Type III Environmental Product Declaration No. 782/2025

Issuance date: 12.03.2025
Validity date: 12.03.2030

TermPIR insulation panels

Owner of the EPD:

Gór-Stal Sp. z o. o.
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ITB is the verified member of The European Platform for EPD program operators and LCA practitioner www.eco-platform.org

Basic information

This declaration is the Type III Environmental Product Declaration (EPD) based on EN 15804+A2 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment. Their aspects were verified by the independent body according to ISO 14025. Basically, a comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804+A2.

Life cycle analysis (LCA): A1-A3, C1-C4 and D modules in accordance with EN 15804+A2 (Cradle-to-Gate with options)

The year of preparing the EPD: 2025

Service Life: > 25 years

PCR: ITB-PCR A, v. 1.6

Declared unit: 1 m^2

Reasons for performing LCA: B2B

Representativeness: Polish, European

MANUFACTURER

Gór-Stal is a Polish company founded in 2003. The production of sandwich panels with a polyurethane core began in 2007 in Gorlice. The company employs over 200 people.

Gór-Stal has been on the market for producers of building materials providing solutions for industrial, residential and agricultural construction. They offer a wide range of modern wall, roof and cooling sandwich panels. In 2015, the company opened a new insulation board factory, which is located in the Special Economic Zone in Bochnia. TermPIR boards are designed for insulation of roofs, walls, floors and other partitions in residential and industrial construction.

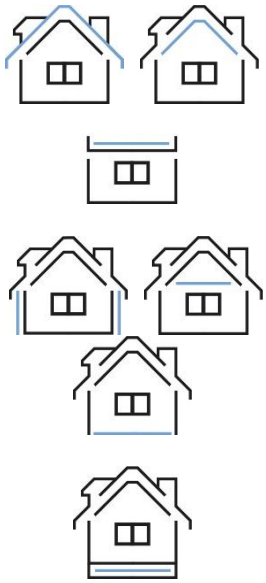
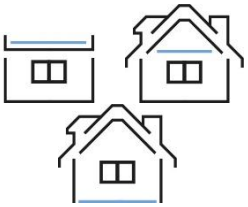
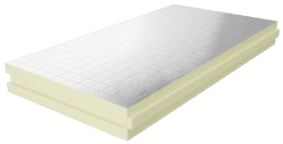
The company has a wide range of materials used in the construction of industrial, commercial and office halls, cold stores, freezers and livestock buildings.

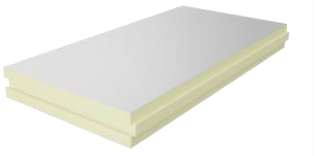
ISO 9001 and 14001 certificates confirm the company's compliance with international standards regarding quality management and environmental protection.

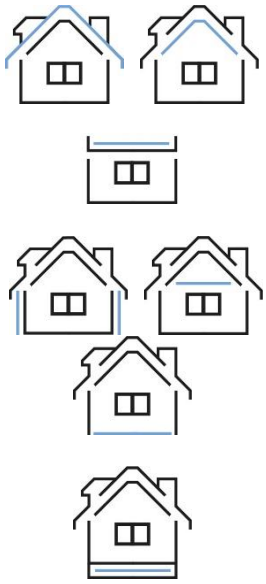
Figure 1. A view of Gór-Stal Sp. z o. o. production plant located in Bochnia (Poland).

PRODUCTS DESCRIPTION AND APPLICATION

TermPIR insulation panels intended for modern insulation of roofs and attics, insulation of external and partition walls, insulation of terraces, grounds and basements and other partitions in residential and industrial construction. Below are descriptions of the product groups and their properties.

Products	Description	Application	Picture
termPIR® AL **termPIR® AL/F** **termPIR® AL AT**	The **termPIR® AL** insulation boards comprise of a PIR rigid foam thermal insulation core. The boards are protected on both sides with a gas tight lining layer composed of aluminium (AL), paper and polyethylene.		
termPIR® Pro-F	The **termPIR® Pro-F** insulation boards comprise of a PIR rigid foam thermal insulation core. The boards are protected on both sides with a gas tight lining layer composed of aluminium, paper and polyethylene.		
IZOPROOF®	The **IZOPROOF®** insulation boards comprise of a PIR rigid foam thermal insulation core. The boards are protected on both sides with a gas tight lining layer composed of aluminium (AL), paper and polyethylene.		

IZOPROOF® ALu	The **IZOPROOF® ALu** insulation boards comprise of a PIR rigid foam thermal insulation core. The boards are protected on both sides gas-tight aluminum foil lining with a thickness of 50 µm. A board intended for insulating flat roofs in glued and mechanical systems.		
termPIR® AGRO AL	The **termPIR® AGRO AL** insulation boards comprise of a PIR rigid foam thermal insulation core. The boards are protected on both sides with a washable gas tight aluminium foil lining thickness 50 µ m (Agro AL)		
termPIR® AGRO AL Ceil	The **termPIR® AGRO AL** Ceil insulation boards comprise of a PIR rigid foam thermal insulation core. The boards are protected on both sides with a washable gas tight aluminium foil lining thickness 50 µm (Agro AL). The boards have a B-s2,d0 classification in end use. Details available in the fire classification		

termPIR® MAX19 AL	**termPIR® MAX19 AL** insulation boards comprise a rigid polyisocyanurate foam thermal insulation core, featuring a thermal conductivity coeficient of 0.019 [W/m·K]. The core is protected on both sides by gas resistant multilayer aluminium (AL), paper and polyethylene facings.		

Name of product	Type of lining	Thickness [mm]	Core density PIR [kg/m^3]	Conductivity coefficient	Fire reaction
IzoProof	Panels secured on both sides with aluminum, paper and polyethylene	20-250	PIR core (Rigid Polyisocyanurate Foam) actual density - 31.00 [min. 30 a max. 35]	λD = 0.022	20-49: class F, 50-250: class E
IzoProof ALu		20-250		λD = 0.022	20-49: class F, 50-250: class E
termPIR AL		20-250		λD = 0.022	20-49: class F, 50-250: class E
termPIR pro-F		50-220		λD = 0.022	class E
termPIR AL AT		20-250		λD = 0.022	20-49: class F, 50-250: class E
termPIR AL/F		20-250		λD = 0.022	class F
termPIR Max 19 AL		80-220	PIR core actual density - 31.00 [min. 30 a max. 35]	λD = 0.019	class E
termPIR Agro AL	Panels are closed Washable on both sides, gas-tight aluminum foil cladding 50 µm thick	20-250	PIR core (Rigid Polyisocyanurate Foam) actual density - 31.00 [min. 30 a max. 35]	λD = 0.022	class E
termPIR Agro AL Ceil		50-250		λD = 0.022	class D-s2,d0

More information: https://termpir.eu/en_en
More information can be found on the Gór-Stal Sp. z o. o. website : https://gor-stal.pl

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Declared Unit

The declaration refers to declared unit (DU) – 1 m^2 of TermPIR insulation panels

Allocation

The allocation rules used for this EPD are based on general ITB PCR A, v. 1.6. Production of TermPIR insulation panels is a line process conducted in the factory of Gór-Stal Sp. z o. o., located in Bochnia (Poland). Allocation was done on product mass basis.
All impacts from raw materials extraction and processing are allocated in module A1 of LCA. Impacts from the Gór-Stal Sp. z o. o. production were inventoried on the annual production volume expressed in mass units. Water and energy consumption, associated emissions and generated wastes are allocated to module A3. Packaging materials were taken into consideration.

System limits

The life cycle analysis (LCA) of the declared products covers: product stage – modules A1-A3, end of life – modules C1-C4 and benefits and loads beyond the system boundary – module D (cradle-to-gate with options) in accordance with EN 15804+A2 and ITB PCR A, v. 1.6. All materials and energy consumption inventoried in factory were included in calculation. Office impacts were also taken into consideration. In the assessment, all significant parameters from gathered production data were inventoried and were included in the calculations, i.e. all material used per formulation, utilised thermal energy, internal fuel and electric power consumption, direct production waste, water consumption and all available emission measurements.
It can be assumed that the total sum of omitted processes does not exceed 5% of all impact categories. In accordance with EN 15804+A2, machines and facilities (capital goods) required for the production as well as transportation of employees were not included in LCA.

Modules A1 and A2: *Raw materials supply and transport*

Raw materials such as polyols, isocyanates, catalysts, pentane (rigid PIR foam) and alufoil, kraft paper, PE (laminates), adhesives, varnishes, boundary tape, protective foil or packaging materials come from both local and foreign suppliers. Means of transport include big trucks (> 16 t) are applied. European standards for average combustion were used for calculations.

Module A3: *Production*

Schematics of the TermPIR production process are presented in Figure 2 and Figure 3. Raw materials such as polyols, isocyanates, catalysts, surfactants and retardants are delivered to factory located in Bochnia, where are manufacturing in a few step process including mixing of components, stabilization, cutting on width and edge forming of faces. Then the final insulation panels are packing, palleting and shipment.

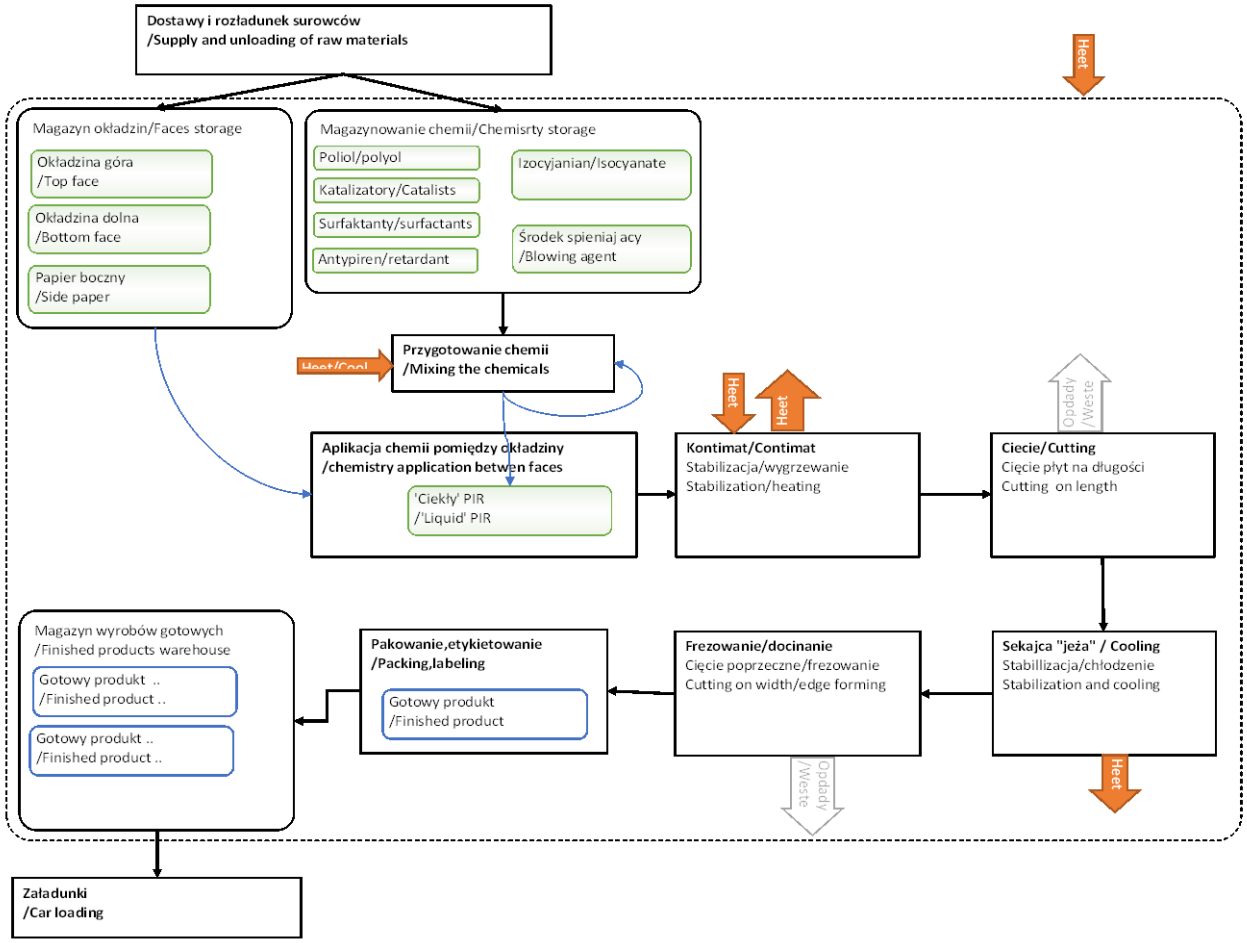


Figure 2. The scheme of TermPIR production process by Gór-Stal Sp. z o. o.

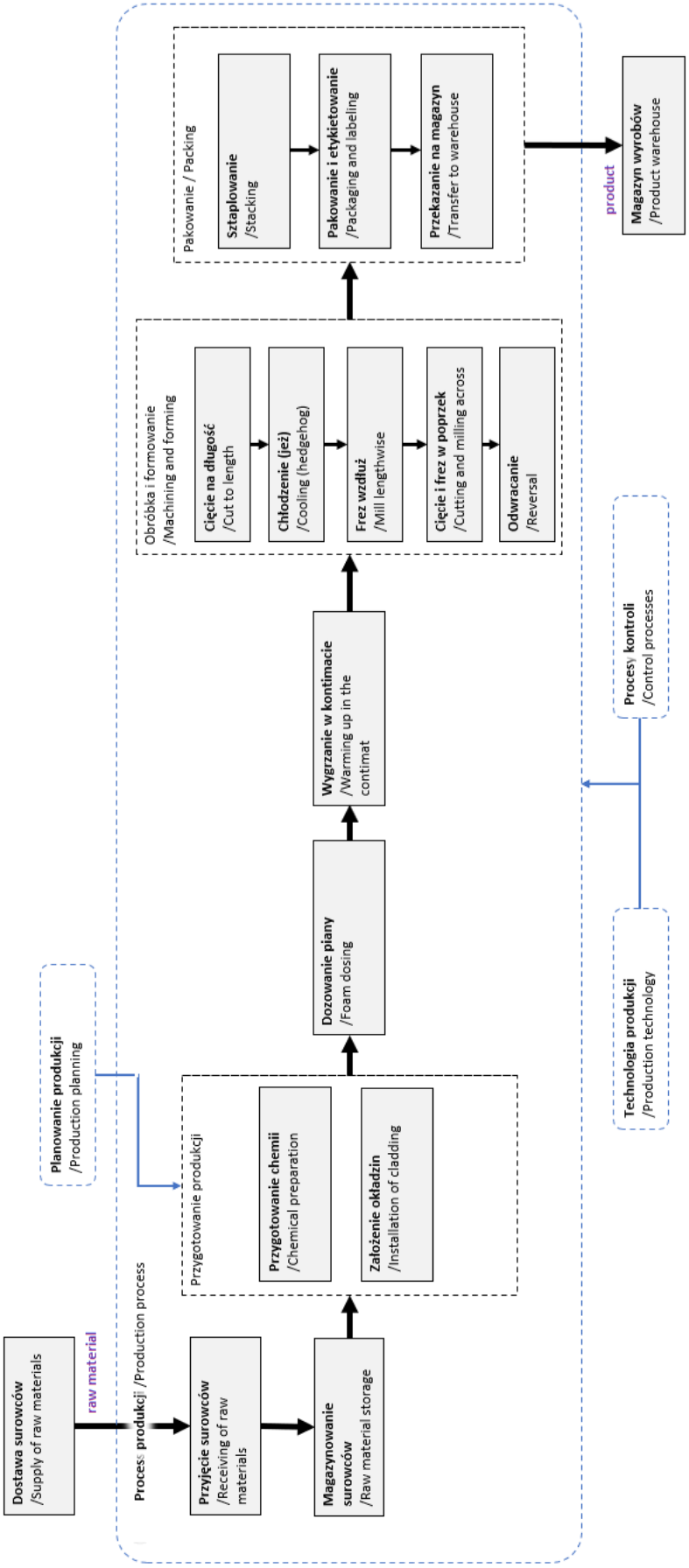


Figure 3. The scheme of TermPIR production process by Gór-Stal Sp. z o. o.

Modules C1-C4 and D*: End-of-life (EoL)*

It is assumed that at the end-of-life, 100% of TermPIR are demounted (module C1) and is transported to waste processing plant which is 100 km away, on 16-32 t lorry EURO 5 (module C2). It is assumed that 40% of PIR cores and 50% of laminates are waste processing (module C3) for material (recycling) and energy recovery (incineration). The residue wastes are forwarded to a landfill (module C4) in the form of mixed construction and demolition wastes (60% PIR cores and 50% laminates). End-of-life scenario was summarized in Table 1. A potential credit (environmental benefits) resulting from energy / material recovery are presented in module D.

Table 1. End-of-life scenario for TermPIR panels manufactured by Gór-Stal Sp. z o. o.

Material	Waste processing (energy / material recovery)	Landfilling
Alufoil/paper/PE laminates	50%	50%
PIR core	40%	60%

Data quality

The data selected for LCA analysis originates from ITB-LCI questionnaires completed by Gór-Stal Sp. z o. o. using the inventory data, ITB database, Ecoinvent database v. 3.10 and KOBiZE. KOBiZE data is supplemented with Ecoinvent v. 3.10 data on the national electricity mix impact where no specific indicator data is provided. No specific data collected is older than five years and no generic datasets used are older than ten years. The representativeness, completeness, reliability, and consistency are judged as good.

Data collection period

Primary data provided by Gór-Stal Sp. z o. o. covers a period of 01.01.2023 – 31.12.2023 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Assumptions and estimates

The impacts of the representative of TermPIR were inventoried and calculated based on consumption for the entire TermPIR product group presented in Tables 4-7 for the PIR with densities of 31 kg/m^3 and average thickness of 110 mm. Conversion factors for others panel thicknesses (20 ÷ 250) are presented in Table 2.

Table 2. Conversion factors for the estimation of environmental impact for different panel thicknesses about density of 31 kg/m^3. Multiply the LCA-result of each impact category in the environmental impact table with the corresponding factors.

Conversion factors for different panel thicknesses about core density of 31 kg/m^3												
Panel thickness	**20 mm**	**30 mm**	**40 mm**	**50 mm**	**60 mm**	**70 mm**	**80 mm**	**90 mm**	**100 mm**	**110 mm**	**120 mm**	**130 mm**
Conversion factor	0.23	0.32	0.40	0.49	0.57	0.66	0.74	0.83	0.91	1.00	1.08	1.17
Panel thickness	**140 mm**	**150 mm**	**160 mm**	**170 mm**	**180 mm**	**190 mm**	**200 mm**	**210 mm**	**220 mm**	**230 mm**	**240 mm**	**250 mm**
Conversion factor	1.26	1.35	1.43	1.52	1.6	1.69	1.77	1.86	1.94	2.03	2.11	2.20

Calculation rules
LCA was performed using ITB-LCA tool developed in accordance with EN 15804 + A2.

Databases
The data for the processes comes from Ecoinvent v. 3.10 and ITB-Database. Specific data quality analysis was a part of external audit. Polish electricity mix used (production) is 0.685 kg CO_2/kWh (KOBiZE 2023).

LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit
The declaration refers to declared unit (DU) – 1 m^2 of TermPIR insulation panels about density of 31 kg/m^3 and average thickness of 110 mm. Conversion factors for different panel thickness are presented above (Table 2).

Table 3. System boundaries for the environmental characteristic of TermPIR production process by Gór-Stal Sp. z o. o.

Environmental assessment information (MD – Module Declared, MND – Module Not Declared, INA – Indicator Not Assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
A1	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
MD	**MD**	**MD**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MD**	**MD**	**MD**	**MD**	**MD**

Table 4. Life cycle assessment (LCA) results for TermPIR about density of 31 kg/m^3 and thickness of 110 mm manufactured by Gór-Stal Sp. z o.o. - environmental impacts (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential - total	eq. kg CO_2	1.45E+01	3.94E-01	4.77E-01	1.54E+01	5.82E-02	6.35E-02	1.95E+00	2.10E-01	-3.95E+00
Greenhouse gas potential - fossil	eq. kg CO_2	1.46E+01	3.92E-01	4.74E-01	1.55E+01	5.81E-02	6.33E-02	8.11E-01	2.09E-01	-3.81E+00
Greenhouse gas potential - biogenic	eq. kg CO_2	-1.77E-01	1.34E-03	3.02E-03	-1.72E-01	9.50E-05	2.16E-04	1.14E+00	2.38E-04	-1.41E-01
Global warming potential - land use and land use change	eq. kg CO_2	9.59E-03	1.54E-04	1.64E-04	9.91E-03	8.03E-05	2.48E-05	1.39E-05	3.68E-05	-3.61E-05
Stratospheric ozone depletion potential	eq. kg CFC 11	5.57E-06	9.07E-08	1.21E-08	5.67E-06	8.83E-10	1.46E-08	1.00E-09	7.51E-10	-3.48E-09
Soil and water acidification potential	eq. mol H+	9.34E-02	1.59E-03	4.96E-03	9.99E-02	2.88E-04	2.57E-04	4.54E-04	2.85E-04	-3.23E-03
Eutrophication potential - freshwater	eq. kg P	2.67E-01	2.64E-05	2.67E-03	2.70E-01	2.18E-05	4.25E-06	6.93E-05	6.02E-06	-2.72E-05
Eutrophication potential - seawater	eq. kg N	4.95E-02	4.80E-04	2.53E-03	5.25E-02	1.21E-04	7.75E-05	2.50E-04	4.25E-02	-2.50E-03
Eutrophication potential - terrestrial	eq. mol N	1.02E+02	5.24E-03	7.90E-03	1.02E+02	1.15E-03	8.46E-04	2.14E-03	1.13E-03	-1.73E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	6.73E-02	1.60E-03	1.71E-03	7.07E-02	3.85E-04	2.59E-04	5.64E-04	3.50E-04	-4.24E-03
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2.50E-02	1.39E-06	6.82E-07	2.50E-02	1.65E-07	2.24E-07	1.59E-07	7.70E-08	-4.33E-07
Abiotic depletion potential - fossil fuels	MJ	3.42E+02	5.82E+00	7.86E+00	3.56E+02	7.96E-01	9.39E-01	5.50E-01	6.95E-01	-2.17E+00
Water deprivation potential	eq. m^3	1.38E+01	2.69E-02	1.56E-01	1.40E+01	4.16E-02	4.34E-03	1.07E-01	7.20E-03	-2.80E-01

Table 5. Life cycle assessment (LCA) results for TermPIR about density of 31 kg/m^3 and thickness of 110 mm manufactured by Gór-Stal Sp. z o.o. - additional impacts indicators (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Particulate matter	disease incidence	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA	INA	INA	INA	INA	INA

Table 6. Life cycle assessment (LCA) results for TermPIR about density of 31 kg/m^3 and thickness of 110 mm manufactured by Gór-Stal Sp. z o.o. - environmental aspects related to resource use (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.65E+01	8.35E-02	5.51E-01	2.72E+01	-2.05E+01	1.35E-02	-1.43E+01	2.16E-02	1.73E+00
Consumption of renewable primary energy resources used as raw materials	MJ	3.90E+00	0.00E+00	0.00E+00	3.90E+00	2.05E+01	0.00E+00	1.44E+01	0.00E+00	-1.78E+00
Total consumption of renewable primary energy resources	MJ	3.01E+01	8.35E-02	5.51E-01	3.07E+01	1.71E-02	1.35E-02	1.92E-02	2.16E-02	-4.55E-02
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.52E+02	5.82E+00	8.32E+00	2.66E+02	7.96E-01	9.39E-01	-8.86E+00	-6.23E+01	4.11E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	9.08E+01	0.00E+00	0.00E+00	9.08E+01	0.00E+00	0.00E+00	9.41E+00	6.30E+01	-4.32E+01
Total consumption of non-renewable primary energy resources	MJ	3.43E+02	5.82E+00	8.32E+00	3.57E+02	7.96E-01	9.39E-01	5.50E-01	6.99E-01	-2.17E+00
Consumption of secondary materials	kg	5.48E-02	1.95E-03	6.34E-04	5.74E-02	1.38E-03	3.15E-04	6.13E-04	2.37E-04	-9.07E-04
Consumption of renewable secondary fuels	MJ	2.61E-03	2.15E-05	3.43E-06	2.64E-03	1.71E-05	3.47E-06	1.12E-05	4.05E-06	-2.96E-05
Consumption of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net consumption of freshwater resources	m^3	3.39E-01	7.32E-04	2.50E-03	3.42E-01	7.90E-04	1.18E-04	1.70E-03	-8.31E-03	-5.56E-03

Table 7. Life cycle assessment (LCA) results for TermPIR about density of 31 kg/m^3 and thickness of 110 mm manufactured by Gór-Stal Sp. z o.o. - environmental information describing waste categories (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste. neutralized	kg	2.66E-01	6.53E-03	5.09E-05	2.73E-01	1.14E-02	1.05E-03	9.24E-02	2.11E-03	-7.85E-02
Non-hazardous waste neutralised	kg	5.95E+00	1.16E-01	4.55E-02	6.11E+00	5.97E+00	1.87E-02	2.35E+00	1.13E+01	-1.90E+00
Radioactive waste	kg	6.05E-04	4.01E-05	7.47E-06	6.52E-04	2.31E-07	6.47E-06	3.24E-07	3.80E-07	-5.23E-07
Components for re-use	kg	1.57E-07	0.00E+00	6.62E-04	6.62E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	5.11E-03	1.80E-05	1.86E-01	1.91E-01	8.08E-06	2.91E-06	1.78E-02	1.32E-05	-2.21E-03
Materials for energy recovery	kg	9.13E-06	1.46E-07	1.15E-04	1.25E-04	5.71E-08	2.35E-08	2.99E-08	4.73E-08	-2.72E-07
Energy exported	MJ	8.95E-01	6.46E-03	2.22E-02	9.24E-01	2.13E-04	1.04E-03	6.56E-04	1.01E-03	-1.20E-03

Verification

The process of verification of this EPD is in accordance with ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

The basis for LCA analysis was EN 15804+A2 and ITB PCR A, v. 1.6
Independent verification corresponding to ISO 14025 (subclause 8.1.3.) [x] external [ ] internal
External verification of EPD: Halina Prejzner, PhD Eng LCA, LCI audit and input data verification: Mateusz Kozicki, PhD Verification of LCA: Michał Piasecki, PhD. DSc. Eng

Note 1: The declaration owner has the sole ownership, liability and responsibility for the information provided and contained in EPD. Declarations within the same product category but from different programmes may not be comparable. Declarations of construction products may not be comparable if they do not comply with EN 15804 + A2. For further information about comparability, see EN 15804 + A2 and ISO 14025. Depending on the application, a corresponding conversion factor such as the specific weight per surface area must be taken into consideration.

Note 2: ITB is a public Research Organization and Notified Body (EC Reg. no 1488) to the European Commission and to other Member States of the European Union designated for the tasks concerning the assessment of building products' performance. ITB acts as the independent, third-party verification organization (17065/17025 certified). ITB-EPD program is recognized and registered member of The European Platform – Association of EPD program operators and ITB-EPD declarations are registered and stored in the international ECO-PORTAL.

Normative references

- ITB PCR A. v. 1.6 General Product Category Rules for Construction Products
- EN 14509: 2013-12 Self-supporting double skin metal faced insulating panels - Factory made products - Specifications
- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework
- ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation
- ISO 20915:2018 Life cycle inventory calculation methodology for steel products
- EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- ISO 14067:2018 Greenhouse gases - Carbon footprint of products — Requirements and guidelines for quantification
- EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business
- KOBiZE Emissions (CO_2. SO_2. NO_x. CO and total dust) from electricity, 2023

LCA, LCI audit and input data verification
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Agnieszka Winkler-Skalna, PhD

qualified electronic signature

Instytut Techniki Budowlanej
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Thermal Physics, Acoustics and Environment Department
02-656 Warsaw, Ksawerów 21

CERTIFICATE № 782/2025
of TYPE III ENVIRONMENTAL DECLARATION

Products:

TermPIR insulation panels

Manufacturer:

GÓR-STAL Sp. z o.o.

ul. Przemysłowa 11, 38-300 Gorlice, Poland

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15804+A2

Sustainability of construction works.
Environmental product declarations.
Core rules for the product category of construction products.

This certificate, issued on 12th March 2025 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics and Environment Department
Agnieszka Winkler-Skalna, PhD

INSTYTUT TECHNIKI BUDOWLANEJ

Deputy Director
for Research and Innovation
Krzysztof Kuczyński, PhD

Warsaw, March 2025