

ENG

EPD

ENVIRONMENTAL PRODUCT DECLARATION

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

SANDWICH PANELS
FOR ROOFS AND WALLS
WITH STEEL FACINGS AND INSULATING CORE
OF POLYURETHAN OR POLYSOCINURATE FOAM

PRODUCTS:
ISOBOX, ISOPARETE, ISOPARETE EVO,
ISOFROZEN, ISOCOP

www.isopan.com



PCR 2019:14: Construction products, version 1.2.5
UN CPC Code Ver2.1 Code 54
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ISOPAN

BUILDING ENVELOPE SOLUTIONS
by Manni Group

01. PROGRAMME INFORMATION

Programme	The International EPD® System EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden www.environdec.com info@environdec.com						
Product Category Rules (PCR)	ISO standard ISO 21930 and CEN standard EN 15804 serve as the core Product Category Rules (PCR) PCR 2019:14 Construction products, version 1.2.5						
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 www.environdec.com/contact.						
LCA accountability	Bureau Veritas Nexta, Via Mario Bianchini, 13, 00142 Roma RM https://www.nexta.bureauveritas.it/						
Third-party verification	Independent third-party verification of the declaration and data, according to ISO 14025:2010:		EPD verification by individual verifier				
	Third party verifier:		Ugo Pretato - Recognized Individual Verifier				
	Approved by:		Technical Committee of “The International EPD® System”				
	Procedure for follow-up during EPD validity involves third party verifier:		<table><tr><td></td><td>YES</td></tr><tr><td>x</td><td>NO</td></tr></table>		YES	x	NO
		YES					
x	NO						

EPDs within the same product category but registered in different EPD programmes 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 characterization factors); have equivalent content declarations; and be valid at the time of comparison.

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

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.

02. GENERAL INFORMATION

EPD OWNER

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COMPANY PROFILE

MANNI GROUP, THE GROUP

For over 75 years, we have been building, day by day, our identity as a key partner for hundreds of companies worldwide in the steel industry. The relentless pursuit of excellence and quality has led us, over time, to specialize in sustainable, safe, and efficient construction. Our strength lies in the ability to encourage sustainable behaviours and choices even in the entities collaborating with us, such as companies, suppliers, and consumers, across all the sectors we serve. Promoting the concept of sustainable construction places us at the forefront of the market, employing methods that are now not only secure but also efficient, thanks to the commitment of passionate and visionary professionals. Together, we are capable of looking towards the future with awareness.

THE COMPANY

Isopan S.p.A is a company of Manni Group.
Isopan promotes sustainable construction through the use of safer and more efficient materials.
In addition to two production plants in Italy, Isopan Spa controls five foreign subsidiaries: Isopan Ibérica (Spain), Isopan Est (Romania), Isopan Deutschland (Germany), Isopan Rus (Russia), and Isocindu (Mexico); as well as the trading companies Isopan CZ, Isopan France, and Manni Store.
The widespread presence on the territory and a consolidated network of commercial contacts allows Isopan to preside over the most important markets in the world.

Isopan has always been committed to the innovation of products and services for buildings, with particular attention to improving the performance of buildings in the fields of environment, safety and energy efficiency. Isopan products contribute to obtaining the prerequisites and credits useful for the most widespread sustainability standards of buildings, such as LEED, BREEAM or Living Building Challenge.

Isopan promotes the concept of responsible construction, ensuring the well-being of those who inhabit the built spaces, as well as taking care of positive aspects for stakeholders and the entire community. Isopan and its network of partners provide support to meet the needs of engineering and architecture firms, construction companies, and installers with end-to-end solutions: from collaboration in the design phase to on-site delivery of the product portfolio. Isopan offers cutting-edge solutions for building envelopes, emphasizing the following key factors: energy efficiency, acoustic performance, and safety; product life cycle from raw materials throughout the manufacturing process; and finally, architectural design for high aesthetic as well as functional value.

03. PRODUCT INFORMATION

PRODUCT SPECIFICATION

UN CPC CODE

UN CPC Code Ver2.1 Code 54

GEOGRAPHIC AREA

Global

PRODUCT DESCRIPTION

The EPD represents the average product of ISOBOX, ISOPARETE, ISOPARETE EVO, ISOFOZEN and ISOCOP with 80 mm insulation thickness and steel sheet on both sides (external/internal) with thickness 0.5 mm / 0.5 mm.

The EPD allows representing the average of the panels included in the analysis since none of the associated environmental indicators, aggregated in modules A-C, differs by more than 10%.

Insulating sandwich panels are elements for the building envelope. They consist of two external metal sheet supports, which enclose an insulating core.

This EPD takes into consideration sandwich panels with an insulating core of polyurethane or polyisocyanurate foam. The metal sheets are composed of steel, are profiled and the metal layer is protected against corrosion by galvanization and prepainting.

The declared insulation panels can be used for roofs and walls of industrial, commercial, civil buildings, animal husbandry and cold stores. They are light, versatile and easy to assemble, and they assure thermal and acoustic insulation, solidity, air tightness and fire safety.

Isopan offers an extremely wide range of metal panels, which includes different thicknesses, colours and surface finishes to create customized solutions with an innovative design.

WALL PANELS

Wall panel with double metal coating with polyurethane insulation. The joint, with tongue-and-groove joints, can be of the visible or hidden type both with through screw. There are also panels with high thermal insulation performance and quality of the junction system, which make them particularly suitable for the creation of environments where a controlled temperature is required, such as cold rooms and processing chambers.

TABLE 3.1 - General characteristics of wall panels

Commercial names	ISOBOX, ISOPARETE, ISOPARETE EVO, ISOFOZEN
Production sites LCA analysis	Isopan Ibérica, Tarragona (Spagna) Isopan Est, Bucarest (Romania) Isopan Deutschland (Germania)
Panel thickness for LCA analysis	80 mm
Insulating material	Polyurethane
Density of insulating material	40 kg/m ³
Inner/outer facing material	Galvanized prepainted steel
Reaction to fire	Variable according to the required specifications
Applications	Walls



TABLE 3.1.1 - Walls; Possible thicknesses and thermal insulation values (U-values) in accordance with EN 14509 - A.10.

THICKNESS	mm	25	30	35	40	50	60	80	100	120	150	180	200	240	PRODUCTS
U	W/m ² K	0.83	0.70	0.61	0.54	0.44	0.37	0.28	0.22	0.19	0.15	0.12	0.11	0.09	ISOBOX, ISOFOZEN
U	W/m ² K	-	-	-	0.64	0.49	0.41	0.29	0.23	0.19	0.15	-	-	-	ISOPARETE, ISOPARETE EVO

ROOF PANELS

ISOCOP is a sandwich panel with double metal coating, for roofs with a slope of not less than 7%, insulated in polyurethane, with external profiled sheet with 5 ribs. Fixing is done with through screws and special metal caps with gasket. They are also used in wall cladding.

TABLE 3.2 General characteristics of roof panels

Commercial names	ISOCOP
Production sites LCA analysis	Isopan Ibérica, Tarragona (Spain) Isopan Est, Bucharest (Romania) Isopan Deutschland (Germany)
Panel thickness for LCA analysis	80 mm
Insulating material	Polyurethane
Density of insulating material	40 kg/m ³
Inner/outer facing material	Galvanized prepainted steel
Reaction to fire	Variable according to the required specifications
Applications	Roofs

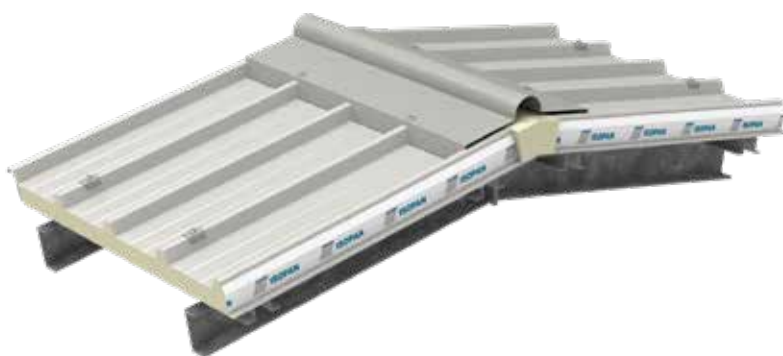


TABLE 3.2.1 - Roof; Possible thicknesses and thermal insulation values (U-values) in accordance with EN 14509 - A.10.

THICKNESS	mm	30	40	50	60	80	100	120	150
U	W/m ² K	0.71	0.54	0.44	0.37	0.28	0.22	0.19	0.15

GENERAL FEATURES

The insulating core of the panel is made of closed-cell rigid polyurethane or polyisocyanurate foam, a light material that allows for high energy performance by limiting the volumes and weights used in applications.

The panels DO NOT contain SVHC Substances of Very High Concern covered by ECHA's Candidate List in concentrations greater than 0.1% by mass.

General features are shown for each product family, such as the type of insulating material and its density, the material that constitutes the internal and external facings of the panel, fire reaction class and the main applications. Further data regard the weight of the panel in kg/m² (depending on the thickness of both the insulation and the internal and external pre-painted steel supports), the composition of the panel (expressed in percentages by weight) and the thermal transmittance coefficient U.

Any missing weight or composition data can be estimated by linear interpolation.

TECHNICAL FEATURES

Sandwich panels are designed and manufactured in compliance with the technical specifications defined in following regulations:

- EN 14509
- EN 13165
- EN 10346

The declared panels are CE marked. With this mark, the manufacturer states that the products comply with all the legislative requirements concerning health and safety and environmental protection.

According to the conditions of use the sandwich panels with steel coating have an estimated duration of 40 - 45 years, as defined on the basis of the methodology for assessing the durability of building components developed by the German Federal Research Institute BBSR (Federal Institute for Building Research, Urban Affairs and Spatial Development) and available on the website: www.nachhaltigesbauen.de/baustoff-und-gebaeuedaten/nutzungsdauern-von-bauteilen.html.

EFFICIENCY AND ENERGY SAVINGS

Isopan insulating panels have high thermal insulation properties. Performance may vary depending on the thickness of the panel and the type of insulation selected. These parameters can be defined and customized during the product order phase, to comply at best the project requirements.

FIRE PERFORMANCE

Isopan sandwich panels offer excellent fire reaction and resistance performance, certified according to EN 13501, parts 1 and 2.

Depending on the project specifications, Isopan is able to offer different degrees of performance.

PRODUCTION PROCESS

The production process of Isopan sandwich panels is divided into different phases, ranging from the acquisition of raw materials to the packaging of the finished product. The panels are made with a continuous process, which can be schematized in the following phases: profiling, foaming, cutting and packaging.

PROFILING

Gives the shape to the steel sheets that enclose the insulating material. The production process begins with the unwinding of pre-painted galvanized steel coils, which pass through a series of rollers shaping the geometry of laminates.

FOAMING

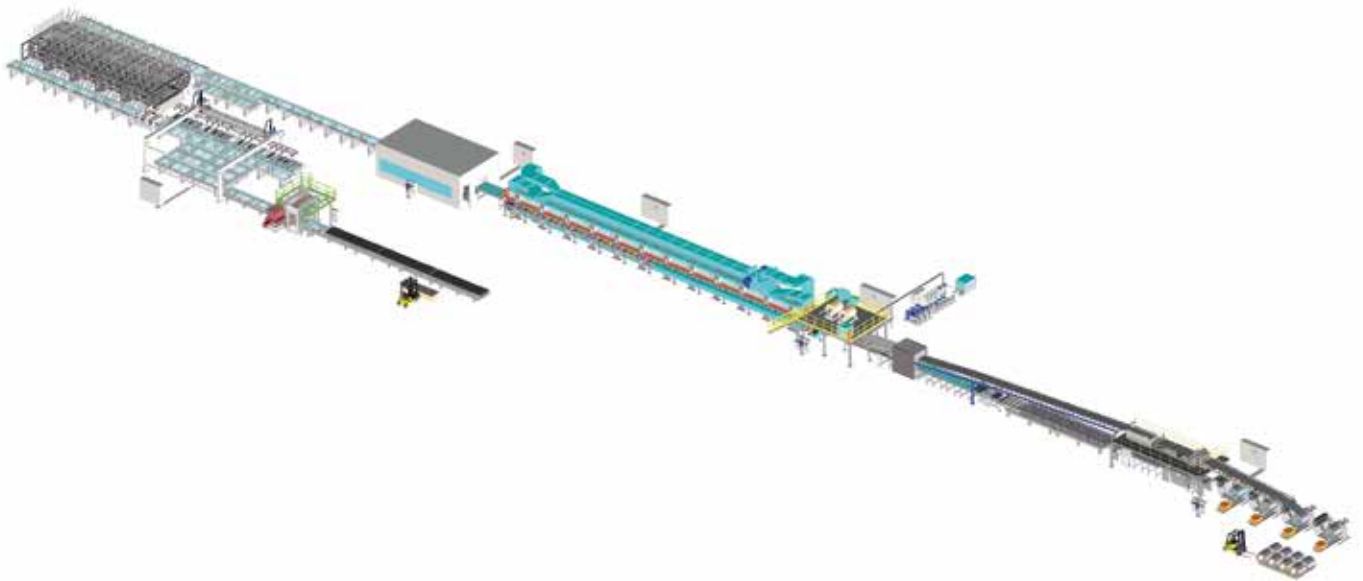
Application of the insulating foam that fills the panel core. The chemical components are mixed and applied between the two steel sheets; the passage through a heated press favors the maturation of the product.

PANEL CUTTING AND STACKING

The product is cut according to the specifications required by the order and stacked for the formation of packages to be delivered to customers.

PACKAGING AND STORAGE

Application of various protective systems to help handling parcels on site and reduce the possibility of material damage during transport.



04. INFORMATION ON LCA METHODOLOGY

FUNCTIONAL UNIT	The functional unit is 1 m ² of insulation roof and wall panel with an insulation thickness of 80 mm and sheet thickness of 0.5 mm + 0.5 mm (thermal insulation value as reported in table 3.2.1).
TIME REPRESENTATIVENESS	The primary data used for the life cycle assessment study are related to a 12-month period, considering the production of the reference year (2020)
DATABASE AND SOFTWARE	Database: Ecoinvent 3.7 LCA Software: SimaPro, version 9.3.0.3.
DATA COLLECTION	<p>The LCA analysis was performed on the basis of primary data for the year 2020, collected for the Isopan Ibérica Terragona (Spain), Isopan Est in Bucarest (Romania) and Isopan Deutschland (Germany).</p> <p>Primary data relating to both plants were acquired with regard to energy consumption, waste production, atmospheric emissions, consumption of raw materials and auxiliaries, distances and types of transport relating to the relevant production plants and to the distribution to clients.</p> <p>Secondary data have been used for the modelling of the production processes of raw materials and auxiliary materials, production of packaging materials, transport of materials, treatment of end-of-life waste and materials. The environmental databases used are: World Steel Association for galvanized prepainted steel sheet production processes, Plastics Europe for production processes of polyurethane foam ingredients, Ecoinvent 3.7 for production processes of other materials, transport and end-of-life treatment.</p> <p>. The modelling of the LCA system was carried out with the software SIMAPRO 9.3.0.3.</p>
ALLOCATION	Energy and material consumption have been allocated to the specific product based on the annual production of the panels. No further allocations have been applied in modules following the production phase.
CUT-OFF	The study applies a cut-off criterion of 1% maximum for the contributions of material and energy to the system. The sum of excluded material inputs does not exceed 1% of the total material inputs. To the knowledge of the authors of the LCA study no exclusions have been made.

TABLE 4.1 Declaration of panel content

Material content (panel insulation thickness 80 mm – sheet thickness 0.5 mm + 0.5 mm)

Materials	Weight (kg/m ²)	Post-consumption material, weight -%	Biogenic material, weight -% and Kg C/m ²
Galvanized prepainted steel	9,08	32%	0 resp. 0
Polyurethane foam	3,29	0%	0 resp. 0
Tape (PP)	0,0109	0%	0 resp. 0
Seal (PU)	0,0109	0%	0 resp. 0
Sum	12,39	23%	0 resp. 0
Packaging	Weight (kg/m ²)	Weight -% (in the product)	Biogenic carbon, weight Kg C/m ²
Adhesive film (PE)	0,06	0.48%	0
Stretch film (PE)	0,0165	0.13%	0
Polystyrene	0,0348	0.28%	0
Polystyrene	0,0013	> 0.1%	0
Sum	0,113	0.90%	0

SYSTEM BOUNDARIES

The approach used for this study is "cradle-to-gate with options". The included modules are from A1 to A5, from C1 to C4, and module D, in accordance with the reference PCR and the standard EN 15804:2012+A2:2019.

TABLE 4.2 System boundaries

	Procurement of raw materials	Transport	Production	Transport	Installation	Use	Maintenance	Repairing	Substitution	Renovation	Energy in use	Water in use	Disassembling	Transport	Waste treatment	Waste disposal	Potential reuse, energy recovery, recycling
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
declared modules	X			X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geographical representativeness	GLO	GLO	EU	GLO	GLO								GLO	GLO	GLO	GLO	GLO
Specific data	> 90%																
Range of product variability	<10%																
Range of plant variability	<10%																

System boundaries

"X" = included in the LCA study

"ND" = Module not declared

SCENARIOS AND TECHNICAL INFORMATION

The LCA analysis was carried out considering material and energy flows in and out of the system, normalized with respect to 1 m² of panel having the specific thickness and specific Thermal Insulation given in chapter 3. The main function of Isopan panels is to provide thermal insulation for the spaces within a building.

PRODUCTION PHASES

Module A1, "raw material extraction", examines and estimates the impact generated by the procurement of raw materials through extraction and processing activities.

- Galvanized prepainted steel coils;
- Polyurethane;
- Water and energy vectors.

Module A2, "raw material transportation", examines and estimates the impact generated by the transportation of raw materials and semi-finished products from the manufacturer to the relevant plants (Isopan Iberica and Isopan EST).

Module A3 describes the 'core' activities of the plant (Isopan Iberica, Isopan EST and Isopan Deutschland), where the production of the analyzed panels is located. Here, internal processing activities of raw materials are carried out for the production of the finished product. These include:

- The combustion of energy carriers
- Packaging
- Production of auxiliaries
- Output flows

CONSTRUCTION PHASES

Module A4 includes transportation of finished products to the installation site. Sales occurred in 2021 and product shipping to Europe and worldwide were considered, in order to calculate an average shipping distance scenario.

Module A5 analyzes the on-site installation of products. Waste treatment (packaging and scraps) after the installation process has been considered

in Module A5, while the environmental benefits and burdens of recycling have been included in Module D.

The treatment processes at the end of life of packaging materials has been modelled on the basis of national statistical surveys on recovery, recycling and treatment rates of plastic materials.

TABLE 4.3 - Parameters for module A4 and A5

PARAMETERS	VALUES
Type of fuel	Diesel
Transport distance A4 (Spain)	Average distance with client (Europe and global)
Transport type A4 (Spain)	Truck, EURO 4 (516 km) Transoceanic ship (8,368 km)
Transport distance A4 (Romania)	Average distance with client (Europe and global)
Transport type A4 (Romania)	Truck, EURO 4 (341 km) Transoceanic ship (546 km)
Transport distance A4 (Germany)	Average distance with client (Europe and global)
Transport type A4 (Germany)	Truck, EURO 4 (427 km)
Transport distance A5	Average distance 50 km
Transport type A5	Truck, EURO 4
Truck load capacity (including return trips empty)	5.79 tons (Efficiency 37%)
End-of-life plastic packaging (Spain)	50.7% - Recycling 15.5% - Energy recovery 33.8% - Waste disposal
End-of-life plastic packaging (Romania)	30% - Recycling 15% - Energy recovery 55% - Waste disposal
End-of-life plastic packaging (Germany)	50% - Recycling 50% - Energy recovery

END-OF-LIFE PHASES

Processes of the panel at the end of its life cannot be controlled by Isopan. The end of life scenarios has been defined on the basis of literature data related to the construction sector or to the national statistics on waste disposal.

Average data from studies conducted in Europe lead to consider that about 90% of the end-of-life panels are collected at the sites of disposal/demolition of buildings and its components are sent for recycling/recovery. Isopan panels are easily disassembled to facilitate the recycling of its components (steel and insulating materials).

The steel is collected for recycling, and constitutes a source of secondary material for the production of new steel products.

The polyurethane collected by the panels at the end of life is destined to waste-to-energy. The residual percentage of panels, not intended for the collection, separation, recovery and recycling, is destined to landfill.

Module C1 analyzes the removal of panels at the end of their useful life or at the end of the building's life in which they are installed. Panels are removed manually by dedicated personnel.

Module C2 includes transportation by road of end-of-life products, that is, to the waste treatment centre for all materials directed to recycling or energy recovery, or to final disposal in a landfill.

Module C3 provides information and analyzes the processes of preparation and treatment of waste until the product is ready to be further processed through recycling or energy recovery.

Module C4 considers disposal of part of the product in a landfill.

TABLE 4.4 - Parameters for module C2, C3 and C4

PARAMETERS C2 - C3 - C4	VALUES
C2 - Type of fuel	Diesel
C2 - Transport distance	Average distance 50 km
C2 - Transport type	Truck, EURO 4
C2 - Load capacity (including return trips empty)	5.79 tons (Efficiency 37%)
C3 / C4 end-of-life steel	90% - Recycling
	10% - Waste disposal
C3 / C4 - end-of-life polyurethane	90% - Energy recovery
	10% - Waste disposal

MODULE D

Module D includes the potential environmental burdens and benefits related to the reuse, recovery, and/or recycling of the material. The Isopan panel generates two flows of materials whose treatment can produce environmental credits accounted for in Module D of this EPD:

- steel: the steel is one of the most recycled materials in the world; to quantify the environmental credit related to the use of scrap steel instead of virgin raw materials in the steel industry.
- polyurethane intended to incineration: the polyurethane incineration in waste to energy plants produces electricity sold to the grid; such energy can replace an equivalent amount of electricity produced by the reference production mix.
- packaging: the polyethylene and the expanded polystyrene that make up the packaging can be recycled to produce new plastic material and used to generate energy through incineration.

According to EN 15804:2012+A2:2019, all environmental benefits and burdens declared by the net flows exiting the product system that are not allocated as co-products and have surpassed the end-of-life state must be included in Module D. Benefits considered in Module D originate from the recycling of steel panels and its packaging and from incineration of polyurethane.

05. INFORMATION ON LCA METHODOLOGY

The environmental performance indicators are summarized in the following tables, grouped by product family. Data are reported for the insulation and steel thicknesses used for the LCA study.

LEGEND OF ENVIRONMENTAL INDICATORS

Potential environmental impacts

GWP-total	Climate change (total)
GWP-fossil	Climate change (fossil)
GWP-biogenic	Climate change (biogenic)
GWP-luluc	Climate change (Use and change in land consumption)
GWP-GHG	Climate change
ODP	Ozone depletion
AP	Acidification
EP-freshwater	Eutrophication (drinking water)
EP-marine	Eutrophication (marine environment)
EP-terrestrial	Eutrophication (terrestrial environment)
POCP	Photochemical ozone creation
ADP MM²	Depletion of non-fossil resources (minerals and metals)
ADP F²	Depletion of fossil resources
WDP²	Water consumption

Disclaimer² – 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 experience with the indicator.

Resource consumption

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 (primary energy and primary energy resources used as raw materials)
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 materials
RSF	Use of renewable secondary fuels
RSF	Use of non-renewable secondary fuels
FW	Net use of fresh water

Waste production

HW	Hazardous waste disposed
NHW	Non-hazardous waste disposed
RW	Radioactive waste disposed

Output flows

REUSE	Components for re-use
RECYCLE	Materials for recycling
EN-REC	Materials for energy recovery
EE-E	Exported energy-electricity
EE-T	Exported energy-thermal energy

ROOF AND WALL PANEL

TABLE 5.1 Environmental performance indicators for 1 m² Panel for roof and wall
Thickness 80 mm – Steel thickness 0.5/0.5 mm (external/internal)

Impact category	Unit	A1-A3	A4	A5	C2	C3	C4	D
GWP-total	kg CO2 eq	3.99E+01	1.24E+00	9.51E-02	1.02E-01	8.01E-02	7.31E+00	-1.01E+01
GWP-fossil	kg CO2 eq	3.96E+01	1.23E+00	9.52E-02	1.02E-01	8.31E-02	7.31E+00	-1.03E+01
GWP-biogenic	kg CO2 eq	2.90E-01	3.70E-04	-8.27E-06	5.51E-05	-3.21E-03	6.46E-04	2.09E-01
GWP-luluc	kg CO2 eq	1.81E-02	5.54E-04	5.89E-06	3.61E-05	1.45E-04	1.59E-04	-4.69E-03
GWP-GHG	kg CO2 eq	3.82E+01	1.23E+00	9.43E-02	1.02E-01	8.22E-02	7.28E+00	-9.67E+00
ODP	kg CFC11 eq	3.53E-06	2.73E-07	5.82E-10	2.34E-08	8.30E-09	7.08E-08	-5.82E-07
AP	mol H+ eq	1.96E-01	1.59E-02	3.17E-05	5.21E-04	7.80E-04	6.32E-03	-4.03E-02
EP-freshwater	kg P eq	8.46E-03	7.91E-05	1.42E-06	7.56E-06	7.40E-05	5.89E-05	-4.05E-03
EP-freshwater (PO4)	kg PO4 eq	2.57E-02	2.40E-04	4.32E-06	2.29E-05	2.24E-04	1.79E-04	-1.23E-02
EP-marine	kg N eq	5.06E-02	4.35E-03	2.99E-05	1.79E-04	1.48E-04	4.80E-03	-7.97E-03
EP-terrestrial	mol N eq	4.03E-01	4.80E-02	1.21E-04	1.96E-03	1.80E-03	3.26E-02	-8.01E-02
POCP	kg NMVOC eq	1.42E-01	1.29E-02	3.36E-05	5.58E-04	4.49E-04	7.46E-03	-4.20E-02
ADP-minerals&metals	kg Sb eq	1.95E-03	2.67E-05	1.43E-07	2.79E-06	1.05E-05	2.67E-06	-1.78E-05
ADP-fossil	MJ	6.16E+02	1.79E+01	5.46E-02	1.56E+00	1.28E+00	2.45E+00	-1.26E+02
WDP	m ³ depriv.	1.91E+02	4.40E-02	1.13E-03	4.33E-03	1.88E-02	1.35E-01	-2.96E-01
PM	disease inc.	2.39E-06	7.48E-08	3.69E-10	7.41E-09	8.33E-09	2.56E-08	-6.04E-07
IR	kBq U-235 eq	2.82E+00	8.96E-02	4.20E-04	8.02E-03	2.22E-02	1.64E-02	-8.85E-01
ETP-fw	CTUe	1.54E+03	1.37E+01	1.18E-01	1.25E+00	3.55E+00	2.55E+01	-1.46E+02
HTP-c	CTUh	2.71E-07	5.01E-10	1.23E-11	3.50E-11	1.59E-10	1.45E-09	-3.88E-08
HTP-nc	CTUh	2.50E-06	1.40E-08	2.74E-10	1.36E-09	4.37E-09	1.56E-08	-2.54E-07
SQP	Pt	5.38E+01	9.88E+00	8.32E-02	1.07E+00	7.20E+00	9.36E-01	-1.87E+01
PERE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERM	MJ	3.35E+01	2.21E-01	3.50E-03	2.20E-02	2.29E-01	1.63E-01	-6.22E+00
PERT	MJ	3.35E+01	2.21E-01	3.50E-03	2.20E-02	2.29E-01	1.63E-01	-6.22E+00
PENRE	MJ	4.85E+02	1.79E+01	5.46E-02	1.56E+00	1.28E+00	2.45E+00	-1.26E+02
PENRM	MJ	1.31E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	6.16E+02	1.79E+01	5.46E-02	1.56E+00	1.28E+00	2.45E+00	-1.26E+02
SM	kg	3.90E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m3	9.26E+00	1.59E-03	3.84E-05	1.61E-04	9.27E-04	4.69E-03	-2.64E-02
HW	kg	1.02E-03	3.93E-05	2.04E-07	4.08E-06	3.47E-06	6.75E-06	-7.62E-04
NHW	kg	5.73E+00	6.53E-01	3.73E-02	7.44E-02	3.23E-02	1.30E+00	-6.16E-01
RW	kg	1.13E-03	1.23E-04	2.83E-07	1.06E-05	7.58E-06	7.85E-06	-2.83E-04
REUSE	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RECYCLE	kg	2.33E-01	0.00E+00	4.90E-02	0.00E+00	8.18E+00	0.00E+00	0.00E+00
EN-REC	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE - E	MJ	0.00E+00	0.00E+00	1.11E-01	0.00E+00	0.00E+00	0.00E+00	1.17E+01
EE - T	MJ	0.00E+00	0.00E+00	2.18E-01	0.00E+00	0.00E+00	0.00E+00	2.28E+01

06. ADDITIONAL INFORMATION

AMOUNT OF BIOGENIC CONTENT

TABLE 6.1 Amount of biogenic content in the declared unit and its packaging

	Value	Unit
Biogenic carbon in the product	0	Kg C/m ²
Biogenic carbon in the packaging	0	Kg C/m ²

1 kg biogenic carbon is equivalent to 44/12 kg of CO₂.

ENERGY MIX

The energy source analyzed in Module A3 is derived from the energy mix purchased from the supplier. The potential impacts related to the consumption of 1 kWh in the ISOPAN IBERICA plant amount to 0.274 kgCO₂eq. in the ISOPAN EST plant to 0.479 kgCO₂eq. in the ISOPAN DEUTSCHLAND plant to 0.594 kgCO₂eq.

MANUFACTURER INFORMATION

OUR ESG IDENTITY

Adherence to ESG (Environment, Social, and Governance) factors has become an essential requirement for the responsible growth of Manni Group. The company is aware of the need to integrate social and environmental aspects into all activities through a transparent organizational approach. We believe that the overall performance of a company and the effectiveness of its actions are closely correlated with the well-being of the social context in which it operates and the impact it generates on the environment.

For these reasons, Corporate Social Responsibility and ESG (Environment, Social, Governance) are fully integrated into the business and our governance.

INNOVATION

Isopan has a Research and Development division dedicated to product and process innovation, which has allowed the introduction of new more sustainable technologies, more performing products and new international certificates.

CERTIFICATIONS

Isopan has a UNI EN ISO 9001:2015 certified global management system for all group companies.

SUPPLIERS AND SHARED RESPONSIBILITY

To ensure the integrity and sustainability of the supply chain, it is crucial that all involved parties are committed.

The involvement of various stakeholders within the value chain allows us to achieve our sustainability goals.

Among our top priorities is the constant monitoring of the environmental, social, and governance impact throughout the entire supply chain, supporting our partners in their growth process.

SUPPLY CHAIN RESPONSIBILITY

Manni Group and Isopan suppliers are evaluated and selected considering product quality, ethical, environmental, social parameters, reduction of the impacts generated, company strategies. The procurement policies are contained in the Manni Group Sourcing Policy, published in 2018. Isopan thus intends to consolidate its market leadership by contributing, through products with high socio-environmental performance, to an evolution in the demand for more sustainable products and services.

END OF LIFE

Different types of Isopan panels are designed and built to be disassembled and reused. The individual parts can be separated and destined for recycling, recovery or disposal depending on the type of material.

INFORMATION ON CORRECT INSTALLATION AND USE OF THE PANEL

Isopan provides customers and users of the products with extensive documentation on storage, handling and use of the sandwich panels. Furthermore, the Product Technical Manuals contain technical information useful in the design and installation phases. Tutorial installation videos are also available for most of the Isopan product range. Each content can be consulted and downloaded from Isopan website: www.isopan.com

MAINTENANCE

Isopan sandwich panels have an estimated life of 40- 45 years depending on the conditions of use, according to the BBSR table. The product does not require specific maintenance. The products are easily washable, and cleaning does not require the use of environmentally harmful chemicals.

BUILDING SUSTAINABILITY RATING AND GREEN PUBLIC PROCUREMENT

The use of Isopan insulating panels contributes to the prerequisites and credits for the most important building sustainability assessment systems, including LEED, BREEAM and Living Building Challenge.

Isopan was also the first Italian company to endow some products with the Declare environmental label. The technical characteristics and the certificates obtained provide credits for these certifications and make them meet the environmental criteria required by many states in the world

on construction products used in their territory.

Specifically, it is specified that:

- During the production process no flame retardants are used which are subject to restrictions or prohibitions provided for by applicable national or community regulations;
- During the production process, no blowing agents are used with an ozone reduction potential greater than zero;
- No lead catalysts are used during the production process.

These percentage values vary depending on the type of panel, the thickness of the insulation and of the sheets and finally on the raw materials used.

OTHER ENVIRONMENTAL INFORMATION

At the Isopan factories there are no water discharges deriving from the panel production process.

07. REFERENCES

GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM, VER 4.0
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PCR 2019:14 version 1.2.5, 2022-11-01 "Construction products"

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

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

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Life cycle assessment - Principles and framework

UNI EN ISO 14044:2021
Life cycle assessment - Requirements and guidelines

UNI EN 16783:2017
Thermal insulation products - Product category rules (PCR) for factory made and in situ formed products for preparing environmental product declarations

c-PCR-005 Thermal Insulation products (EN 16783)

Life Cycle Assessment Technical Report
October 2022 - Bureau Veritas Nexta Srl

08. CONTACTS

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