



Environmental Product Declaration

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

Radiant panel – Pulsar IX

From **Sabiana S.p.A.**

EPD of multiple products, based on a representative product.

Included products:

- P IX 1, P IX 2, P IX 3, P IX 4
- PS IX 1, PS IX 2, PS IX 3, PS IX 4
- W IX 1, W IX 2, W IX 3, W IX 4
- WS IX 1, WS IX 2, WS IX 3, WS IX 4
- R IX 1, R IX 2, R IX 3, R IX 4

Programme:

The International EPD® System, www.environdec.com

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EPD International AB

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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

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
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Accountabilities for PCR and independent, third-party verification

Product Category Rules (PCR)

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

Product Category Rules (PCR): Construction Products, 2019:14, version 2.0.1

PCR review was conducted by: Technical Committee of the International EPD® System.
 The review panel may be contacted via support@environdec.com

Third-party verification

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

☒ EPD verification by individual verifier

Third-party verifier: Guido Croce

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 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 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.

About Sabiana S.p.A

Sabiana is an Italian manufacturer of heating and air conditioning products, leader for hydronic terminal fan coil unit.

Sabiana headquarter is located in Corbetta (MI) and production facilities are all located nearby: two sites in Corbetta (MI) and two sites in Magenta (MI).

Sabiana's continuous innovation and quality enhancement strategy is pursued by the continuous R&D investments, with the adoption of advanced 3D design and simulations and modern laboratories for product testing and inspection, by continuous investments on advanced production equipment and new technologies and by the implementation of IoT across the organization.

Strong commitment to quality and sustainability is witnessed by the long-held ISO 9001 certification of the company and the ISO 14001 certification of the main production sites.

Sustainability and Circular Economy became pillars of the company strategy, with the main results¹ of:

- 96.6% of production material sourced from the European Union (of which 83.6% from Italian suppliers, most of them located in a short distance)
- Self-production of 60% of the overall electrical energy consumption, with the target of 80% in few years
- Continuous increase of % of reusable and recyclable materials in production

The Plants

Name and location of production site(s):

Sabiana plant involved in the production process of radiant panels is:

Sabiana 1: via Piave 53, 20011 Corbetta (MI), Italy



Aerial view of Sabiana headquarter

¹ Referred to 2022

Product information

Product name: Radiant panel - Pulsar P IX

Product identification: The Pulsar Radiant Panel is a modular hydronic radiant ceiling system designed for heating and cooling applications. The system operates with hot water, high temperature hot water or steam and provides uniform thermal comfort through radiant heat transfer without air movement, noise or dust circulation. Its smooth ceiling integrated design, low maintenance requirements, hygienic characteristics and compatibility with a wide range of building types, including offices, schools, hospitals and commercial facilities, make it a versatile solution for indoor climate control. The product is designed and manufactured in accordance with the requirements of EN 14037-1

Geographical scope: A1-A2 Global, A3 Italian, A4-A5, C European

UN CPC code: UN CPC Code: 44832 and HS 73221900

Product description: The Pulsar radiant panel consists of a 1 mm galvanized steel radiant plate with a welded stainless-steel tube. Galvanized steel omega strips ensure optimal thermal contact between the tube and the radiant surface. The panel is supplied with a 30 mm thick mineral wool insulation layer protected by a 25 µm aluminium sheet, which is mounted on the rear side of the panel. The visible surface is finished with an epoxy-polyester powder coating in standard RAL 9016.

The product is available in four standard lengths (1,2, 1,8, 2,4 and 3,0 m) and is designed for integration into suspended ceiling systems. The panel dimensions are compatible with standard 600 × 600 mm modular ceilings commonly used in Europe, while the flat visible surface allows the panels to be combined with a wide range of suspended ceiling tiles and lighting fixtures.

Heat is transferred predominantly by thermal radiation, providing uniform temperature distribution with limited air movement and silent operation. When connected to an appropriate

water system, the same panel can be used for both heating and cooling applications. As the system contains no fans or other moving parts, maintenance requirements are minimal and dust circulation is reduced. Typical applications include offices, educational buildings, healthcare facilities, commercial buildings and industrial premises.



The present EPD covers all models of Pulsar IX radiant panel shown in the following table and it is applicable to all possible configurations.

The model designation identifies the installation version and the panel size. The installation versions include P IX for installation within false ceilings, W IX for free hanging installation, R IX for installation in plasterboard ceilings, and PS IX and WS IX with double hydraulic connections.

Model	Type
P IX 1	Tipo P
P IX 2	Tipo P
P IX 3	Tipo P
P IX 4	Tipo P
PS IX 1	Tipo PS
PS IX 2	Tipo PS
PS IX 3	Tipo PS
PS IX 4	Tipo PS
W IX 1	Tipo W
W IX 2	Tipo W
W IX 3	Tipo W
W IX 4	Tipo W
WS IX 1	Tipo WS
WS IX 2	Tipo WS
WS IX 3	Tipo WS
WS IX 4	Tipo WS
R IX 1	Tipo R
R IX 2	Tipo R
R IX 3	Tipo R
R IX 4	Tipo R

According to the General Programme Instruction (GPI) v. 5.0.1 and the PCR 2019:14 "Construction products" v.2.0.1, the results for each category of impact are represented for the product P IX 2, identified as representative. This

product is the model of the Pulsar IX range estimated to have the highest sales volumes.

Packaging: Radiant panels are sold on wooden pallets with wooden spacers and wrapped in plastic film.

Technical data

The following table provides the weights and the corresponding conversion factors for the different Pulsar IX radiant panel models relative to the representative model P IX 2.

All other information and technical characteristics are available in the product technical manual downloadable from the company website, www.sabiana.it

Model	Length (mm)	Water content (l)	Weight (kg)		Conversion factors	
			Without packaging	With packaging	Without packaging	With packaging
P IX 1	1195	1,0	12,5	15,5	0,68	0,66
P IX 2	1795	1,5	18,5	23,5	1,00	1,00
P IX 3	2395	2,0	24,0	30,5	1,30	1,30
P IX 4	2995	2,5	31,5	38,5	1,70	1,64
PS IX 1	1195	1,0	12,5	15,5	0,68	0,66
PS IX 2	1795	1,5	18,5	23,5	1,00	1,00
PS IX 3	2395	2,0	24,0	30,5	1,30	1,30
PS IX 4	2995	2,5	31,5	38,5	1,70	1,64
W IX 1	1234	1,0	13,0	16,0	0,70	0,68
W IX 2	1858	1,5	19,5	24,5	1,05	1,04
W IX 3	2482	2,0	26,0	32,5	1,41	1,38
W IX 4	3106	2,5	32,5	39,5	1,76	1,68
WS IX 1	1234	1,0	13,0	16,0	0,70	0,68
WS IX 2	1858	1,5	19,5	24,5	1,05	1,04
WS IX 3	2482	2,0	26,0	32,5	1,41	1,38
WS IX 4	3106	2,5	32,5	39,5	1,76	1,68
R IX 1	1255	1,0	14,0	17,0	0,76	0,72
R IX 2	1855	1,5	21,0	26,0	1,14	1,11
R IX 3	2455	2,0	28,0	34,5	1,51	1,47
R IX 4	3055	2,5	35,5	42,5	1,92	1,81

Since the declared unit is 1 kg of product and the same life cycle model is applied to all products covered by this EPD, the variation is considered to be within the 10% criterion.

Content information

Product components	Weight, kg	Post-consumer recycled material, weight-%	Pre-consumer recycled material, weight-%	Total recycled material, weight-%	Biogenic material, weight-% and kg C/kg
Sheet metal (steel)	14,0400	0	0	0	0
Steel	3,3975	0	0	0	0
Glass fiber with aluminum kraft paper	0,7400	0	0	0	0,02% 0,0040
Powder paint	0,4400	0	0	0	0
TOTAL	18,6175	0	0	0	0
Packaging materials	Weight, kg	Weight-% (versus the product)			Weight biogenic carbon, kg C/kg
Wood (pallet)	4,4282	23,79%			0,4361
Cardboard	0,3780	2,03%			0,0328
Iron	0,0927	0,50%			0,0000
PE	0,3090	1,66%			0,0000
TOTAL	5,2079	27,97%			0,4688

Data referred to a single unit of the representative product P IX 2

The ranges of products from Sabiana Spa comply with the requirements of the "RoHS" Directive (EU) 2015/863 of 31 March 2015 and 2011/65/EU of 8 June 2011.

Sabiana S.p.A fulfils the requirements of "Regulation (EC) No 1907/2006 - Registration,

Evaluation, Authorisation and Restriction Chemicals (REACH)". Detailed declaration of the SVHC substances that may be present above a concentration of 0.1% (w/w) in the individual articles is available.

LCA information

Methodology: The quantification of the environmental performance was carried out in accordance with the Life Cycle Assessment (LCA - Life Cycle Assessment) methodology regulated by the ISO 14040, ISO 14044 and ISO 14025 standards and following the specific product requirements PCR 2019: 14 Construction Products Version 2.0.1.

The LCA methodology allows you to determine the environmental impacts of a product or service in terms of resource consumption and emissions into the environment, as well as waste production, from a life cycle perspective.

Declared unit: The declared unit is 1 kg of radiant panel.

Time representativeness: The LCA study is conducted in 2026 with data relating to 2025.

Database and LCA software: The Ecoinvent database v.3.10 (www.ecoinvent.org) provides the life cycle inventory data for the raw and process materials obtained from the background system. LCA software used is SimaPro 10.02.03.

Environmental impact method: EN 15804 + A2 based on EF 3.1 characterisation factors ([JRC Website](#))

Description of the system boundaries: Cradle to gate with options (A1-A3, A4-A5, C1-C4, D).

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage			Use stage							End of life stage			Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	IT	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data used	8,39%				-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X=Declared module, ND= Non declared, EU=European, GLO=Global, IT=Italy.

Cut-off rules: 1% cut-off is applied. According to PCR 2019:14 v.2.0.1, data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts have been included, and also a 95% of total inflows (mass and energy) per life-cycle stages have been included.

Quality data: Primary data are used for electricity and average distances and means of transport in modules A1-A3.

Secondary data derived from the Ecoinvent v.3.10 database is used for the following phases: production of raw materials, fuels and water consumption. Data quality assessment is compliant with Annex E of EN 15804:2012+A2:2019, taking into account

The following table shows the details of the determination of primary data. According to PCR, the declaration of share of primary data

geographical, technological and temporal representativeness.

Allocation rules: No allocation was made in the A1-A2 modules. The materials and weights were extracted from the BoM of the specific configuration. For each material, the type of packaging with which it arrives at the Sabiana plant has been identified and the amount of packaging allocated to the individual material has been calculated. Raw material transports were calculated based on manufacturer/supplier distances.

For module A3 an allocation was made based on the number of pieces to determine the specific consumes of a single radiant panel.

is required only for the total GWP-GHG results of modules A1-A3.

Process name	Source Type	Source	Reference year	Data category	Share of primary data, of GWP GHG results for A1 A3
(A2) Transport of raw materials to manufacturing site	Database	Ecoinvent 3.10	2025	Primary data	1,64%
(A3) Manufacture of product	Database	Ecoinvent 3.10	2025	Primary data	6,75%
Total share of primary data, of GWP GHG results for A1-A3					8,39%

Process name	Geographical Representativeness	Temporal Representativeness	Technological Representativeness
(A2) Transport of raw materials to manufacturing site	Good (Database are selected based on the geographical representativeness of the suppliers)	Very Good (all the processes considered are under validity)	Good
(A3) Manufacture of product	Good (Database are selected based on the geographical representativeness of the suppliers)	Very Good (all the processes considered are under validity)	Good

Life Cycle Stages

A1, raw material supply. This includes the extraction and processing of all raw materials and energy which occur upstream from the manufacturing process.

A2, transport to the manufacturer. The raw materials are transported to the manufacturing

site. The modelling includes road and boat transportations of each raw material. For each component/material, the distance from the production country to the Sabiana plant has been calculated.

A3, manufacturing. This module includes the manufacture/assembly of product at the Sabiana' plant and the manufacture of packaging. The production of packaging material is taken into account at this stage. The processing of any waste arising from this stage is also included.

The 11,52% of the electricity used for the production of the Pulsar P IX 2 at Sabiana plant is self-produced by photovoltaic panels (0,0725 kg CO₂eq/ kWh). The remaining amount of electricity is supplied by the national grid. The electrical mix used to model the electrical consumption at medium voltage is based on the Italian Residual Mix 2025 (Source: AIB, "European Residual Mixes -Results of the calculation of Residual Mixes for the calendar year 2025", 0,74 kg CO₂eq/kWh). Total electricity mix is evaluated as 0,6631 kg CO₂eq/ kWh.

The end-of-life scenario for raw material packaging was modelled according to CONAI 2024 data (Italian Packaging Consortium).

A4, transport to the building site. This module includes transport from the production gate to the installation site. The average distribution distance is calculated based on the sales of the Pulsar IX - P IX 2 radiant panel in the year 2025. Specifically, the following distribution is considered: 2,4% of the product is sold in Italy and 97,6% in other European countries (it was considered the specific distance for each state). Shipments to Italy and Europe took place by truck, with some distances also covered by train (for the United Kingdom and Ireland).

A5, installation into the building. This module includes all material and energy inputs and outputs required for the installation of the radiant panel. Installation is manual without the use of energy and/or materials. Specifically, this module includes only the end of life of the product packaging. The end-of-life scenario for packaging was modelled for a European scenario according to Eurostat scenarios for packaging waste (2023).

C1 - de-construction. This stage includes the impacts during the dismantling of the Pulsar P IX 2 from the building. It is assumed that no energy and additional material are needed for the dismantling of the product. This module has

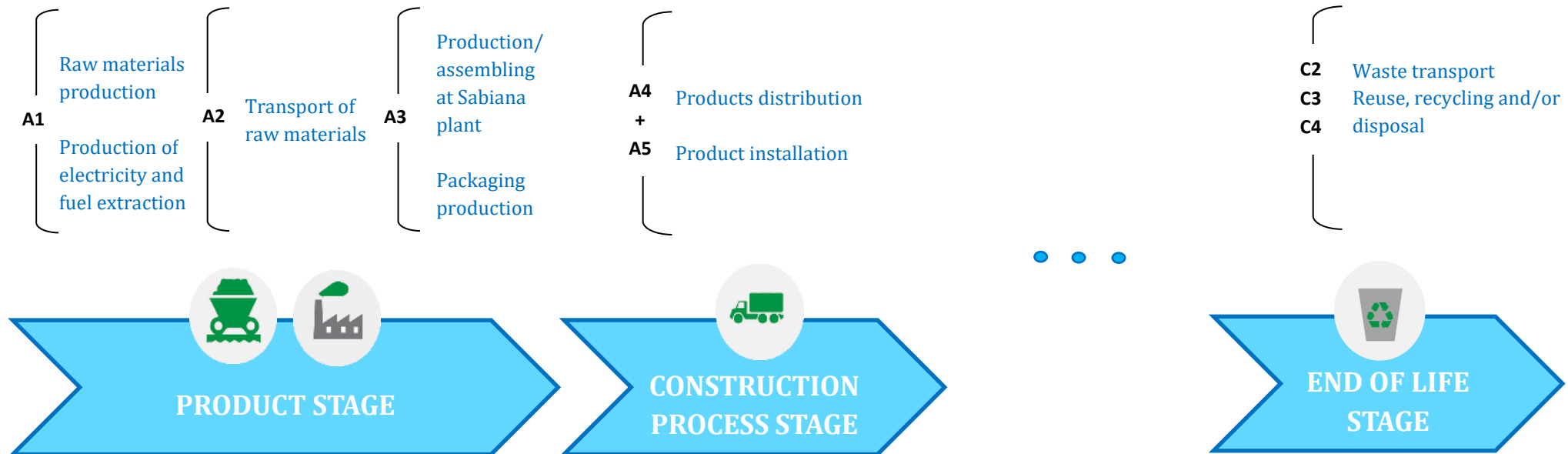
a contribution of 0 to all environmental indicators.

C2, waste transport. This stage includes the transport by road to local waste sites from the installation site. A distance of 50 km is assumed.

C3, waste processing. This module includes the collection of waste fractions from the deconstruction and waste processing of material flows intended for reuse, recycling and energy recovery. For Europe, a steel recycling rate of 88% is assumed, according to the European Steel Association (EUROFER).

C4, waste disposal. Waste disposal including physical pre-treatment and management of the disposal site. According to EUROFER, for Europe it is assumed that 12% of steel is sent to landfill. 100% of fiberglass insulation is landfilled.

D, reuse, recycling and energy recovery potentials. Materials that are recycled are assumed to substitute the use of virgin metals. Benefits of heat recovery from the incineration are excluded.



Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results referred to 1 kg of radiant panel									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	4,65E+00	1,25E-01	1,83E-02	0,00E+00	9,89E-03	1,48E-02	6,55E-04	-1,55E+00
GWP-biogenic	kg CO ₂ eq.	-2,20E-01	4,14E-05	4,29E-01	0,00E+00	3,21E-06	2,81E-02	3,23E-06	-1,15E+00
GWP-luluc	kg CO ₂ eq.	7,30E-03	3,08E-06	1,95E-07	0,00E+00	2,41E-07	8,89E-06	6,50E-08	-2,10E-03
GWP-total	kg CO ₂ eq.	4,43E+00	1,25E-01	4,48E-01	0,00E+00	9,89E-03	4,29E-02	6,59E-04	-2,70E+00
ODP	kg CFC 11 eq.	6,39E-08	2,55E-09	9,66E-11	0,00E+00	2,00E-10	8,53E-11	1,67E-11	-1,42E-08
AP	mol H ⁺ eq.	1,83E-02	3,12E-04	2,48E-05	0,00E+00	2,37E-05	3,71E-05	6,92E-06	-5,47E-03
EP-freshwater	kg P eq.	2,11E-04	1,05E-07	1,39E-08	0,00E+00	8,21E-09	5,21E-07	1,20E-08	-6,35E-05
EP-marine	kg N eq.	4,05E-03	1,19E-04	1,42E-05	0,00E+00	8,97E-06	2,45E-05	2,33E-06	-1,32E-03
EP-terrestrial	mol N eq.	4,33E-02	1,31E-03	1,22E-04	0,00E+00	9,83E-05	1,35E-04	2,53E-05	-1,31E-02
POCP	kg NMVOC eq.	1,63E-02	5,43E-04	4,00E-05	0,00E+00	4,15E-05	4,52E-05	8,32E-06	-4,30E-03
ADP-minerals&metals*	kg Sb eq.	1,03E-04	4,14E-09	5,89E-10	0,00E+00	3,24E-10	4,16E-10	1,14E-10	-6,35E-06
ADP-fossil*	MJ	2,73E+01	1,87E-02	1,57E-03	0,00E+00	1,30E-03	4,91E-02	4,37E-04	-1,11E+01
WDP*	m ³ eq	1,85E+00	7,06E-04	-2,87E-04	0,00E+00	5,49E-05	-4,77E-04	-5,20E-03	-4,32E-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.

Additional mandatory and voluntary impact category indicators

Results referred to 1 kg of radiant panel									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG²	kg CO ₂ eq.	4,67E+00	1,25E-01	2,46E-02	0,00E+00	9,89E-03	2,73E-02	6,56E-04	-1,56E+00

² This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Resource use indicators

Results referred to 1 kg of radiant panel									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE**	MJ	4,60E+00	5,31E-03	6,78E-04	0,00E+00	4,01E-04	1,36E-02	1,37E-04	-1,09E+00
PERM**	MJ	3,35E+01	7,34E-04	5,17E+00	0,00E+00	5,64E-05	2,21E-03	1,21E-04	1,74E+01
PERT**	MJ	3,81E+01	6,05E-03	5,17E+00	0,00E+00	4,58E-04	1,58E-02	2,58E-04	1,63E+01
PENRE	MJ	2,73E+01	1,87E-02	1,57E-03	0,00E+00	1,29E-03	4,91E-02	4,37E-04	-1,11E+01
PENRM	MJ	5,89E-03	3,57E-07	1,82E-07	0,00E+00	2,80E-08	8,67E-08	5,43E-09	-2,10E-04
PENRT	MJ	2,73E+01	1,87E-02	1,57E-03	0,00E+00	1,29E-03	4,91E-02	4,37E-04	-1,11E+01
SM	kg	1,42E-02	0,00E+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	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	0,00E+00
FW	m ³	5,20E-02	4,30E-05	-3,36E-04	0,00E+00	3,32E-06	3,42E-05	-1,12E-04	-1,25E-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								

**** The indicators PERE, PERM and PERT were calculated according to method B of the Annex 3 (PCR 2019:14 v.2.0.1)**

Waste indicators

Results referred to 1 kg of radiant panel									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,41E-02	1,22E-05	9,11E-04	0,00E+00	9,53E-07	4,16E-03	4,65E-06	-2,20E-03
Non-hazardous waste disposed	kg	9,48E-02	4,91E-05	8,21E-02	0,00E+00	3,85E-06	1,07E-02	1,55E-01	-2,67E-02
Radioactive waste disposed	kg	8,02E-05	1,86E-07	1,26E-08	0,00E+00	1,22E-08	4,88E-07	2,79E-09	-1,73E-05

Output flow indicators

Results referred to 1 kg of radiant panel									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,26E+00	0,00E+00	1,19E-01	0,00E+00	0,00E+00	8,80E-01	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	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
Exported energy, thermal	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

Different scenarios for module C1-C4 and D

Below, as indicated by the PCR, are the impacts associated with different waste management scenarios: 100% recycling and 100% landfilling. Results are referred to 1 kg of radiant pannel (Pulsar P IX 2, representative model).

100% recycling

Indicator	Unit	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	0,00E+00	9,89E-03	1,69E-02	0,00E+00	-1,81E+00
GWP-biogenic	kg CO ₂ eq.	0,00E+00	3,21E-06	3,19E-02	0,00E+00	-1,15E+00
GWP-luluc	kg CO ₂ eq.	0,00E+00	2,41E-07	1,01E-05	0,00E+00	-2,21E-03
GWP-total	kg CO ₂ eq.	0,00E+00	9,89E-03	4,88E-02	0,00E+00	-2,96E+00
ODP	kg CFC 11 eq.	0,00E+00	2,00E-10	9,70E-11	0,00E+00	-1,56E-08
AP	mol H ⁺ eq.	0,00E+00	2,37E-05	4,22E-05	0,00E+00	-6,53E-03
EP-freshwater	kg P eq.	0,00E+00	8,21E-09	5,92E-07	0,00E+00	-7,45E-05
EP-marine	kg N eq.	0,00E+00	8,97E-06	2,78E-05	0,00E+00	-1,52E-03
EP-terrestrial	mol N eq.	0,00E+00	9,83E-05	1,53E-04	0,00E+00	-1,55E-02
POCP	kg NMVOC eq.	0,00E+00	4,15E-05	5,14E-05	0,00E+00	-5,10E-03
ADP-minerals&metals	kg Sb eq.	0,00E+00	3,24E-10	4,73E-10	0,00E+00	-8,61E-06
ADP-fossil*	MJ	0,00E+00	1,30E-03	5,58E-02	0,00E+00	-1,31E+01
WDP*	m ³ eq	0,00E+00	5,49E-05	-5,42E-04	0,00E+00	-4,95E-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				

Indicator	Unit	C1	C2	C3	C4	D
GWP-GHG ³	kg CO ₂ eq.	0,00E+00	9,89E-03	3,10E-02	0,00E+00	-1,83E+00

³ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Indicator	Unit	C1	C2	C3	C4	D
PERE**	MJ	0,00E+00	4,01E-04	1,55E-02	0,00E+00	-1,35E+00
PERM**	MJ	0,00E+00	5,64E-05	2,52E-03	0,00E+00	1,73E+01
PERT**	MJ	0,00E+00	4,58E-04	1,80E-02	0,00E+00	1,60E+01
PENRE	MJ	0,00E+00	1,29E-03	5,58E-02	0,00E+00	-1,31E+01
PENRM	MJ	0,00E+00	7,06E-08	1,21E-10	0,00E+00	1,43E-06
PENRT	MJ	0,00E+00	1,29E-03	5,58E-02	0,00E+00	-1,31E+01
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	0,00E+00	3,32E-06	3,88E-05	0,00E+00	-1,44E-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

Indicator	Unit	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0,00E+00	9,53E-07	4,73E-03	0,00E+00	-2,26E-03
Non-hazardous waste disposed	kg	0,00E+00	3,85E-06	1,22E-02	0,00E+00	-3,16E-02
Radioactive waste disposed	kg	0,00E+00	1,22E-08	5,55E-07	0,00E+00	-2,00E-05

Indicator	Unit	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	1,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

100% disposal

Indicator	Unit	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	0,00E+00	9,89E-03	0,00E+00	2,86E-03	-4,09E-01
GWP-biogenic	kg CO ₂ eq.	0,00E+00	3,21E-06	0,00E+00	9,53E-06	-1,14E+00
GWP-luluc	kg CO ₂ eq.	0,00E+00	2,41E-07	0,00E+00	1,81E-07	-1,72E-03
GWP-total	kg CO ₂ eq.	0,00E+00	9,89E-03	0,00E+00	2,87E-03	-1,55E+00
ODP	kg CFC 11 eq.	0,00E+00	2,00E-10	0,00E+00	5,16E-11	-8,47E-09
AP	mol H ⁺ eq.	0,00E+00	2,37E-05	0,00E+00	2,71E-05	-1,20E-03
EP-freshwater	kg P eq.	0,00E+00	8,21E-09	0,00E+00	1,48E-08	-1,43E-05
EP-marine	kg N eq.	0,00E+00	8,97E-06	0,00E+00	1,18E-05	-4,46E-04
EP-terrestrial	mol N eq.	0,00E+00	9,83E-05	0,00E+00	1,29E-04	-3,08E-03
POCP	kg NMVOC eq.	0,00E+00	4,15E-05	0,00E+00	3,93E-05	-8,43E-04
ADP-fossil*	MJ	0,00E+00	3,24E-10	0,00E+00	2,06E-10	-5,10E-08
WDP*	m ³ eq	0,00E+00	1,30E-03	0,00E+00	7,97E-04	-2,28E+00
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					

Indicator	Unit	C1	C2	C3	C4	D
GWP-GHG⁴	kg CO ₂ eq.	0,00E+00	9,89E-03	0,00E+00	2,86E-03	-4,20E-01

⁴ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Indicator	Unit	C1	C2	C3	C4	D
PERE**	MJ	0,00E+00	4,01E-04	0,00E+00	2,62E-04	-2,45E-01
PERM**	MJ	0,00E+00	5,64E-05	0,00E+00	7,89E-04	1,75E+01
PERT**	MJ	0,00E+00	4,58E-04	0,00E+00	1,05E-03	1,72E+01
PENRE	MJ	0,00E+00	1,29E-03	0,00E+00	7,97E-04	-2,28E+00
PENRM	MJ	0,00E+00	7,06E-08	0,00E+00	7,92E-12	4,66E-08
PENRT	MJ	0,00E+00	1,29E-03	0,00E+00	7,97E-04	-2,28E+00
SM	kg	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
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m³	0,00E+00	3,32E-06	0,00E+00	-1,11E-04	-4,95E-03

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

Indicator	Unit	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	5,00E-06	-1,98E-03
Non-hazardous waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	9,99E-01	-1,02E-02
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	5,01E-09	-7,16E-06

Indicator	Unit	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

VERSION HISTORY

Version 1, 2026-07-15

- Original Version of the EPD

Abbreviations

Abbreviation	Definition
EN	European Norm (Standard)
EF	Environmental Footprint
EPD	Environmental Product Declaration
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification
SVHC	Substances of Very High Concern
ND	Not Declared

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