TENAXPANEL

ENVIRONMENTAL PRODUCT DECLARATION

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

WALL- AND ROOF PANELS WITH AN INSULATION CORE MADE OF POLYISOCYANURATE

EPD®

ECO PLATFORM EPD VERIFIED

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	S-P-12697
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Multiple product EPD based on a representative product

Included products: W PIR S, W PIR T, W PIR H

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

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GENERAL INFORMATION

PROGRAMME INFORMATION

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

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product category rules (PCR): *PCR 2019:14. Construction Products v1.3.2*

PCR review was conducted by: *The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat info@environdec.com.*

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

☐ EPD process certification ☒ EPD verification

Third party verifier: Elisabet Amat Guasch

Approved by: The International EPD® System

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

☐ Yes ☒ No

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.

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COMPANY INFORMATION

Owner of the EPD:

TENAX PANEL, SIA
Spodrības iela 1, Dobele
Latvija, LV-3701
Tel: +371 63707154
Mail: tenaxpanel@tenaxgrupa.lv
Web: www.tenaxpanel.lv

Description of the organisation:

TENAX PANEL, SIA is a sandwich panel producer and a subsidiary of TENAX, SIA as part of a group of companies producing construction and industrial materials based in Dobele, Latvia.

Product-related or management system-related certifications:

TENAX PANEL, SIA is committed to providing reliable and sustainable products and services. The company has an ISO 14001 certified Environmental management system, ISO 9001 certified Quality management system and ISO 45001 certified Occupational health and safety management system.
TENAX group. The company has an ISO 50001 certified Energy management system and ISO 27001 certified Information security, cybersecurity and privacy protection system.

Name and location of production site(s):

The declaration applies to sandwich panels produced at the production site in Lauku iela 23, Dobele, Latvia.

PRODUCT INFORMATION

Product name:

Double skin steel faced sandwich panels with a core made of polyisocyanurate

Product identification:

TENAX W PIR S, TENAX W PIR T, TENAX W PIR H

Product description:

Prefabricated double skin steel faced sandwich panels with a core made of polyisocyanurate used for self-supporting application in wall (facade and partition), roof and ceiling structures. The internal and external facings of the panels are made of flat, lightly profiled or profiled steel sheets protected against corrosion with zinc and organic (polymer) coatings. The thermal insulating core material is made of polyisocyanurate (PIR) in accordance with European Standard EN 13165. The core is auto-adhered on both sides with coated steel facings to form the composite resistant to tensile, compressive and shear forces.
The product complies with the Regulation (EU) No 305/2011 considering the harmonized technical specification EN 14509. The product is put on the market with a Declaration of performance and the CE-mark containing the required construction data.
The sandwich panels are manufactured and delivered as a project specific product, with width and length specified for the particular building. This allows to minimize cut-off waste during the installation.

UN CPC code:
412 - Structural metal products

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Product characteristics:

Technical specifications for sandwich panels with a core made of polyisocyanurate are given in:

- EN 14509:2013, Self-supporting double skin metal faced insulating panels
- EN 13165+A2:2016, Thermal insulation products for buildings. Factory made rigid polyurethane foam (PUR) products

Characteristic	Value	Unit
Density of the insulating layer	40	kg/m^3
Thickness of panel*	50-200	mm
Modular width of panel	1000-1200	mm
Thickness of internal facing	0.4-0.7	mm
Thickness of external facing	0.5-0.7	mm
Thermal conductivity of the insulating material	0.021	W/(m·K)
Heat transfer coefficient	0.47-0.1	W/(m^2·K)

* when the outer layers are even, this is the overall height of the panel (D);
on heavily profiled panels, this is the consistent core thickness without profile (dc)

Manufacturing process of the product:

The production of sandwich panels is on a continuously operating production line. Manufacture begins by unwinding two galvanized steel coils. Self-adhesive film is added to outer facing surfaces of the metal sheets to protect from scratches during production, handling and transportation. The metal surface is then profiled by rolling dice according to product option. Roll forming shapes the joint locks on the sides of the panel. The foaming station pours liquid polyurethane components which expand in a chemical reaction so the insulating core is formed to necessary thickness and width while passing through the rotating steel plate conveyor. The product is then cut to length in panels according to each order specification thus minimizing cutting works and scraps produced on the construction site. Panels then pass through a cooling section into an automatic stacking system. Afterwards panel stacks are packaged for handling and transportation according to option chosen by the client.

Product processing/installation:

The sandwich panel stacks are unloaded at the job site using crane, forklift or front loader. Panels are lifted into place using lifting equipment or manually and attached to the supporting structure. The facing protective film should be removed before installation / finishing. Careful planning limits cuts on the job site to a minimum.
The sandwich panels are fixed into place with fasteners in either pre-drilled holes or with self-drilling fasteners. For a weather tight building envelope, sealing foam, polyurethane insulation materials, sealing tapes and steel details are used. Manufacturers of these auxiliary materials and details are to produce the necessary EPDs.

Packaging:

Panels are shipped on EPS foam supports with additional EPS sheets and wrapped in stretch wrap film to avoid handling and transportation damage and protect from the weather during short-term storage. The packaging material is to be collected separately and recycled in compliance with local regulations.

End of life:

The steel facing of the sandwich panels can be removed from the insulating core, collected, and reused or recycled after dismantling. The polyurethane core can be incinerated with energy recovery.

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LCA INFORMATION

LCA Practitioner:

Bureau Veritas Latvia SIA, Duntes 17A, Riga, Latvia

Declared unit:

The EPD refers to a declared unit of 1 m² double skin steel faced sandwich panel with a core made of PIR. The results represent a weight of 13.7 kg/m² and a reference thickness of 120 mm. As a result, this EPD declares a specific product with a specific thickness.

System boundaries:

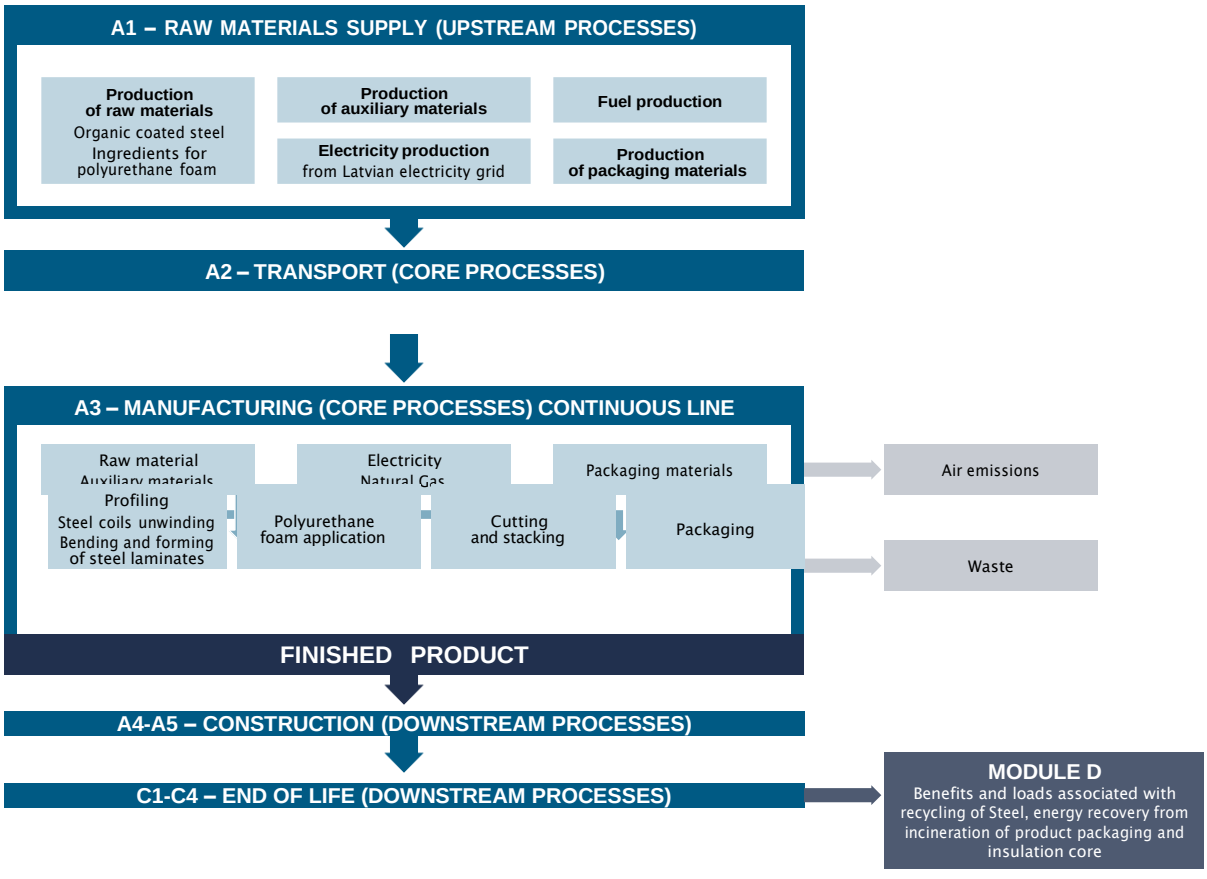
The life cycle assessment of TENAX panels refers to a cradle-to-gate analysis of the product's environmental impacts with options declaring module A4 and A5 as well as the end-of-life modules C1-C4 and D (A1-A3 + A4-A5 + C1-C4 + D).

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	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	EU	EU	LV	EU	EU	–	–	–	–	–	–	–	EU	EU	EU	EU	EU
Specific data used	>90%			–	–	–	–	–	–	–	–	–	–	–	–	–	–
Variation - products	<5%			–	–	–	–	–	–	–	–	–	–	–	–	–	–
Variation - sites	0%			–	–	–	–	–	–	–	–	–	–	–	–	–	–

ND = module not declared

A system diagram depicting the TENAX PANEL process in detail:



The following life cycle phases are part of the analysis:

Module A1-A3 | Production stage
The panels are produced using the following materials:

- galvanized and painted steel sheet coils
- backing film/filament tape made of HDPE attached to the steel sheet
- insulation foam formed from MDI, polyol, catalysts and pentane
- siliconized paper and HDPE tape for containing foam during core forming
- self-adhesive PU foam tape
- EPDM joint gaskets and glue
- standard packaging made up from EPS, stretch wrap and optional cargo straps and spacer boards.

The production stage accounts for all upstream burdens of raw materials supply until panel manufacturing including the transport to the production site in Dobele. The main inputs include the organic coated steel sheets and the insulation material. Thermal energy is provided by natural gas. Electrical energy is obtained directly from the Latvian electricity grid. GWP of Latvian low voltage grid mix is mostly impacted by high share of import from Estonia (high share of fossil fuels) and use of Natural gas as a source of energy for CHP. GWP-GHG of Latvian low voltage grid mix is 0,532 kgCO_2eq per 1 kWh.

Module A4 | Transport
Transportation of the final product, i.e., sandwich panel with PIR insulation core and respective packaging from TENAX PANEL manufacturing plant in Latvia to its customers. Sandwich panel of each specific thickness has its own market, therefore, share of sales has been calculated based on weighted average. Biggest share of weighted average for PIR panel is mainly represented by local market in Latvia (27.51% of the total sales).

Module A5 | Installation
According to EN 16783, ancillary materials used in the process shall be taken into account along with impact of using installation equipment and product wastage. Data for this module has been provided by manufacturing company's partner responsible for installation activities and it includes 0.25 liters of Diesel per 1 m² of the product, 1% product wastage and 0.274 kg of ancillary (fasteners, silicone products, sealing tapes etc.) per 1 m² of the product.

Module C1 | Deconstruction, demolition
Module C1 assumes demolition process and is associated with fuel consumption for building machine operation. Data on both has been provided by manufacturer, considering specific machine operation time of 0.04 hours per 1 m².

Module C2 | Transport
Module C2 considers an average transport distance of 100 km declared by manufacturer and company responsible for installation. Waste transportation is carried out by 16-32 metric ton EURO5 freight lorry.

Module C3 | Waste processing
As c-PCR-005 does not provide any specific guidelines on waste processing module C3 and EN 16783:2017 only states that thermal insulation products can be sorted and separated for recycling or for energy recovery (incineration), guidelines of NPCR 012 Part B have been used for the purpose of this study. Waste processing, therefore, follows the default conservative scenarios provided in NPCR 012 Part B, that are as follows:

- central sorting of mixed construction waste in Waste processing module C3, that foresees sorting activities for separation of Steel sheets from insulation core and following recycling activities of Steel;
- municipal incineration with energy recovery (C3) for waste processing of PIR insulation core and landfilling of ashes from incineration (C4).

Module C4 | Disposal
Module C4 declares the impact from landfilling of ashes from incineration of PIR insulation core. In addition, the environmental impacts declared in module C4 reflect the recycling losses of the steel top layer.

Module D | Credits and loads beyond the system boundary
This study also considers module D (reuse, recovery, recycling, potential). Since Installation module A5 has also been declared, it is possible to declare benefits and loads of packaging materials, as well as benefits and loads of Product wastage. Therefore, recycling rate (avoided product) and incineration share of plastic, recycling metal (staples), incineration of EPS and wooden spacers along with avoided impact of recycled Steel and recovered energy of PIR insulation core incineration have been considered in this module.

Time representativeness of data collection:

Foreground data were collected for the production year 2022. All data are based on annual volumes.

Database and LCA-software used:

This study uses generic background data for the evaluation of upstream environmental impacts from ecoinvent v3.8 database (SimaPro 9.4).

Data quality:

Data collection is based on product specific questionnaires. It follows an iterative process clarifying questions via e-mail, telephone calls or in web meetings. Intensive discussion between TENAX and Bureau Veritas Latvia results in an accurate mapping of product related material and energy flows. This leads to a high quality of foreground data collected. Data collection relies on a consistent process considering the requirements of ISO 14044. The technological, geographical and time-related representativeness of the database was kept in mind when selecting background data. Whenever specific data were missing, either generic datasets or representative average data were used instead.

Estimates and assumptions:

Assumptions and approximations are applied in case of a lack of representative data. All assumptions and approximations are documented precisely and represent a best-guess representation of reality. In case of uncertainty, a conservative approach is chosen.

Cut-off criteria:

The LCA model covers all available input and output flows, which can be represented based on robust data. Data gaps are filled with conservative assumptions from average data (when available) or with generic data and are documented accordingly. Thus, no data were neglected, of which a substantial impact is to be expected. All relevant data were collected comprehensively. Cut-off material and energy flows were chosen carefully based on their expected quantitative contribution as well as potential environmental impacts.

Allocation:

Upstream processes in the supply chain are mainly based on ecoinvent v3.8 background data sets. All information for the allocation of given material and energy flows is based on the ERP- systems of the entire production site. The calculation of thickness-specific amounts is based on suitable allocation factors. Steel scrap as well as waste insulation material is sent to recycling. Even though contribution is not very significant, co-product allocation (physical, mass) is applied. A certain share of the mineral wool waste is deposited and considered in the modelling accordingly.

During this LCA, the polluters pay, and modularity principles have been followed.

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CONTENT INFORMATION

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Steel	7.95	90.9%	0% 0.0
Insulation core (polyisocyanurate)	5.75	0%	0% 0.0
TOTAL	**13.70**	**52.7%**	
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Cargo slings	0.0103	0.075%	0.000
Staples	0.0004	0.003%	0.000
Wooden spacers	0.2000	1.460%	0.374
PET	0.0007	0.005%	0.000
EPS	0.0547	0.399%	0.000
LDPE-film	0.0016	0.012%	0.000
TOTAL	**0.2677**	**1.954%**	**0.374**

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
None			

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ENVIRONMENTAL INFORMATION

The following tables contain the LCA results for a declared unit of 1 m² double skin steel faced sandwich panel with a core made of polyisocyanurate (weight of 13.7 kg/m²; representative thickness of 120 mm).

Potential environmental impact – mandatory indicators according to EN 15804 (EF 3.0 reference package)

Results for 1 m² of TENAX panel (120 mm)									
Indicator	Unit	Tot. A1–A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO2 eq.	2,5E+01	5,1E-01	2,2E+00	7,5E-01	1,9E-01	1,6E+01	2,0E-04	-9,5E+00
GWP-fossil	kg CO2 eq.	2,5E+01	5,1E-01	2,2E+00	7,5E-01	1,9E-01	1,6E+01	2,0E-04	-9,4E+00
GWP-biogenic	kg CO2 eq.	1,4E-02	3,0E-05	1,1E-02	5,2E-05	1,1E-05	5,1E-04	2,7E-08	-7,1E-02
GWP-luluc	kg CO2 eq.	2,5E-02	5,1E-06	1,0E-03	1,8E-05	1,5E-06	7,3E-05	6,8E-09	-6,3E-03
ODP	kg CFC 11 eq.	1,9E-06	1,2E-07	6,5E-07	1,7E-07	4,5E-08	1,6E-07	4,2E-11	-3,1E-07
AP	mol H⁺ eq.	8,6E-02	5,1E-03	2,2E-02	3,8E-03	6,6E-04	1,8E-02	2,1E-06	-4,9E-02
EP-freshwater	kg P eq.	3,1E-04	2,7E-07	4,6E-05	5,2E-07	9,7E-08	2,9E-06	7,1E-10	-5,1E-04
EP-freshwater	kg PO4 eq.	9,4E-04	8,1E-07	1,4E-04	1,6E-06	2,9E-07	8,7E-06	2,2E-09	-1,6E-03
EP-marine	kg N eq.	2,2E-02	1,3E-03	5,3E-03	1,5E-03	2,1E-04	9,5E-03	9,0E-07	-4,9E-03
EP-terrestrial	mol N eq.	2,1E-01	1,4E-02	8,5E-02	1,6E-02	2,3E-03	9,3E-02	9,8E-06	-5,7E-02
POCP	kg NMVOC eq.	6,6E-02	3,7E-03	1,5E-02	4,6E-03	6,3E-04	2,3E-02	2,7E-06	-3,6E-02
ADP-minerals & metals*	kg Sb eq.	1,9E-03	1,8E-08	2,8E-05	3,8E-08	8,2E-09	1,9E-07	9,7E-12	-1,8E-05
ADP-fossil*	MJ	5,2E+02	7,1E+00	3,2E+01	1,0E+01	2,7E+00	1,2E+01	2,7E-03	-1,1E+02
WDP	m³	7,5E+00	-1,2E-03	1,5E+00	2,7E-03	-4,5E-04	1,5E-01	1,1E-06	-8,9E-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.

The GWP-biogenic results have been balanced out in accordance with the following approach - characterization factors for uptake and release of biogenic Carbon dioxide have been set to zero.

Potential environmental impact – additional mandatory and voluntary indicators

Results for 1 m² of TENAX panel (120 mm)									
Indicator	Unit	Tot. A1–A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG*	kg CO2 eq.	1.2E-06	3.6E-08	3.7E-07	6.0E-08	1.4E-08	1.6E-07	5.5E-11	-3.8E-07
PM	Disease incidence	6.7E-01	3.1E-02	1.0E-01	4.5E-02	1.2E-02	3.4E-02	1.1E-05	-5.1E-01
IRP**	kBq U235-equiv.	4.4E+02	2.8E+00	4.6E+01	3.4E+00	1.1E+00	4.2E+01	1.4E-03	-1.9E+02
ETP-fw***	CTUe	9.3E-08	5.1E-11	6.8E-09	5.1E-10	1.5E-11	8.4E-10	1.7E-14	6.3E-09
HTP-c***	CTUh	1.1E-06	4.5E-09	5.8E-08	3.3E-09	1.8E-09	4.4E-08	2.0E-12	-4.5E-07
HTP-nc***	CTUh	7.4E+01	1.9E-02	3.4E+00	3.2E-02	7.2E-03	3.3E-01	3.3E-03	-1.3E+01
SQP***	—	1.2E-06	3.6E-08	3.7E-07	6.0E-08	1.4E-08	1.6E-07	5.5E-11	-3.8E-07
Acronyms	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, cancer effects; HTP-nc = Potential comparative toxic unit for humans, non-cancer effects; SQP = Potential soil quality index								

* The indicator includes all greenhouse gases included in GWP-total. This indicator follows a comparable rationale to the GWP indicator originally defined in EN 15804:2012+A1:2013.

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

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Use of resources

Results for 1 m² of TENAX panel (120 mm)									
Indicator	Unit	Tot. A1–A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2.0E+02	8.0E-03	1.2E+00	1.2E-02	3.1E-03	2.0E-01	4.6E-06	-8.5E+00
PERM	MJ	6.4E+00	2.6E-03	7.0E-01	4.2E-03	1.0E-03	3.8E-02	6.6E-06	-1.8E+00
PERT	MJ	2.0E+02	1.1E-02	1.9E+00	1.7E-02	4.1E-03	2.4E-01	1.1E-05	-1.0E+01
PENRE	MJ	3.9E+02	7.1E+00	3.2E+01	1.0E+01	2.7E+00	1.2E+01	2.7E-03	-1.1E+02
PENRM	MJ	1.3E+02	7.9E-06	8.4E-04	5.9E-05	1.1E-06	9.8E-05	1.6E-08	-1.9E-03
PENRT	MJ	5.2E+02	7.1E+00	3.2E+01	1.0E+01	2.7E+00	1.2E+01	2.7E-03	-1.1E+02
SM	kg	1.2E+01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-01
RSF	MJ	8.7E-16	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	MJ	1.2E-14	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m³	2.1E-01	1.9E-05	4.1E-02	1.7E-04	6.9E-06	2.2E-02	5.3E-08	-5.4E-02
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 production

Results for 1 m² of TENAX panel (120 mm)									
Indicator	Unit	Tot. A1–A3	A4	A5	C1	C2	C3	C4	D
Hazardous ···aste disposed	kg	2.2E-04	1.6E-05	1.7E-04	2.7E-05	7.0E-06	5.2E-05	6.7E-09	-1.3E-04
Non-hazardous waste disposed	kg	5.1E-01	3.0E-04	7.5E-02	6.3E-04	1.1E-04	2.0E-01	7.9E-02	-4.5E-01
Radioactive waste disposed	kg	7.0E-03	5.1E-05	1.3E-04	7.4E-05	1.9E-05	5.0E-05	1.8E-08	-4.5E-04

Output flows

Results for 1 m² of TENAX panel (120 mm)									
Indicator	Unit	Tot. A1–A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0.0E+00	0.0E+00	5.7E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Material for recycling	kg	1.1E-01	0.0E+00	7.0E-03	0.0E+00	0.0E+00	7.9E+00	0.0E+00	0.0E+00
Materials for energy recovery	kg	0.0E+00	0.0E+00	1.9E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Exported energy, electricity	MJ	0.0E+00	0.0E+00	2.5E-01	0.0E+00	0.0E+00	2.3E+01	0.0E+00	0.0E+00
Exported energy, thermal	MJ	0.0E+00	0.0E+00	3.1E+00	0.0E+00	0.0E+00	4.4E+01	0.0E+00	0.0E+00

Interpretation:

The impact on the various environmental impact categories in the life cycle of declared unit of TENAX PANEL products is primarily driven by the production stage (A1-A3) with raw material module A1 having major share of the total impact.
In terms of primary energy demand, the production stage (A1-A3) is the main driver and is accountable for 92% of total consumption, followed by Construction stage (A4-A5) with 5% and End-of-life stage (C1-C4) with 3%.
Other key effect factor, i.e., Freshwater consumption, similarly to primary energy demand, freshwater use level of the Production stage (A1-A3) is also responsible for most of its demand with the 77% share. Second biggest contributor is Installation module A5 with 15%of the total demand, with Distribution module A4 and End-of-Life stage almost non-existent (8%).

Conversion factors:

A scaling factor can be applied to obtain a valid results of impact assessment for a range of each specific thickness within the group. This extrapolation is possible because the product conforms to the rules of the PCR. Following table displays scaling factors that are given per each respective declared unit, i.e., 1 m² of sandwich panel with PIR core and 120mm thickness:

Panel thickness	mm	50	80	100	120	150	175	200
Conversion factor	—	0.79	0.88	0.93	**1.00**	1.09	1.16	1.23

Information on biogenic carbon content

The analyzed product does not contain biogenic carbon. Biogenic carbon content in packaging is 0.374 kg C/kg or 1.0E-01 kg C per Declared unit.

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ADDITIONAL INFORMATION

Optimal application of panels:

TENAX PANEL provides consultations and materials on the advantages and limitations of panel variations for specific use cases in order to ensure optimal performance, lifespan and value for the specific project.

Correct handling and installation of panels:

TENAX PANEL provides customers and users of the products with detailed documentation on storage, handling and installation of the sandwich panels. Furthermore, the Product Technical Details contain technical information useful in the design and installation phases.
Each content can be consulted and downloaded from TENAX PANEL website: www.tenaxpanel.com

Maintenance:

TENAX sandwich panels have an estimated lifespan of 50 years depending on the conditions of use, according to BBSR. The product does not require special maintenance, but lifespan can be prolonged by carrying out maintenance as outlined in Product Use and Maintenance Manual. The products are easily washable and their cleaning does not require chemicals harmful to the environment. Content can be consulted and downloaded from TENAX PANEL website: www.tenaxpanel.com

Rating systems for sustainability of buildings:

The use of TENAX panels helps to obtain the prerequisites and credits for the most important building sustainability assessment systems, including LEED, BREEAM, Miljobyggnad, DGNB. The technical characteristics and certificates of TENAX PANEL products provide credits for these certifications and make them comply with the environmental criteria required by many nations for construction products used on their territory.

Certifications:

TENAX PANEL has an integrated management system certified according to ISO 9001:2015, ISO 14001:2015, ISO 45001:2018, TENAX group certified according to ISO 50001:2018 and ISO 27001:2013.

Differences versus previous versions:

This EPD considers significant improvements in the supply chain, i.e., specific data from suppliers of main raw materials (EPDs) used in manufacturing process - organic coated steel coils, in-situ formed dispensed rigid polyurethane foam system (PU), Polyol component and packaging materials (EPS). EPD also considers only specific products that has been now removed from the initially published EPD.

Owner of the declaration:

TENAX PANEL, SIA
Spodrības iela 1, Dobele, LV-3701
Latvia

Tel: +371 63707154
Mail: tenaxpanel@tenaxgrupa.lv
Web: www.tenaxpanel.lv/en

LCA practitioner:

Bureau Veritas Latvia, SIA
Duntes 17A, Rīga, LV-1005
Latvija

Tel: +371 67323246
Mail: riga@bureauveritas.com
Web: www.bureauveritas.lv

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Šiškins A., (2024) LCA background report v3.0 for Non-load bearing multi-layer sandwich panels with an insulation core made of mineral wool (MW) and polyisocyanurate (PIR) manufactured by TENAX PANEL

Core value for companies of TENAX GROUP from an early start -
to be reliable and stable partner to employees, customers, and suppliers
continuously ensuring compliance to highest quality standards and
regional requirements in all activity fields of the group.

INCREASE ENERGY EFFICIENCY

CONTINUOUS DEVELOPMENT

ENVIRONMENTAL QUALITY ENHANCEMENT

HIGH QUALITY STANDARDS

TENAXPANEL

Spodrības iela 1
Dobele, LV-3701
Latvia
+37163707154