Environmental Product Declaration

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

Melody resistance welded

from

ISAN Radiátory s.r.o.

EPD of multiple products, based on average results

Programme:	The International EPD® System, www.environdec.com
Programme operator:	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
Website:	www.environdec.com
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Accountabilities for PCR, LCA 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): PCR 2019:14 CONSTRUCTION PRODUCTS, version 1.3.4
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair of the PCR review is Claudia A. Peña. The review panel may be contacted via info@environdec.com.
Life Cycle Assessment (LCA)
LCA accountability: LCA accountability: Dr.-Ing. Hana Brunhoferová, Ing. et Ing. Tatiana Trecáková, Ph.D., prof. Ing. Vladimír Kočí, Ph.D.,MBA, Šárecká 1962/5, 16000 Prague 6, Czech Republic, www.lcastudio.cz LCA Studio
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: prof. Ing. Silvia Vilčeková, Ph.D., SILCERT, s.r.o. 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.

Company information

Owner of the EPD: Isan Radiátory s.r.o.
Contact: Svrbík Richard, Ing.
Description of the organisation: As a Czech manufacturer of heating radiators, we have been on the market since 1953. Our extensive product portfolio includes Melody bathroom and designer radiators, Termo trench heaters, Atol column radiators, Exact lamellar and radiant convectors, Spiral finned-tube radiators, Ecolite convectors with Al-Cu exchangers for low-temperature heating, and Sofito ceiling panels. The radiators are made of steel profiles and pipes joined by soldering or resistance welding. The units are compatible with central heating systems, and with selected models also available for electric heating. Some heaters are also suitable for low-temperature systems further boosting their energy efficiency. In addition to heating, several variants feature a cooling function for year round comfort.

In addition to standard heating units, we also offer custom-made radiators. We excel in high-quality product processing, short delivery times, flexibility and professional customer service.
We have recently been devoting considerable effort to the development and manufacture of cutting edge electric radiators, and convectors for low-temperature water systems units and heat pumps. We follow up on developments in building heating and cooling technologies.
Our responsible approach to business is also reflected in our environmental policy. The way we manufacture and package our products systematically reduces our environmental impact.
Product-related or management system-related certifications: ISO 9001:2016, EMAS-registrations
Name and location of production site(s): ISAN Radiátory s.r.o. Cejl 105, Brno 602 00, CZ
Workshop: ISAN Radiátory s.r.o., Poříčí 26, Blansko 678 01, CZ

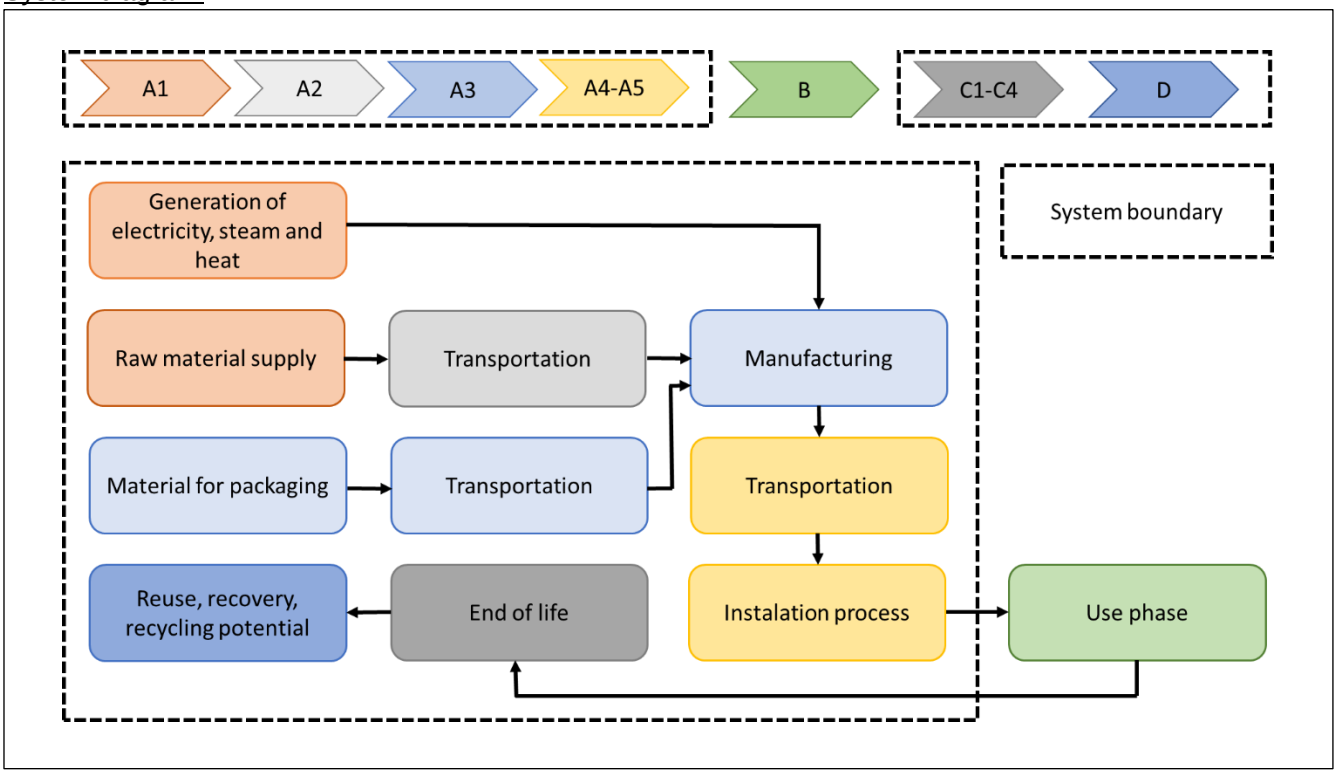
Product information

Product name: PANKOW (Melody resistance welded)
Product identification: Heating elements (EN 442)
Product description:
The company's widest product range offers more than 80 radiator models for bathrooms as well as residential and office space. It includes water and electric heaters that come in a broad selection of shapes, sizes and connection options. The customers welcome the wide range of colors available and the opportunity to choose their own front panel print design, including photographs.
The weighted average results of the included products based on production volumes were calculated.
UN CPC code: 44823
Geographical scope: EU, global

LCA information

Functional unit / declared unit: 1 kg of radiator
Reference service life: ten calendar years
Time representativeness: Site specific data from producer are based on 1 year average for process data (reference year 2023). Time scope less than 10-years were applied for background data. Time scope less than 2-years were applied for specific data
Database(s) and LCA software used: LCA for Experts (Sphera), Sphera database and Ecoinvent database
Description of system boundaries:
This EPD is based on system boundary cradle to gate (A1-A3) with modules C1-C4, module D and optional modules A4 and A5.
The system boundary covers the production of raw materials, all relevant transport down to factory gate, manufacturing by ISAN, Czech Republic, transport to the customer and process of unpacking, treatment of produced waste, treatment of residual waste.

System diagram:



More information:
Module A1 covers the production of materials and components for ISAN and it also includes fuels and energy carriers (electricity, thermal energy). This consists of the production of input materials and components as steel sheets, profiles and tubes, wires, indirect materials, etc.
Module A2 covers the transport of materials and components into the site of production ISAN. Generic database (DB) processes with site-specific parameters for distance were used.
Module A3 covers on-site operated processes dealing with the radiator production and packaging. In this module is also covered internal transport of products to company warehouse.
Module A4 covers the transport of product from the site of production ISAN to the site of installation (considered average distance to customer 800 km for Melody resistance welded). Generic DB processes with site-specific parameters for distance were used.
Module A5 covers the phase of treatment and disposal of waste generated from the unpacking of the heater.
Module C1 includes the radiator's deconstruction.
Module C2 covers the transport of residual waste to End-of-life (EoL) treatment. Generic DB processes with estimated general distances were used. Estimated distance for the transport of waste to EoL treatment was set at 100 km.
Module C3 includes media consumed in recyclable waste sorting facility.
Module C4 covers the process for landfilling of residual waste from radiator's recycling.
Module D covers declared benefits and loads regarding to recycling potential and energy recovery from incineration of packaging materials.
Electricity mix: Generation of electricity consumed within ISAN was based on the Czech residual electricity grid mix. GWP-GHG indicator of the used residual electricity grid mix is 0,64 kg CO2 eq./kWh.
Characterisation factors: Characterisation factors are based on Environmental Footprint 3.1. (EF 3.1).

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	CZE	EU	EU	NR	NR	NR	NR	NR	NR	NR	EU	EU	EU	EU	GLO
Specific data used	97%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<5%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Steel	0,952	30*	0
Pigment	0,029	0	0
HDPE	0,019	0	0
TOTAL	1,000	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Corrugated cardboard	0,024	2,22%	0,42
Polyethylene	0,008	0,74%	0
TOTAL	0,032	2,96%	0,32

*Based on supplier's EPD; post-consumer and pre- consumer are not distinguishable

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
No substances from the SVHC list to report.			

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	3,73E+00	7,44E-02	7,03E-02	5,01E-02	9,01E-03	2,07E-02	7,41E-04	-4,21E-01
GWP-biogenic	kg CO_2 eq.	-1,14E-01	8,96E-04	1,18E-01	1,13E-05	1,09E-04	9,01E-06	0,00E+00	6,38E-04
GWP-luluc	kg CO_2 eq.	2,62E-03	1,23E-03	8,58E-06	7,50E-06	1,49E-04	2,46E-06	2,33E-06	-1,73E-04
GWP-total	kg CO_2 eq.	3,62E+00	7,66E-02	1,88E-01	5,01E-02	9,27E-03	2,08E-02	7,43E-04	-4,21E-01
ODP	kg CFC 11 eq.	5,53E-07	7,38E-15	5,56E-13	5,51E-13	8,94E-16	1,66E-13	1,93E-15	1,14E-12
AP	mol H^+ eq.	1,38E-02	1,00E-04	1,22E-04	1,17E-04	1,22E-05	4,83E-05	5,33E-06	-9,52E-04
EP-freshwater	kg P eq.	8,11E-04	3,13E-07	2,76E-08	2,62E-08	3,79E-08	8,96E-09	1,52E-09	-3,46E-08
EP-marine	kg N eq.	3,15E-03	3,65E-05	2,12E-05	1,96E-05	4,42E-06	1,12E-05	1,38E-06	-2,28E-04
EP-terrestrial	mol N eq.	3,34E-02	4,35E-04	2,33E-04	2,10E-04	5,26E-05	1,21E-04	1,51E-05	-2,47E-03
POCP	kg NMVOC eq.	1,06E-02	-1,31E-03	6,28E-05	5,85E-05	-1,59E-04	3,31E-05	4,15E-06	-7,58E-04
ADP-minerals&metals*	kg Sb eq.	1,64E-05	6,24E-09	2,43E-09	2,37E-09	7,56E-10	8,49E-10	3,48E-11	-4,76E-09
ADP-fossil*	MJ	4,42E+01	9,57E-01	9,41E-01	9,30E-01	1,16E-01	3,53E-01	1,00E-02	-3,32E+00
WDP*	m^3	8,68E+00	1,09E-03	5,81E-03	2,86E-03	1,32E-04	8,75E-04	8,23E-05	-6,29E-03
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

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	3,73E+00	7,59E-02	7,03E-02	5,01E-02	9,19E-03	2,08E-02	7,45E-04	-4,21E-01
Particulate matter	Disease incidences	2,16E-08	1,01E-09	1,14E-09	1,09E-09	1,22E-10	4,03E-10	6,55E-11	-1,38E-08
Ionising radiation. human health	kBq U235 eq.	1,27E-01	1,73E-04	1,80E-02	1,79E-02	2,09E-05	5,39E-03	1,28E-05	3,56E-03
Ecotoxicity fresh water	CTUe	1,40E+01	7,04E-01	9,97E-02	9,27E-02	8,53E-02	8,28E-02	6,27E-03	-4,86E-01
Human toxicity. cancer	CTUh	1,50E-08	1,41E-11	5,29E-12	4,94E-12	1,71E-12	2,90E-12	8,40E-13	-6,39E-10
Human toxicity. non-cancer	CTUh	1,16E-08	6,29E-10	2,03E-10	1,78E-10	7,62E-11	8,51E-11	8,87E-11	4,39E-10
Land Use	Pt	6,07E+00	3,50E-01	9,21E-02	8,90E-02	4,24E-02	2,70E-02	2,52E-03	2,76E-01

Resource use indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	7,17E+00	8,09E-02	1,35E-01	1,32E-01	9,80E-03	4,01E-02	1,64E-03	4,91E-01
PERM	MJ	2,69E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	7,17E+00	8,09E-02	1,35E-01	1,32E-01	9,80E-03	4,01E-02	1,64E-03	4,91E-01
PENRE	MJ	5,03E+01	9,57E-01	9,41E-01	9,30E-01	1,16E-01	3,53E-01	1,00E-02	-3,32E+00
PENRM	MJ	1,10E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	5,03E+01	9,57E-01	9,41E-01	9,30E-01	1,16E-01	3,53E-01	1,00E-02	-3,32E+00
SM	kg	3,19E-01	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	2,52E-01	9,08E-05	2,57E-04	1,87E-04	1,10E-05	5,66E-05	2,52E-06	-2,90E-04
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								

[1] 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 CO_2 is set to zero.

Waste indicators

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,55E-01	3,10E-11	1,38E-10	1,32E-10	3,75E-12	4,18E-11	2,15E-13	-2,75E-11
Non-hazardous waste disposed	kg	9,28E-01	1,49E-04	2,31E-03	2,30E-04	1,80E-05	8,46E-05	5,00E-02	-6,20E-03
Radioactive waste disposed	kg	1,71E-03	1,24E-06	1,21E-04	1,20E-04	1,50E-07	3,61E-05	1,12E-07	3,79E-05

Output flow indicators

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	5,00E-02	0,00E+00	2,40E-02	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	1,40E-02	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	-4,92E-02
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	-8,83E-02

Additional environmental information

ISAN's environmental performance:

Efficient customer deliveries

- All products are delivered to our customers at fixed intervals.
- Contractually arranged supplies of specific volume ensure that only full-pallet deliveries are made.
- Pallets used for deliveries are reclaimed and reused.

Packaging material

- Quarterly reports help monitor packaging material consumption on a regular basis.
- Pallets are reclaimed at delivery, reused and recycled at the end of their useful life.
- Smaller units are delivered on half-size pallets, ensuring their full utilization.
- Plastic film is replaced by hardened cardboard as secondary packaging.
- Our customized packaging is designed specifically for each unit range to reduce the consumption of packaging material.
- We use brown unbleached cardboard for packaging as its recycling and degradability is more efficient compared to bleached cardboard. In addition, it is produced at a larger scale, allowing us to further reduce our carbon footprint.
- All plastic caps are replaced by eco-friendly sugar cane plugs.
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Rainwater

- Rainwater collected in tanks provides a cooling source for the capillary soldering furnace.

Saving paper

- Our manufacturing workshop operations are paper-free.
- All billing documentation, including invoices and delivery notes, is made exclusively in electronic form.

Photovoltaics

- Installation of photovoltaic panels with a maximum capacity of 169 kW.

References

General Programme Instructions of the International EPD® System. Version 4.1.
Product Category Rules (PCR) document for Construction Products (PCR 2019:14 Version 1.3.4. 2024-04-30)
ISO 14020:2000 Environmental labels and declarations — General principles. 2000-09
ISO 14025: EN ISO 14025:2006-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures
ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework. 2006-07
ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines. 2006-07
EN 15804+A2:2019/AC:2021 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. 2021
Ecoinvent: ecoinvent database. www.ecoinvent.org
Sphera: software LCA for Experts. Sphera solutions. www.sphera.com

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