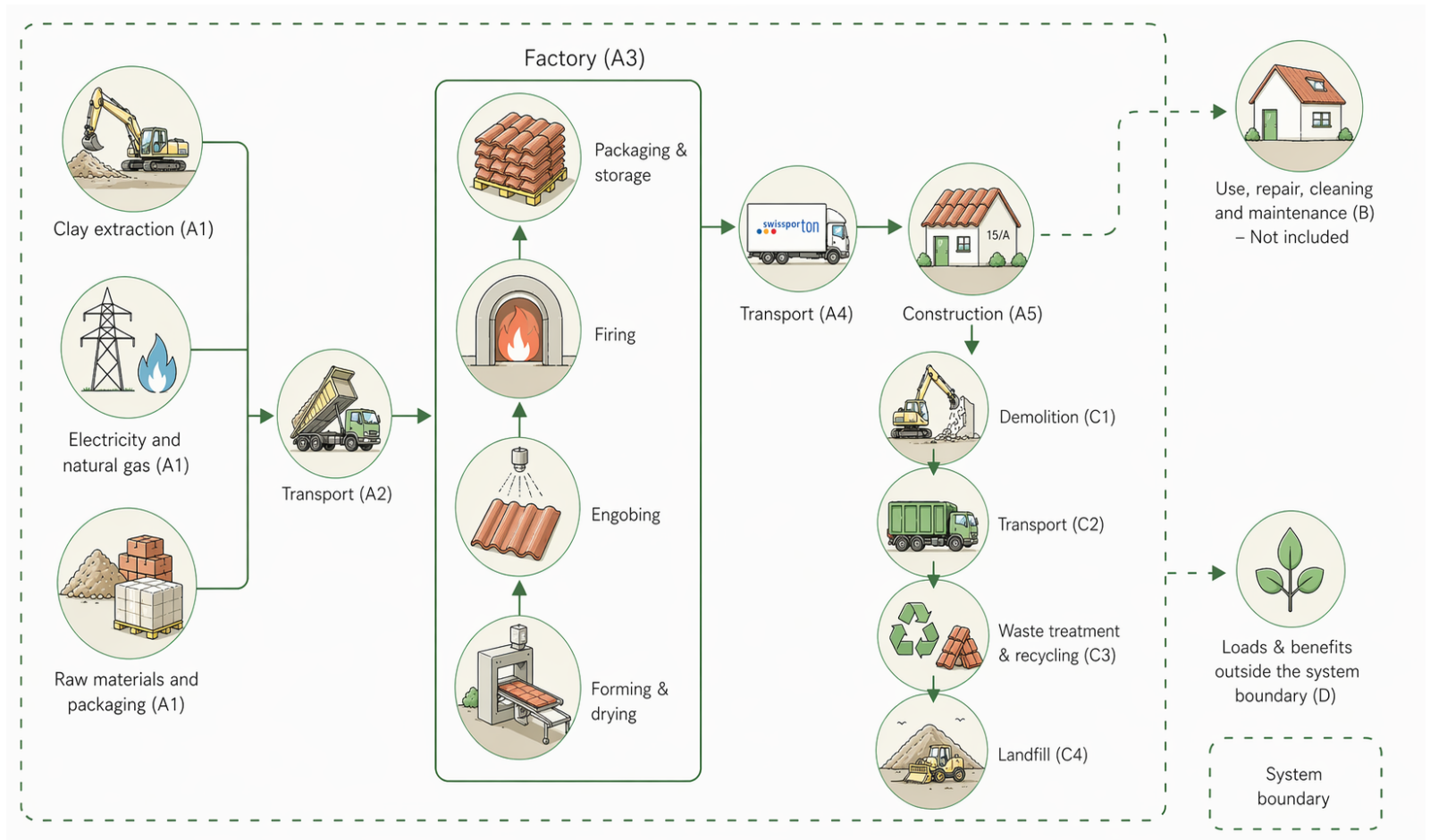
	Nuclear	39.06%
	Natural gas	23.39%
	Coal	16.15%
	Oil	2.39%
	Peat	0%
	Other	0%
Climate impact (GWP-GHG):	0.4 kg CO ₂ eq./kWh	

SYSTEM BOUNDARY

Description of the System boundary	b) Cradle to gate with options, modules C1-C4, module D and with optional modules (A1-A3 + C + D and additional modules).
Excluded modules	No, there is no excluded module, or there are no excluded modules

	Product stage			Construction process stage		Use stage							End of life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport to site	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	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	Europe	Europe	Hungary	Europe	Europe	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Europe	Europe	Europe	Europe	Europe
Share of specific data	71%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disclaimer	The share of specific/primary data and both variations (products and sites) refer to GWP-GHG results only.																

Process flow diagram(s) related images



DEFAULT SCENARIO

Name of the default scenario	Default scenario
Description of the default scenario	Tiles are transported to sites via 16–32t trucks (A4). Installation (A5) assumes a 2% wastage rate and manual application on timber frameworks. Given the extreme longevity and inert nature of fired clay, the use stage (B1–B7) requires no material or energy inputs and is excluded. At the end of the service life, tiles are manually removed (C1) and transported 25 km (C2) for mechanical crushing (C3) and landfilling (C4). Crushed waste tiles is 100% recyclable as secondary aggregate, thus environmental benefits from the replacement of gravel are claimed in Module D.

Module A4: Transport to the building site

Explanatory name of the default scenario in module A4	Road transport to site
Description of the default scenario in module A4	Detailed transport distances are collected by the EPD owner along with average loads per transport mode. All of the products are transported on road by trucks, mostly by self-loading trucks (crane trucks) and the rest by normal lorries. Gross average load is 22.3 metric tonne per delivery which includes packaging materials. There are also negligible amount of small parcel delivery using courier service. Based on the average, 420 t km average transport has been calculated and modeled with ecoinvent process “market for transport, freight, lorry, 16–32 metric ton, diesel, EURO 5, RER”.

Module A5: Installation in the building

Explanatory name of the default scenario in module A5	Construction
Description of the default scenario in module A5	Installation (A5) assumes a 2% wastage rate and manual application on timber frameworks.

Module C: End-of-life

Explanatory name of the default scenario in module C	Recycling as aggregate
Description of the default scenario in module C	The end-of-life stage (Modules C1–C4) assumes manual product removal with zero environmental impact (C1). Waste transport (C2) is modeled as an 25 km road journey using a 16–32 tonne EURO 5 lorry. Waste processing (C3) involves loading and mechanical crushing using 3.3 kWh of diesel per tonne modeled using global ecoinvent dataset for diesel-powered machinery.

Module D: Beyond product life cycle

Explanatory name of the default scenario in module D	100% recycling
Description of the default scenario in module D	Since the product can be recycled as backfilling material, is assumed that it replaces an equivalent amount of gravel on the market. Energy recovery of production and packaging wastes are assumed to be negligible, thus excluded from the analysis.

ENVIRONMENTAL PERFORMANCE

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.

Mandatory environmental performance indicators according to EN 15804

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - total	GWP-total	kg CO ₂ eq.	2.63E+2	7.99E+1	7.01E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.77E+0	1.20E+0	0.00E+0	-1.83E-2
Climate change - fossil	GWP-fossil	kg CO ₂ eq.	2.64E+2	7.98E+1	7.04E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.76E+0	1.20E+0	0.00E+0	-1.83E-2
Climate change - biogenic	GWP-biogenic	kg CO ₂ eq.	-1.66E+0	5.09E-2	-3.22E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.04E-3	1.95E-4	0.00E+0	-2.40E-5
Climate change - land use and land-use change	GWP-luluc	kg CO ₂ eq.	2.26E-2	2.57E-2	1.02E-3	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.53E-3	1.21E-4	0.00E+0	-1.40E-5
Ozone depletion	ODP	kg CFC-11 eq.	1.56E-5	1.80E-6	3.52E-7	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.08E-7	1.84E-8	0.00E+0	-2.06E-10
Acidification	AP	mol H ⁺ eq.	4.79E-1	2.50E-1	1.53E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.49E-2	1.07E-2	0.00E+0	-1.09E-4
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	6.45E-2	5.54E-3	1.41E-3	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.30E-4	3.84E-5	0.00E+0	-4.52E-6
Eutrophication aquatic marine	EP-marine	kg N eq.	1.65E-1	8.73E-2	5.32E-3	ND	ND	ND	ND	ND	ND	ND	0.00E+0	5.21E-3	5.00E-3	0.00E+0	-3.25E-5
Eutrophication terrestrial	EP-terrestrial	mol N eq.	1.62E+0	9.47E-1	5.43E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	5.65E-2	5.47E-2	0.00E+0	-3.71E-4
Photochemical ozone formation	POCP	kg NMVOC eq.	6.72E-1	3.96E-1	2.24E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.36E-2	1.64E-2	0.00E+0	-1.13E-4
Depletion of abiotic resources - minerals and metals	ADP-minerals&metals ¹	kg Sb eq.	1.34E-4	2.78E-4	8.70E-6	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.66E-5	4.44E-7	0.00E+0	-9.55E-8
Depletion of abiotic resources - fossil fuels	ADP-fossil ¹	MJ, net calorific value	4.48E+3	1.13E+3	1.14E+2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	6.71E+1	1.55E+1	0.00E+0	-2.40E-1
Water use	WDP ¹	m ³ world eq. deprived	1.47E+1	5.86E+0	4.32E-1	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.49E-1	3.89E-2	0.00E+0	-1.59E-2
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																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
Disclaimer 1	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																

Additional mandatory environmental performance indicators

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - GWP-GHG	GWP-GHG ¹	kg CO ₂ eq.	2.64E+2	7.99E+1	7.05E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.76E+0	1.20E+0	0.00E+0	-1.83E-2
Acronyms	GWP-GHG = Global warming potential greenhouse gas.																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
Disclaimer 1	The GWP-GHG indicator is termed GWP-IOBC/GHG in the ILCD+EPD+ data format. The 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.																

Additional voluntary environmental performance indicators according to EN 15804

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter emissions	PM	Disease incidence	3.20E-5	6.37E-6	7.85E-7	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.80E-7	3.05E-7	0.00E+0	-1.77E-9
Ionizing radiation - human health	IRP ¹	kBq U235 eq.	3.06E+1	1.29E+0	6.40E-1	ND	ND	ND	ND	ND	ND	ND	0.00E+0	7.67E-2	6.49E-3	0.00E+0	-1.08E-3
Eco-toxicity - freshwater	ETP-fw ²	CTUe	3.32E+2	1.67E+2	1.03E+1	ND	ND	ND	ND	ND	ND	ND	0.00E+0	9.95E+0	1.57E+0	0.00E+0	-6.03E-2
Human toxicity - cancer effects	HTP-c ²	CTUh	3.26E-8	1.30E-8	9.37E-10	ND	ND	ND	ND	ND	ND	ND	0.00E+0	7.77E-10	1.15E-10	0.00E+0	0.00E+0
Human toxicity - non-cancer effects	HTP-nc ²	CTUh	6.45E-7	6.84E-7	2.77E-8	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.08E-8	2.05E-9	0.00E+0	-1.55E-10
Land-use related impacts/soil quality	SQP ²	Dimensionless	2.01E+2	6.69E+2	1.90E+1	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.99E+1	1.07E+0	0.00E+0	-1.86E-1
Acronyms	PM = Potential incidence of disease due to particulate matter 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.																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
Disclaimer 1	This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.																
Disclaimer 2	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.																

Resource use indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ, net calorific value	1.11E+2	1.85E+1	2.62E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.10E+0	9.73E-2	0.00E+0	-1.46E-2
PERM	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ, net calorific value	1.11E+2	1.85E+1	2.62E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.10E+0	9.73E-2	0.00E+0	-1.46E-2
PENRE	MJ, net calorific value	4.48E+3	1.13E+3	1.14E+2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	6.72E+1	1.55E+1	0.00E+0	-2.40E-1
PENRM	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ, net calorific value	4.48E+3	1.13E+3	1.14E+2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	6.72E+1	1.55E+1	0.00E+0	-2.40E-1
SM	kg	3.09E+0	1.09E+0	8.57E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	6.51E-2	8.82E-3	0.00E+0	-4.89E-4
RSF	MJ, net calorific value	6.08E-1	2.55E-1	1.77E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.52E-2	8.96E-4	0.00E+0	-1.31E-4
NRSF	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	m³	4.15E-1	1.33E-1	1.14E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	7.95E-3	9.33E-4	0.00E+0	-3.67E-4
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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

Waste indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	5.72E+0	6.88E+0	2.65E-1	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.10E-1	5.05E-2	0.00E+0	-3.62E-3
NHWD	kg	3.63E+2	9.04E+1	1.08E+1	ND	ND	ND	ND	ND	ND	ND	0.00E+0	5.39E+0	2.51E-1	0.00E+0	-3.23E-2
RWD	kg	7.26E-3	3.11E-4	1.52E-4	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.86E-5	1.52E-6	0.00E+0	-2.60E-7
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

Output flow indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	kg	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	kg	1.60E+0	1.01E+0	5.40E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	6.00E-2	7.50E-3	0.00E+0	-4.17E-4
EEE	MJ, net calorific value	3.38E-1	2.08E-1	1.13E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.24E-2	7.24E-4	0.00E+0	-1.25E-4
EET	MJ, net calorific value	1.39E-1	2.64E-1	8.50E-3	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.58E-2	3.44E-4	0.00E+0	-3.68E-5
Acronyms	CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

ADDITIONAL ENVIRONMENTAL INFORMATION

As part of the swisspor Group, swisspor Hungary SEE Kft. (operating under the swissporTON brand) integrates Environmental, Social and Governance (ESG) principles into its operations and long-term business approach.

The company focuses on improving energy efficiency in production, optimizing the use of raw materials, increasing recycled content where technically feasible, and supporting resource-efficient construction solutions. Industrial activities, including raw material sourcing in quarries, are carried out in compliance with applicable legal and environmental requirements, with consideration for biodiversity protection and responsible land use.

The company is also gradually expanding the use of life cycle assessment methodologies and Environmental Product Declarations (EPDs) in accordance with relevant European standards.

ADDITIONAL SOCIAL AND ECONOMIC INFORMATION

As part of the swisspor Group, swisspor Hungary SEE Kft. contributes to regional economic stability through its industrial hub in Lenti, supporting both direct employment and a broader supply chain across fourteen countries.

The company prioritizes a safe and inclusive working environment by adhering to group-wide social principles, which include protecting employee well-being, providing fair labor conditions, and fostering professional development through training and apprenticeships.

As a member of the swisspor Group, the company aligns with international standards such as the UN Global Compact, ensuring ethical business practices, transparency, and a zero-tolerance policy toward discrimination.

INFORMATION RELATED TO EPDS OF MULTIPLE PRODUCTS

Description of how the averages have been determined	The Lenti factory manufactures extruded and pressed ceramic products from shared raw materials, in various geometries and accessory tiles within the system boundary. Mass and energy balances were established independently for each production line through metering, while shared processes were allocated based on total production mass. Since all products originate from a single site, no multi-site averaging was required. Production data is averaged over a full year to account for seasonal variations in energy and water use.
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ABBREVIATIONS

Not applicable

REFERENCES

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VERSION HISTORY

Version 001, 2026-06-25: Original version of the EPD

