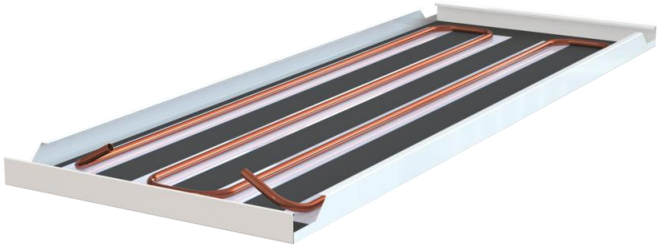
ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

A11-S, Steel panels - 150 mm HCR distance
Swegon Group AB



EPD HUB, HUB-3451
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Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Swegon Group AB
Address	JA Wettergrens gata 7, 421 30, Västra Frölunda, Sweden
Contact details	info@swegon.se
Website	www.swegon.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Heloise Hedbom, Swegon
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	A11-S, Steel panels with 150 mm distance between heat conducting rails (HCR).
Additional labels	Size 1000 mm x 600 mm – 150 mm to 2500 mm x 1000 mm – 150 mm. See Appendix 1
Product reference	-
Place of production	St. Leon-Rot, Germany
Period for data	2024
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	+0,9% / -0,9%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of A11-S
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	3,47E+00
GWP-total, A1-A3 ($kgCO_2e$)	3,30E+00
Secondary material, inputs (%)	24,7
Secondary material, outputs (%)	81,1
Total energy use, A1-A3 (kWh)	14,4
Net freshwater use, A1-A3 (m^3)	1,28

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

People spend most of their time indoors, which is why we need a sound indoor climate for our health, well-being, and happiness. Swegon's ambition is to achieve the world's best indoor environment with the least possible impact on the external environment. Our business models, services, products, and systems are all designed to provide the right solution for each individual project.

Swegon Group AB is a market leading supplier in the field of indoor environment, offering solutions for ventilation, heating, cooling and climate optimization, as well as connected services and expert technical support. Swegon has subsidiaries in and distributors all over the world and production plants in Europe, North America and India. The company employs more than 3 300 people.

PRODUCT DESCRIPTION

The A11-S radiant ceiling sail in steel is a highly efficient radiant ceiling system that receives a flow of room air on all sides, allowing both heating and cooling of buildings.

The innovative A11 activation system has a special structure. The copper pipe and aluminium heat conducting rails are welded together using laser technology. The coils are permanently bonded to the metal plates using a special adhesive and high pressure, thereby ensuring optimum thermal transfer. To satisfy the acoustic requirements, acoustic fleece is bonded in the back of the ceiling panels.

For more information about the product please visit;
https://www.swegon.com/products-and-services/room-units/climate-ceilings/sails--modules/a11-s/

Further information can be found at www.swegon.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	> 99 %	Europe
Minerals	< 1 %	Europe
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	0,053

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of A11-S
Mass per declared unit	1 kg
Functional unit	-
Reference service life	50 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Perforated and coated steel ceiling panels with an acoustic tissue are delivered to the Swegon factory in St. Leon-Rot. Here, aluminium strips are cut to the correct sizes and copper pipes are bent to form the required shapes. The copper pipes are then welded onto the aluminium strips to create the activation part of the climate ceiling. The aluminium strips ensure thermal connection between the ceiling panel and the copper pipes, while the copper pipes facilitate water conduction and heat absorption within the radiant ceiling system. The activation part is then glued onto the perforated metal ceiling panels, forming the complete A11-S.

The A11-S units are then stacked on wooden pallets and secured with cardboard and plastic foil, ready for shipment to the building site for installation.

Waste streams from the manufacturing process include metal scrap from discarded products, which is sent for recycling, and ancillary materials like plastic foil, which are incinerated.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation distance to the construction site is calculated based on a weighted average of sales 2024.

The A11-S in steel is sold ready to be installed and no raw material waste is generated during installation. The end-of-life treatment of product packaging is assumed based on an average EU scenario, where the packaging material is managed with different ratios of recycling, incineration, and disposal in landfills.

PRODUCT USE AND MAINTENANCE (B1-B7)

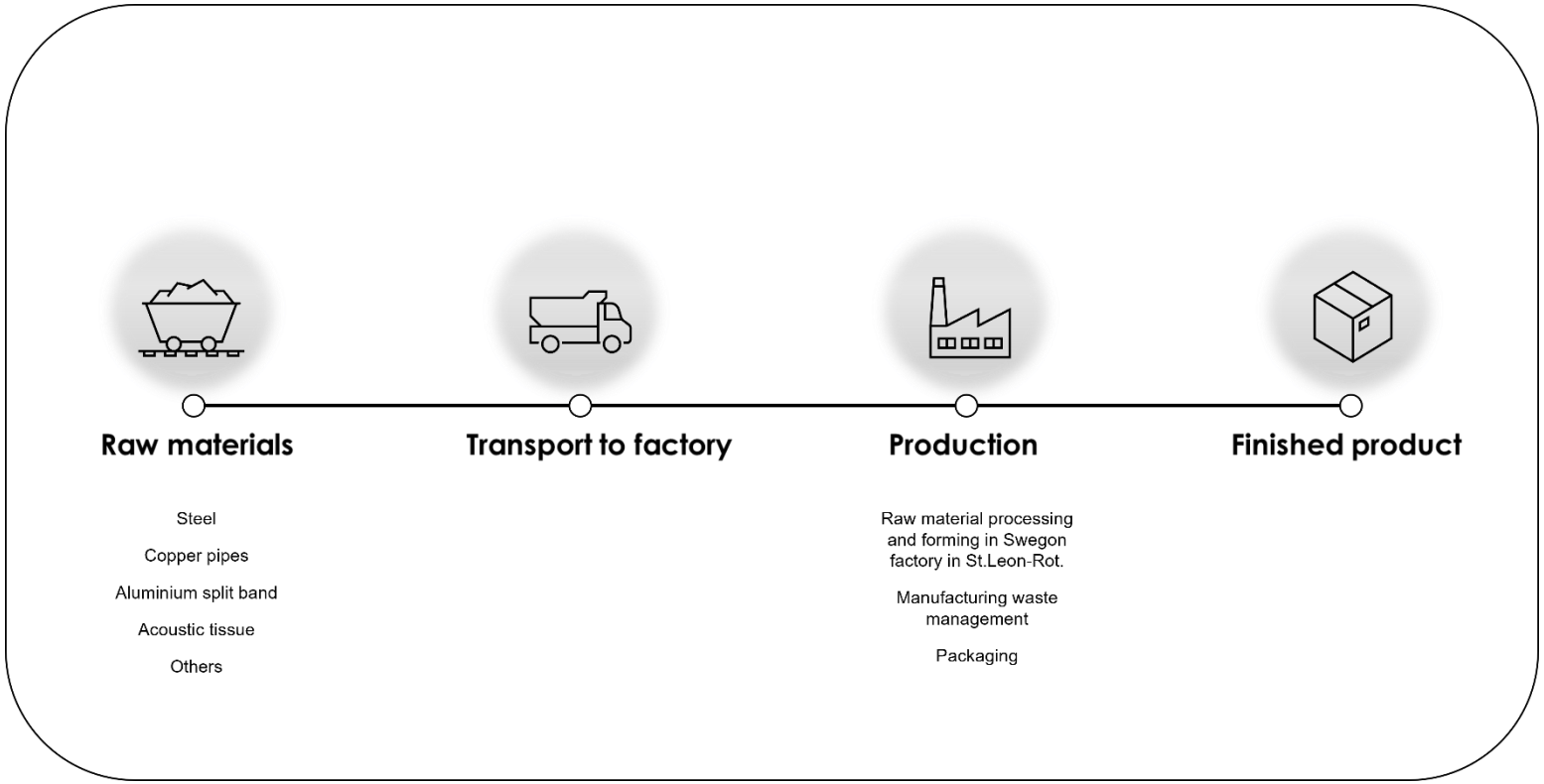
This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end of the product life, the A11-S is assumed to be demolished. The impact of its deconstruction (C1) is based on literature data for energy use during demolition. The copper pipes, aluminium rail, and steel plates can be easily separated and reused. Waste processing (C3) and disposal (C4) consider the European market, with scenarios based on literature data.

These scenarios include varying ratios of material recycling, incineration, and landfill for the input materials. For steel, 85% is recycled while 15% ends up in a landfill. Aluminium has a 90% recycling rate, whereas copper sees 60% recycling.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Averaged by shares of total mass
Variation in GWP-fossil for A1-A3 (%)	+0,9% / -0,9%

To investigate variations in environmental impact, two extreme cases were modelled and analysed. From these two models, an average was calculated based on weight. GWP fossil for modules A1-A3 for the size with the highest respective lowest impact included in this EPD, differs from the average with +0,9 % respective -0,9%.

This EPD covers the A11-S, Steel panels with 150 mm distance between the heat conducting rails. While the panels can be manufactured in various sizes, this EPD includes products ranging from sizes 1000 mm x 600 mm to 2500 mm x 1000 mm. Please find a selection of the included products, their corresponding weight and GWP-GHG impact in Annex 1.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology ‘allocation, Cut-off, EN 15804+A2‘.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	3,29E+00	7,38E-02	-6,19E-02	3,30E+00	9,44E-02	2,50E-01	MND	MND	MND	MND	MND	MND	MND	3,25E-03	3,98E-02	1,90E-02	4,10E-03	-1,74E+00
GWP – fossil	kg CO_2e	3,27E+00	7,37E-02	1,29E-01	3,47E+00	9,44E-02	1,23E-02	MND	MND	MND	MND	MND	MND	MND	3,24E-03	3,98E-02	1,90E-02	4,10E-03	-1,73E+00
GWP – biogenic	kg CO_2e	3,05E-03	1,46E-05	-1,91E-01	-1,88E-01	1,90E-05	2,37E-01	MND	MND	MND	MND	MND	MND	MND	7,32E-06	8,70E-06	-4,39E-05	-2,02E-06	1,10E-02
GWP – LULUC	kg CO_2e	1,65E-02	2,65E-05	4,07E-04	1,69E-02	3,39E-05	6,17E-06	MND	MND	MND	MND	MND	MND	MND	1,00E-05	1,76E-05	2,32E-05	1,60E-06	-1,55E-02
Ozone depletion pot.	kg CFC_{-11}e	5,50E-08	1,47E-09	2,25E-09	5,87E-08	1,88E-09	6,75E-11	MND	MND	MND	MND	MND	MND	MND	5,61E-11	5,59E-10	2,45E-10	7,95E-11	-1,05E-08
Acidification potential	mol H^+e	2,08E-02	1,53E-04	4,12E-04	2,14E-02	1,96E-04	2,34E-05	MND	MND	MND	MND	MND	MND	MND	1,65E-05	1,33E-04	2,21E-04	1,30E-05	-1,54E-02
EP-freshwater[2)]	kg Pe	5,83E-04	4,96E-06	1,11E-04	6,99E-04	6,35E-06	1,09E-06	MND	MND	MND	MND	MND	MND	MND	2,89E-06	3,09E-06	1,18E-05	8,82E-07	-4,89E-03
EP-marine	kg Ne	2,97E-03	3,68E-05	1,22E-04	3,13E-03	4,72E-05	2,44E-05	MND	MND	MND	MND	MND	MND	MND	2,86E-06	4,31E-05	4,91E-05	4,46E-06	-3,19E-03
EP-terrestrial	mol Ne	3,55E-02	3,98E-04	1,12E-03	3,70E-02	5,09E-04	9,52E-05	MND	MND	MND	MND	MND	MND	MND	2,49E-05	4,68E-04	5,54E-04	4,67E-05	-4,09E-02
POCP ("smog")[3)]	kg NMVOCe	1,07E-02	2,55E-04	4,94E-04	1,14E-02	3,27E-04	3,10E-05	MND	MND	MND	MND	MND	MND	MND	8,24E-06	1,85E-04	1,64E-04	1,66E-05	-1,04E-02
ADP-minerals & metals[4)]	kg Sbe	1,75E-04	2,45E-07	4,88E-07	1,76E-04	3,14E-07	1,29E-08	MND	MND	MND	MND	MND	MND	MND	7,22E-09	1,30E-07	1,30E-06	9,59E-09	-1,41E-04
ADP-fossil resources	MJ	4,16E+01	1,04E+00	2,31E+00	4,50E+01	1,33E+00	5,84E-02	MND	MND	MND	MND	MND	MND	MND	7,65E-02	5,59E-01	2,48E-01	4,44E-02	-1,68E+01
Water use[5)]	m^3e depr.	3,07E+00	5,16E-03	4,93E-02	3,13E+00	6,60E-03	1,71E-03	MND	MND	MND	MND	MND	MND	MND	1,98E-03	2,60E-03	4,37E-03	4,08E-04	-8,62E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1,61E-07	5,43E-09	4,71E-09	1,71E-07	6,95E-09	4,03E-10	MND	MND	MND	MND	MND	MND	MND	5,76E-11	3,20E-09	3,02E-09	2,47E-10	-1,76E-07
Ionizing radiation[6)]	kBq U235e	2,98E-01	1,34E-03	2,22E-02	3,22E-01	1,71E-03	1,61E-04	MND	MND	MND	MND	MND	MND	MND	2,14E-03	4,55E-04	1,87E-03	5,91E-05	-4,24E-02
Ecotoxicity (freshwater)	CTUe	1,83E+02	1,38E-01	5,17E-01	1,84E+02	1,77E-01	2,43E-02	MND	MND	MND	MND	MND	MND	MND	8,07E-03	8,79E-02	1,45E-01	1,50E+00	-6,90E+01
Human toxicity, cancer	CTUh	6,91E-09	1,24E-11	1,97E-10	7,12E-09	1,58E-11	2,35E-12	MND	MND	MND	MND	MND	MND	MND	6,72E-13	6,75E-12	1,66E-11	3,40E-12	-1,39E-09
Human tox. non-cancer	CTUh	3,01E-07	6,56E-10	1,06E-09	3,03E-07	8,40E-10	1,21E-10	MND	MND	MND	MND	MND	MND	MND	2,89E-11	3,51E-10	1,12E-09	4,77E-11	-2,81E-08
SQP[7)]	-	6,68E+00	6,27E-01	1,54E+01	2,27E+01	8,03E-01	5,52E-02	MND	MND	MND	MND	MND	MND	MND	1,30E-02	3,46E-01	4,81E-01	6,20E-02	-8,09E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low-dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	6,10E+00	1,82E-02	1,41E+00	7,53E+00	2,32E-02	-1,66E+00	MND	MND	MND	MND	MND	MND	MND	1,79E-02	7,67E-03	4,48E-02	9,28E-04	-6,55E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,68E+00	1,68E+00	0,00E+00	-1,68E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,07E-02
Total use of renew. PER	MJ	6,10E+00	1,82E-02	3,09E+00	9,21E+00	2,32E-02	-3,34E+00	MND	MND	MND	MND	MND	MND	MND	1,79E-02	7,67E-03	4,48E-02	9,28E-04	-6,46E+00
Non-re. PER as energy	MJ	4,14E+01	1,04E+00	1,84E+00	4,43E+01	1,33E+00	-2,17E-01	MND	MND	MND	MND	MND	MND	MND	7,65E-02	5,59E-01	2,49E-01	2,57E-02	-1,68E+01
Non-re. PER as material	MJ	0,00E+00	0,00E+00	3,99E-01	3,99E-01	0,00E+00	-3,99E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,49E-01
Total use of non-re. PER	MJ	4,14E+01	1,04E+00	2,24E+00	4,47E+01	1,33E+00	-6,16E-01	MND	MND	MND	MND	MND	MND	MND	7,65E-02	5,59E-01	2,49E-01	2,57E-02	-1,67E+01
Secondary materials	kg	2,47E-01	4,82E-04	8,71E-03	2,57E-01	6,17E-04	4,79E-05	MND	MND	MND	MND	MND	MND	MND	8,22E-06	2,51E-04	3,00E-04	1,21E-05	6,17E-01
Renew. secondary fuels	MJ	8,32E-05	6,09E-06	5,60E-02	5,61E-02	7,80E-06	4,58E-07	MND	MND	MND	MND	MND	MND	MND	3,38E-08	3,19E-06	1,39E-05	2,29E-07	-2,13E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,28E+00	1,41E-04	1,32E-03	1,28E+00	1,81E-04	-1,44E-04	MND	MND	MND	MND	MND	MND	MND	6,36E-05	7,45E-05	1,27E-04	3,24E-06	-1,92E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,38E-01	1,51E-03	6,55E-03	2,46E-01	1,93E-03	4,46E-04	MND	MND	MND	MND	MND	MND	MND	1,74E-04	9,73E-04	1,69E-03	3,12E-04	-5,23E-01
Non-hazardous waste	kg	2,63E+00	3,18E-02	6,82E-01	3,35E+00	4,07E-02	2,59E-01	MND	MND	MND	MND	MND	MND	MND	1,42E-02	1,82E-02	5,79E-02	4,73E-02	-3,16E+00
Radioactive waste	kg	8,48E-05	3,32E-07	6,37E-06	9,15E-05	4,26E-07	4,01E-08	MND	MND	MND	MND	MND	MND	MND	5,49E-07	1,11E-07	4,78E-07	1,50E-08	-8,59E-06

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	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	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	6,20E-02	6,20E-02	0,00E+00	4,06E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	8,11E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	7,00E-04	7,00E-04	0,00E+00	3,57E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	9,93E-03	0,00E+00	0,00E+00	9,93E-03	0,00E+00	2,16E-01	MND	MND	MND	MND	MND	MND	MND	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	9,14E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,25E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	3,29E+00	7,33E-02	1,29E-01	3,49E+00	9,38E-02	1,50E-02	MND	MND	MND	MND	MND	MND	MND	3,24E-03	3,96E-02	1,90E-02	4,09E-03	-1,73E+00
Ozone depletion Pot.	kg $CFC_{-11}e$	1,32E-08	1,17E-09	1,83E-09	1,62E-08	1,50E-09	5,44E-11	MND	MND	MND	MND	MND	MND	MND	4,60E-11	4,46E-10	2,02E-10	7,00E-11	-9,68E-09
Acidification	kg SO_2e	1,05E-02	1,23E-04	3,26E-04	1,10E-02	1,58E-04	1,74E-05	MND	MND	MND	MND	MND	MND	MND	1,40E-05	1,02E-04	1,78E-04	9,92E-06	-1,20E-02
Eutrophication	kg PO_4^3e	1,76E-03	3,11E-05	1,77E-03	3,55E-03	3,98E-05	6,47E-06	MND	MND	MND	MND	MND	MND	MND	1,90E-06	2,47E-05	2,57E-05	3,06E-06	-2,30E-03
POCP (“smog”)	kg C_2H_4e	1,12E-03	1,30E-05	4,63E-05	1,18E-03	1,67E-05	2,00E-06	MND	MND	MND	MND	MND	MND	MND	7,87E-07	9,10E-06	1,05E-05	8,34E-07	-1,07E-03
ADP-elements	kg Sbe	2,42E-04	2,40E-07	4,82E-07	2,43E-04	3,07E-07	1,24E-08	MND	MND	MND	MND	MND	MND	MND	7,16E-09	1,27E-07	1,30E-06	6,06E-09	-1,41E-04
ADP-fossil	MJ	3,24E+01	1,01E+00	1,89E+00	3,53E+01	1,30E+00	5,57E-02	MND	MND	MND	MND	MND	MND	MND	3,88E-02	5,52E-01	2,16E-01	4,34E-02	-1,63E+01

ENVIRONMENTAL IMPACTS – ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Radioactive waste, high	kg	1,67E-05	8,23E-08	1,38E-06	1,82E-05	1,05E-07	1,07E-08	MND	MND	MND	MND	MND	MND	MND	1,24E-07	3,31E-08	1,19E-07	4,29E-09	-2,59E-06
Radioactive waste, int/low	kg	4,57E-05	2,50E-07	4,99E-06	5,09E-05	3,20E-07	2,95E-08	MND	MND	MND	MND	MND	MND	MND	4,26E-07	7,83E-08	3,59E-07	1,07E-08	-6,00E-06

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	3,28E+00	7,38E-02	1,29E-01	3,49E+00	9,44E-02	1,23E-02	MND	MND	MND	MND	MND	MND	MND	3,25E-03	3,98E-02	1,90E-02	4,10E-03	-1,75E+00

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online
This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Imane Uald Lamkaddam as an authorized verifier for EPD Hub Limited
12.06.2025

ANNEX 1

In this EPD the environmental impact of the radiant ceiling A11-S in steel with 150 mm distance between the heat conducting rails representing an average for several sizes is presented.

Please find a selected list of included products listed in the following table. The GWP-GHG impact presented for each size in the table has been calculated by multiplying the GWP-GHG for A1-A3 (as presented in this EPD) by the respective weight of each size.

For variants not shown in the following table, the item specific GWP-GHG can be calculated by multiplying the weight from the product data sheet with the GWP-GHG for A1-A3 presented in this EPD. If the weight is not shown it can be assumed that 1 m^2 of A11-S, steel panels with 150 mm distance between the heat conducting rails weight approximately 7,6 kg/ m^2.

Product	Area (m^2/item)	Total weight (kg)	GWP-GHG, A1-A3 (kg CO_2e/item)
A11-S, 2500 mm x 1000 mm - 150mm	2,5	19,1	66,7
A11-S, 2500 mm x 800 mm - 150mm	2	15,3	53,4
A11-S, 2500 mm x 600 mm - 150mm	1,5	11,4	39,8
A11-S, 2000 mm x 1000 mm - 150mm	2	15,3	53,4
A11-S, 2000 mm x 800 mm - 150mm	1,6	12,2	42,6
A11-S, 2000 mm x 600 mm - 150mm	1,2	9,2	32,1
A11-S, 1500 mm x 1000 mm - 150mm	1,5	11,4	39,8
A11-S, 1500 mm x 800 mm - 150mm	1,2	9,2	32,1
A11-S, 1500 mm x 600 mm - 150mm	0,9	6,9	24,1
A11-S, 1000 mm x 1000 mm - 150mm	1	7,6	26,5
A11-S, 1000 mm x 800 mm - 150mm	0,8	6,1	21,3
A11-S, 1000 mm x 600 mm - 150mm	0,6	4,6	16,1