

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

ARECO SPIRIT PANEL
(SANDWICH-ELEMENT)
ARECO PROFILES OY

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Areco Profiles Oy
Address	Tehdastie 17, 31400 Somero, Finland
Contact details	jori.jokela@macon.fi
Website	http://www.arecoprofiles.fi/fi/

PRODUCT IDENTIFICATION

Product name	Areco Spirit Panel (Sandwich-element)
Additional label(s)	ASP-S, ASP-S+, ASP-L, ASP-E, ASP-EX, ASP-T
Place(s) of production	Somero, Finland

The Building Information Foundation RTS sr

EPDs within the same product category but from different programmes may not be comparable.



Jukka Seppänen
RTS EPD Committee Secretary



Laura Apilo
Managing Director

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	The Building Information Foundation RTS sr
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804+A2 serves as the core PCR. In addition, the RTS PCR (Finnish version, 26.8.2020) is used.
EPD author	Jori Jokela, Macon Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
Verification date	12.01.2022
EPD verifier	Anni Oviir, Rangi Maja OÜ, www.lcasupport.com
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PRODUCT INFORMATION

PRODUCT DESCRIPTION

This EPD represents Areco Spirit Panel product group produced at Areco Profiles Oy facility in Somero, Finland. The product names are: Areco Spirit Panel (Sandwich element) ASP-S, ASP-S+, ASP-L, ASP-E, ASP-EX, ASP-T. Product names differ in terms of construction characteristics: e.g. fire classification, u-value, purpose of installation. Panel thicknesses available are 100 mm, 120 mm, 150 mm, 175 mm, 200 mm, 240 mm and 300 mm. The product under investigation is a sandwich-element which is used as an outer wall, partition or ceilings element. Areco Spirit Panel is a coloured steel sheet coated sandwich element consisting of a mineral wool (stone wool) core.

PRODUCT APPLICATION

The panel element is suitable for use in both normal and fire-resistant external and partition walls and ceilings. Typical applications are industrial and commercial buildings, sports halls, power plants and various storage facilities. Special applications include ventilation and cable ducts, fresh air chambers or fire and explosion rooms.

TECHNICAL SPECIFICATIONS

Areco Spirit Panel elements are constructed in three layers. The surface and background are colour coated structural steel, and the core of the elements is structural stone wool. Panel elements are 910 to 12,000 mm long and 1,200 mm wide. The thickness varies from 100 to 300 mm and 1 m² mass 18 to 37,5 kg. Elements less than 910 mm are sawn to length on site.

PRODUCT STANDARDS

Areco Spirit Panel elements are certified and CE marked. They meet a European standard EN 14509: Self-supporting double skin metal faced insulating panels (SFS-EN 14509: Itsekantavat metalliöhtlevypintaiset eristävät sandwich-elementit).

PHYSICAL PROPERTIES OF THE PRODUCT

Detailed properties information can be found from manufacturers webpages at <http://www.arecoprofiles.fi/fi/tuotteet/areco-sandwich-paneelit/areco-spirit-panel-rw/>.

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at <https://www.arecoprofiles.fi/fi/tuotteet/areco-sandwich-paneelit/areco-spirit-panel-rw/>

PRODUCT RAW MATERIAL COMPOSITION

Product and Packaging Material	Weight, kg	Post-consumer %	Renewable %	Country Region of origin
Colour coated galvanized steel/ recycled	8,4	20	0	Finland
Mineral wool				
100 mm panel	8,8	0	0	Russia, Finland
120 mm panel	10,3			
150 mm panel	13,7			
175 mm panel	16,6			
200 mm panel	18,2			
240 mm panel	22,6			
300 mm panel	28			
Adhesive				
100-120 mm panel	0,5	0	0	Finland
150-200 mm panel	0,6			
240 mm panel	0,7			
300 mm panel	0,8			

SUBSTANCES, REACH - VERY HIGH CONCERN

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	23-47 %	Finland
Minerals	50-77 %	EU, Russia
Fossil materials	2-3 %	EU
Bio-based materials	0	

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts of raw material supply (A1) include emissions generated when raw materials are taken from nature, transported to industrial units for processing and processed, along with waste handling from the various production processes. All major upstream processes are taken into consideration, including infrastructure. Loss of raw material and energy transmission losses are also taken into account. This stage includes all the aforementioned for the raw materials which end up in the final product (i.e. steel, zinc layer, polymer coating, adhesive and packaging) as well as the electricity and heat production which are consumed during the manufacturing at the plant.

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.

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 is defined according to RTS PCR. Manufacturing plant is taking place near the capital region of Finland. Therefore the transportation distance from manufacturing site to construction site in Helsinki is assumed as 110 km and the transportation method is assumed to be lorry.

Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly.

The installation (A5) of the elements is handled by the customer/constructor. Construction work itself is not taken into account in life-cycle calculations. Packaging waste goes to building material recycling by constructors via their waste management systems.

PRODUCT USE AND MAINTENANCE (B1-B7)

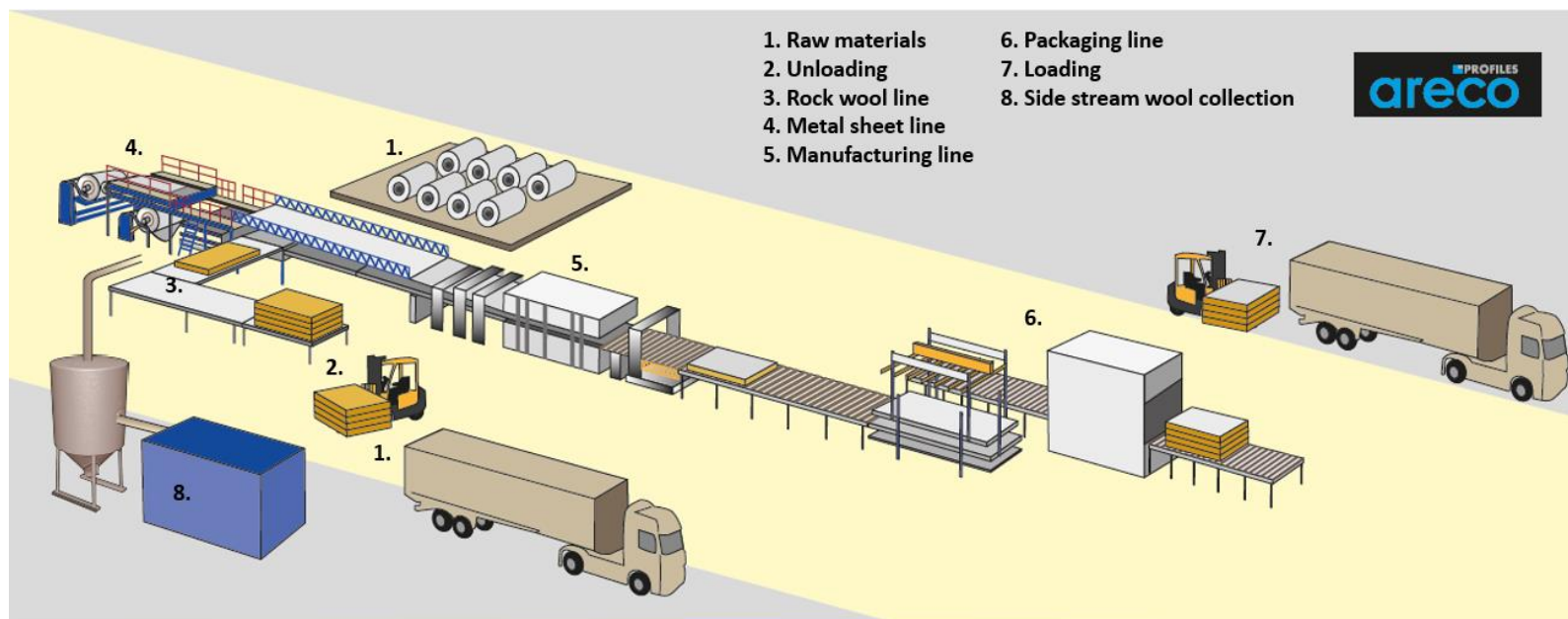
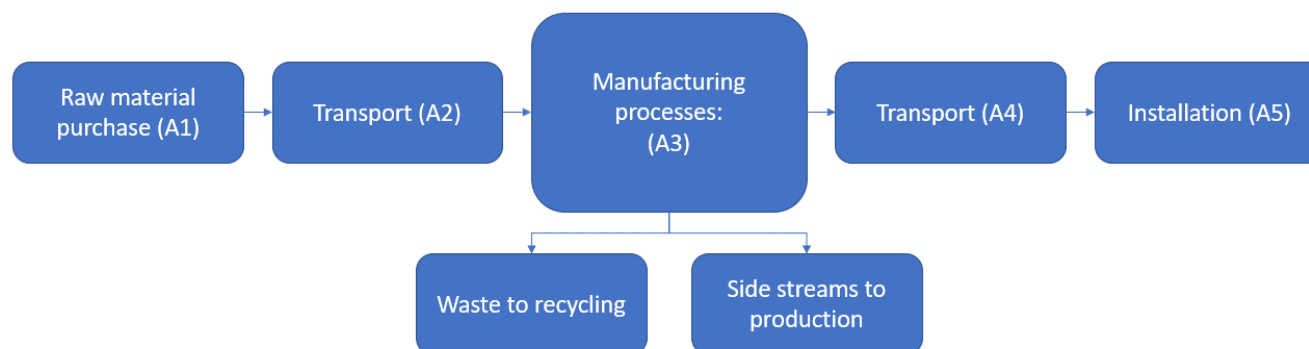
This EPD does not cover the use phase.

PRODUCT END OF LIFE (C1-C4, D)

Demolition is assumed to have negligible effects due to easy dismantling as elements by man work, no heavy demolition machinery needed. It is assumed that 100% of the elements are collected (C1). Distance for transportation to treatment is assumed as 50 km and the transportation method is assumed to be lorry (C2). 100 % of steel is assumed to be recycled (C3). It is assumed that 100 % of mineral wool is taken to landfill for final disposal (C4). Due to the recycling process the end-of-life product is converted into a recycled steel.

MANUFACTURING PROCESS

Simplified manufacturing process of Areco sandwich-elements:



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	Calendar year 2020
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DECLARED AND FUNCTIONAL UNIT

Declared unit	1 m2 of averaged Areco Spirit Panel
Mass per declared unit (100 mm)	18 kg
Mass per declared unit (120 mm)	19,5 kg
Mass per declared unit (150 mm)	23 kg
Mass per declared unit (175 mm)	25,6 kg
Mass per declared unit (200 mm)	27,5 kg
Mass per declared unit (240 mm)	32 kg
Mass per declared unit (300 mm)	37,5 kg

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0,0063

SYSTEM BOUNDARY

This EPD covers the cradle to gate with options scope with following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport), A5 (Assembly) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

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	D	D
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 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. There is no suitable data available for polymeric roller coating process used in colour coating of sheet metal. Instead we have used data of polyester coating to present contribution from colour coating.

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and RTS PCR. The study does not exclude any hazardous materials or substances.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order:

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below:

- Steel containing recycled metals are used, the proportion of recycled metals are about 20 % (SSAB's 2020 Sustainability report).
- Rolling coating of steel process data was not available. Data of

polyester coating has been used to present contribution from colour coating.

- Only electricity is used in the production of the products. Energy calculations can be allocated directly to Areco Spirit Panel products because other products are not manufactured at the same facility building.
- The transport distance of the finished product to customers has been estimated to be 110 km (distance to Finnish capital area from factory).
- In the end-of-life phase 100 % of the metals are recyclable.
- Estimation is that mineral wool needs to be handled at the moment as landfill waste.
- Packaging waste goes to building material recycling by constructors via their waste management systems. Wooden packaging material is usually re-used at construction sites to protect the openings of the building (doorways and windows).

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 - standard.

AVERAGES AND VARIABILITY

The range of thickness and weight of the products varies between 100-300 mm and 18-37,5 kg.

ENVIRONMENTAL IMPACT DATA

Note: ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930 are presented in annex.

Result tables below are presented for corresponding thicknesses (100-300mm).

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

100 mm CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	4,4E1	1,73E-1	4,69E-2	MND	0E0	8,19E-2	7,04E-2	5,07E-2	-9,5E0
GWP – fossil	kg CO ₂ e	4,39E1	1,74E-1	4,7E-2	MND	0E0	8,18E-2	7,03E-2	5,05E-2	-9,58E0
GWP – biogenic	kg CO ₂ e	1,02E-1	1,32E-4	-1,58E-4	MND	0E0	5,94E-5	1,31E-4	1E-4	7,11E-2
GWP – LULUC	kg CO ₂ e	3,46E-2	5,48E-5	2,83E-5	MND	0E0	2,46E-5	2,63E-5	1,5E-5	2,65E-4
Ozone depletion pot.	kg CFC-11e	3,16E-6	4,28E-8	3,71E-9	MND	0E0	1,92E-8	2,38E-8	2,08E-8	-2,55E-7
Acidification potential	mol H ⁺ e	6,15E-1	5,61E-4	1,39E-4	MND	0E0	3,44E-4	5,8E-4	4,8E-4	-3,69E-2
EP-freshwater ³⁾	kg Pe	2,27E-3	1,48E-6	8,43E-7	MND	0E0	6,65E-7	9,2E-7	6,11E-7	-3,85E-4
EP-marine	kg Ne	5,64E-2	1,23E-4	3,8E-5	MND	0E0	1,04E-4	2,02E-4	1,65E-4	-7,27E-3
EP-terrestrial	mol Ne	2,04E0	1,37E-3	4,17E-4	MND	0E0	1,14E-3	2,22E-3	1,82E-3	-7,7E-2
POCP (“smog”)	kg NMVOCe	1,98E-1	5,39E-4	1,34E-4	MND	0E0	3,68E-4	6,4E-4	5,29E-4	-5,02E-2
ADP-minerals & metals	kg Sbe	5,34E-2	3,11E-6	5,96E-7	MND	0E0	1,4E-6	1E-6	4,62E-7	-9,5E-6
ADP-fossil resources	MJ	5,49E2	2,83E0	4,8E-1	MND	0E0	1,27E0	1,63E0	1,41E0	-7,07E1
Water use ²⁾	m ³ e depr.	2,68E1	1,05E-2	9,64E-3	MND	0E0	4,73E-3	5,86E-2	6,53E-2	-1,36E0

1) GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) 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 experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e.

120 mm CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	4,6E1	1,87E-1	4,69E-2	MND	0E0	8,87E-2	7,04E-2	5,86E-2	-9,5E0
GWP – fossil	kg CO ₂ e	4,58E1	1,89E-1	4,7E-2	MND	0E0	8,86E-2	7,03E-2	5,84E-2	-9,58E0

GWP – biogenic	kg CO ₂ e	8,85E-2	1,43E-4	-1,58E-4	MND	0E0	6,44E-5	1,31E-4	1,16E-4	7,11E-2
GWP – LULUC	kg CO ₂ e	3,57E-2	5,93E-5	2,83E-5	MND	0E0	2,67E-5	2,63E-5	1,74E-5	2,65E-4
Ozone depletion pot.	kg CFC ₁₁ e	3,28E-6	4,64E-8	3,71E-9	MND	0E0	2,08E-8	2,38E-8	2,41E-8	-2,55E-7
Acidification potential	mol H ⁺ e	6,33E-1	6,07E-4	1,39E-4	MND	0E0	3,72E-4	5,8E-4	5,55E-4	-3,69E-2
EP-freshwater ³⁾	kg Pe	2,35E-3	1,6E-6	8,43E-7	MND	0E0	7,21E-7	9,2E-7	7,06E-7	-3,85E-4
EP-marine	kg Ne	5,82E-2	1,34E-4	3,8E-5	MND	0E0	1,12E-4	2,02E-4	1,91E-4	-7,27E-3
EP-terrestrial	mol Ne	2,07E0	1,49E-3	4,17E-4	MND	0E0	1,24E-3	2,22E-3	2,1E-3	-7,7E-2
POCP (“smog”)	kg NMVOCe	2,08E-1	5,83E-4	1,34E-4	MND	0E0	3,98E-4	6,4E-4	6,11E-4	-5,02E-2
ADP-minerals & metals	kg Sbe	5,34E-2	3,36E-6	5,96E-7	MND	0E0	1,51E-6	1E-6	5,34E-7	-9,5E-6
ADP-fossil resources	MJ	5,72E2	3,07E0	4,8E-1	MND	0E0	1,38E0	1,63E0	1,63E0	-7,07E1
Water use ²⁾	m ³ e depr.	2,74E1	1,14E-2	9,64E-3	MND	0E0	5,13E-3	5,86E-2	7,56E-2	-1,36E0

150 mm CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	5,1E1	2,2E-1	4,69E-2	MND	0E0	1,05E-1	7,04E-2	7,71E-2	-9,5E0
GWP – fossil	kg CO ₂ e	5,09E1	2,22E-1	4,7E-2	MND	0E0	1,05E-1	7,03E-2	7,69E-2	-9,58E0
GWP – biogenic	kg CO ₂ e	6,39E-2	1,69E-4	-1,58E-4	MND	0E0	7,59E-5	1,31E-4	1,52E-4	7,11E-2
GWP – LULUC	kg CO ₂ e	3,85E-2	6,98E-5	2,83E-5	MND	0E0	3,15E-5	2,63E-5	2,28E-5	2,65E-4
Ozone depletion pot.	kg CFC ₁₁ e	3,64E-6	5,46E-8	3,71E-9	MND	0E0	2,46E-8	2,38E-8	3,17E-8	-2,55E-7
Acidification potential	mol H ⁺ e	6,77E-1	7,15E-4	1,39E-4	MND	0E0	4,39E-4	5,8E-4	7,3E-4	-3,69E-2
EP-freshwater ³⁾	kg Pe	2,56E-3	1,89E-6	8,43E-7	MND	0E0	8,5E-7	9,2E-7	9,29E-7	-3,85E-4
EP-marine	kg Ne	6,33E-2	1,57E-4	3,8E-5	MND	0E0	1,32E-4	2,02E-4	2,51E-4	-7,27E-3
EP-terrestrial	mol Ne	2,15E0	1,75E-3	4,17E-4	MND	0E0	1,46E-3	2,22E-3	2,77E-3	-7,7E-2
POCP (“smog”)	kg NMVOCe	2,31E-1	6,87E-4	1,34E-4	MND	0E0	4,7E-4	6,4E-4	8,04E-4	-5,02E-2
ADP-minerals & metals	kg Sbe	5,35E-2	3,96E-6	5,96E-7	MND	0E0	1,78E-6	1E-6	7,03E-7	-9,5E-6
ADP-fossil resources	MJ	6,34E2	3,61E0	4,8E-1	MND	0E0	1,63E0	1,63E0	2,15E0	-7,07E1
Water use ²⁾	m ³ e depr.	2,9E1	1,34E-2	9,64E-3	MND	0E0	6,05E-3	5,86E-2	9,94E-2	-1,36E0

175 mm CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	5,48E1	2,45E-1	4,69E-2	MND	0E0	1,16E-1	7,04E-2	9,08E-2	-9,5E0
GWP – fossil	kg CO ₂ e	5,47E1	2,47E-1	4,7E-2	MND	0E0	1,16E-1	7,03E-2	9,06E-2	-9,58E0
GWP – biogenic	kg CO ₂ e	3,71E-2	1,88E-4	-1,58E-4	MND	0E0	8,45E-5	1,31E-4	1,8E-4	7,11E-2
GWP – LULUC	kg CO ₂ e	4,07E-2	7,77E-5	2,83E-5	MND	0E0	3,5E-5	2,63E-5	2,69E-5	2,65E-4
Ozone depletion pot.	kg CFC ₁₁ e	3,87E-6	6,07E-8	3,71E-9	MND	0E0	2,73E-8	2,38E-8	3,73E-8	-2,55E-7
Acidification potential	mol H ⁺ e	7,12E-1	7,95E-4	1,39E-4	MND	0E0	4,89E-4	5,8E-4	8,6E-4	-3,69E-2
EP-freshwater ³⁾	kg Pe	2,71E-3	2,1E-6	8,43E-7	MND	0E0	9,46E-7	9,2E-7	1,09E-6	-3,85E-4
EP-marine	kg Ne	6,67E-2	1,75E-4	3,8E-5	MND	0E0	1,47E-4	2,02E-4	2,96E-4	-7,27E-3
EP-terrestrial	mol Ne	2,21E0	1,95E-3	4,17E-4	MND	0E0	1,63E-3	2,22E-3	3,26E-3	-7,7E-2
POCP (“smog”)	kg NMVOCe	2,49E-1	7,64E-4	1,34E-4	MND	0E0	5,23E-4	6,4E-4	9,47E-4	-5,02E-2
ADP-minerals & metals	kg Sbe	5,36E-2	4,4E-6	5,96E-7	MND	0E0	1,99E-6	1E-6	8,28E-7	-9,5E-6
ADP-fossil resources	MJ	6,78E2	4,02E0	4,8E-1	MND	0E0	1,81E0	1,63E0	2,53E0	-7,07E1
Water use ²⁾	m ³ e depr.	3E1	1,49E-2	9,64E-3	MND	0E0	6,73E-3	5,86E-2	1,17E-1	-1,36E0

200 mm CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	5,69E1	2,63E-1	4,69E-2	MND	0E0	1,25E-1	7,04E-2	1,01E-1	-9,5E0
GWP – fossil	kg CO ₂ e	5,68E1	2,66E-1	4,7E-2	MND	0E0	1,25E-1	7,03E-2	1,01E-1	-9,58E0
GWP – biogenic	kg CO ₂ e	2,23E-2	2,01E-4	-1,58E-4	MND	0E0	9,08E-5	1,31E-4	1,99E-4	7,11E-2
GWP – LULUC	kg CO ₂ e	4,18E-2	8,34E-5	2,83E-5	MND	0E0	3,76E-5	2,63E-5	2,99E-5	2,65E-4
Ozone depletion pot.	kg CFC ₁₁ e	3,99E-6	6,52E-8	3,71E-9	MND	0E0	2,94E-8	2,38E-8	4,14E-8	-2,55E-7
Acidification potential	mol H ⁺ e	7,31E-1	8,54E-4	1,39E-4	MND	0E0	5,25E-4	5,8E-4	9,55E-4	-3,69E-2
EP-freshwater ³⁾	kg Pe	2,79E-3	2,25E-6	8,43E-7	MND	0E0	1,02E-6	9,2E-7	1,22E-6	-3,85E-4
EP-marine	kg Ne	6,86E-2	1,88E-4	3,8E-5	MND	0E0	1,58E-4	2,02E-4	3,29E-4	-7,27E-3
EP-terrestrial	mol Ne	2,24E0	2,09E-3	4,17E-4	MND	0E0	1,75E-3	2,22E-3	3,62E-3	-7,7E-2
POCP (“smog”)	kg NMVOCe	2,59E-1	8,2E-4	1,34E-4	MND	0E0	5,62E-4	6,4E-4	1,05E-3	-5,02E-2
ADP-minerals & metals	kg Sbe	5,37E-2	4,73E-6	5,96E-7	MND	0E0	2,13E-6	1E-6	9,19E-7	-9,5E-6

ADP-fossil resources	MJ	7,02E2	4,31E0	4,8E-1	MND	0E0	1,94E0	1,63E0	2,81E0	-7,07E1
Water use ²⁾	m ³ e depr.	3,06E1	1,6E-2	9,64E-3	MND	0E0	7,23E-3	5,86E-2	1,3E-1	-1,36E0

240 mm CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	6,33E1	3,06E-1	4,69E-2	MND	0E0	1,46E-1	7,04E-2	1,25E-1	-9,5E0
GWP – fossil	kg CO ₂ e	6,32E1	3,09E-1	4,7E-2	MND	0E0	1,45E-1	7,03E-2	1,24E-1	-9,58E0
GWP – biogenic	kg CO ₂ e	-1,15E-2	2,34E-4	-1,58E-4	MND	0E0	1,06E-4	1,31E-4	2,46E-4	7,11E-2
GWP – LULUC	kg CO ₂ e	4,54E-2	9,69E-5	2,83E-5	MND	0E0	4,38E-5	2,63E-5	3,69E-5	2,65E-4
Ozone depletion pot.	kg CFC ₁₁ e	4,43E-6	7,58E-8	3,71E-9	MND	0E0	3,42E-8	2,38E-8	5,12E-8	-2,55E-7
Acidification potential	mol H ⁺ e	7,88E-1	9,93E-4	1,39E-4	MND	0E0	6,11E-4	5,8E-4	1,18E-3	-3,69E-2
EP-freshwater ³⁾	kg Pe	3,05E-3	2,62E-6	8,43E-7	MND	0E0	1,18E-6	9,2E-7	1,5E-6	-3,85E-4
EP-marine	kg Ne	7,49E-2	2,18E-4	3,8E-5	MND	0E0	1,84E-4	2,02E-4	4,06E-4	-7,27E-3
EP-terrestrial	mol Ne	2,34E0	2,43E-3	4,17E-4	MND	0E0	2,03E-3	2,22E-3	4,47E-3	-7,7E-2
POCP (“smog”)	kg NMVOCe	2,88E-1	9,53E-4	1,34E-4	MND	0E0	6,54E-4	6,4E-4	1,3E-3	-5,02E-2
ADP-minerals & metals	kg Sbe	5,39E-2	5,5E-6	5,96E-7	MND	0E0	2,48E-6	1E-6	1,14E-6	-9,5E-6
ADP-fossil resources	MJ	7,79E2	5,01E0	4,8E-1	MND	0E0	2,26E0	1,63E0	3,47E0	-7,07E1
Water use ²⁾	m ³ e depr.	3,26E1	1,86E-2	9,64E-3	MND	0E0	8,41E-3	5,86E-2	1,61E-1	-1,36E0

300 mm CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	7,09E1	3,58E-1	4,69E-2	MND	0E0	1,71E-1	7,04E-2	1,54E-1	-9,5E0
GWP – fossil	kg CO ₂ e	7,1E1	3,61E-1	4,7E-2	MND	0E0	1,7E-1	7,03E-2	1,53E-1	-9,58E0
GWP – biogenic	kg CO ₂ e	-5,46E-2	2,74E-4	-1,58E-4	MND	0E0	1,24E-4	1,31E-4	3,04E-4	7,11E-2
GWP – LULUC	kg CO ₂ e	4,97E-2	1,13E-4	2,83E-5	MND	0E0	5,13E-5	2,63E-5	4,55E-5	2,65E-4
Ozone depletion pot.	kg CFC ₁₁ e	4,95E-6	8,87E-8	3,71E-9	MND	0E0	4,01E-8	2,38E-8	6,31E-8	-2,55E-7
Acidification potential	mol H ⁺ e	8,56E-1	1,16E-3	1,39E-4	MND	0E0	7,16E-4	5,8E-4	1,45E-3	-3,69E-2
EP-freshwater ³⁾	kg Pe	3,37E-3	3,07E-6	8,43E-7	MND	0E0	1,39E-6	9,2E-7	1,85E-6	-3,85E-4
EP-marine	kg Ne	8,24E-2	2,55E-4	3,8E-5	MND	0E0	2,16E-4	2,02E-4	5,01E-4	-7,27E-3

EP-terrestrial	mol Ne	2,46E0	2,84E-3	4,17E-4	MND	0E0	2,38E-3	2,22E-3	5,52E-3	-7,7E-2
POCP ("smog")	kg NMVOCe	3,24E-1	1,12E-3	1,34E-4	MND	0E0	7,66E-4	6,4E-4	1,6E-3	-5,02E-2
ADP-minerals & metals	kg Sbe	5,4E-2	6,43E-6	5,96E-7	MND	0E0	2,91E-6	1E-6	1,4E-6	-9,5E-6
ADP-fossil resources	MJ	8,72E2	5,87E0	4,8E-1	MND	0E0	2,65E0	1,63E0	4,28E0	-7,07E1
Water use ²⁾	m ³ e depr.	3,49E1	2,18E-2	9,64E-3	MND	0E0	9,86E-3	5,86E-2	1,98E-1	-1,36E0

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

100 mm ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	5,32E-6	1,53E-8	2,34E-9	MND	0E0	7,4E-9	1,05E-8	9,33E-9	-6,78E-7
Ionizing radiation ²⁾	kBq U235e	1,65E0	1,24E-2	1,58E-3	MND	0E0	5,56E-3	6,87E-3	5,8E-3	1,08E-1
Ecotoxicity (freshwater)	CTUe	1,86E3	2,17E0	4,9E-1	MND	0E0	9,72E-1	1,13E0	8,92E-1	-3,13E2
Human toxicity, cancer	CTUh	3,58E-7	5,45E-11	4,77E-11	MND	0E0	2,49E-11	3,37E-11	2,11E-11	-2,09E-9
Human tox. non-cancer	CTUh	2,18E-6	2,47E-9	6,86E-10	MND	0E0	1,15E-9	9,81E-10	6,52E-10	1,62E-6
SQP ¹⁾	-	1,19E2	4,28E0	2,88E-1	MND	0E0	1,92E0	2,49E0	2,4E0	-1,71E1

1) SQP = Land use related impacts/soil quality. 2) 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.

120 mm ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	5,42E-6	1,66E-8	2,34E-9	MND	0E0	8,02E-9	1,05E-8	1,08E-8	-6,78E-7
Ionizing radiation ²⁾	kBq U235e	1,68E0	1,34E-2	1,58E-3	MND	0E0	6,02E-3	6,87E-3	6,7E-3	1,08E-1
Ecotoxicity (freshwater)	CTUe	1,91E3	2,34E0	4,9E-1	MND	0E0	1,05E0	1,13E0	1,03E0	-3,13E2
Human toxicity, cancer	CTUh	3,65E-7	5,9E-11	4,77E-11	MND	0E0	2,69E-11	3,37E-11	2,44E-11	-2,09E-9
Human tox. non-cancer	CTUh	2,2E-6	2,68E-9	6,86E-10	MND	0E0	1,25E-9	9,81E-10	7,53E-10	1,62E-6
SQP ¹⁾	-	1,26E2	4,63E0	2,88E-1	MND	0E0	2,08E0	2,49E0	2,78E0	-1,71E1

150 mm ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	5,7E-6	1,95E-8	2,34E-9	MND	0E0	9,45E-9	1,05E-8	1,42E-8	-6,78E-7
Ionizing radiation ³⁾	kBq U235e	1,79E0	1,58E-2	1,58E-3	MND	0E0	7,1E-3	6,87E-3	8,82E-3	1,08E-1
Ecotoxicity (freshwater)	CTUe	2,05E3	2,76E0	4,9E-1	MND	0E0	1,24E0	1,13E0	1,36E0	-3,13E2
Human toxicity, cancer	CTUh	3,89E-7	6,95E-11	4,77E-11	MND	0E0	3,18E-11	3,37E-11	3,21E-11	-2,09E-9
Human tox. non-cancer	CTUh	2,32E-6	3,15E-9	6,86E-10	MND	0E0	1,47E-9	9,81E-10	9,91E-10	1,62E-6
SQP ¹⁾	-	1,4E2	5,45E0	2,88E-1	MND	0E0	2,45E0	2,49E0	3,65E0	-1,71E1

175 mm ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	5,9E-6	2,17E-8	2,34E-9	MND	0E0	1,05E-8	1,05E-8	1,67E-8	-6,78E-7
Ionizing radiation ³⁾	kBq U235e	1,86E0	1,76E-2	1,58E-3	MND	0E0	7,91E-3	6,87E-3	1,04E-2	1,08E-1
Ecotoxicity (freshwater)	CTUe	2,14E3	3,07E0	4,9E-1	MND	0E0	1,38E0	1,13E0	1,6E0	-3,13E2
Human toxicity, cancer	CTUh	4,03E-7	7,73E-11	4,77E-11	MND	0E0	3,54E-11	3,37E-11	3,78E-11	-2,09E-9
Human tox. non-cancer	CTUh	2,37E-6	3,5E-9	6,86E-10	MND	0E0	1,64E-9	9,81E-10	1,17E-9	1,62E-6
SQP ¹⁾	-	1,52E2	6,06E0	2,88E-1	MND	0E0	2,73E0	2,49E0	4,3E0	-1,71E1

200 mm ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	6,01E-6	2,33E-8	2,34E-9	MND	0E0	1,13E-8	1,05E-8	1,86E-8	-6,78E-7
Ionizing radiation ²⁾	kBq U235e	1,9E0	1,88E-2	1,58E-3	MND	0E0	8,49E-3	6,87E-3	1,15E-2	1,08E-1
Ecotoxicity (freshwater)	CTUe	2,18E3	3,3E0	4,9E-1	MND	0E0	1,49E0	1,13E0	1,78E0	-3,13E2
Human toxicity, cancer	CTUh	4,11E-7	8,3E-11	4,77E-11	MND	0E0	3,8E-11	3,37E-11	4,2E-11	-2,09E-9
Human tox. non-cancer	CTUh	2,39E-6	3,76E-9	6,86E-10	MND	0E0	1,76E-9	9,81E-10	1,3E-9	1,62E-6
SQP ¹⁾	-	1,59E2	6,51E0	2,88E-1	MND	0E0	2,93E0	2,49E0	4,78E0	-1,71E1

240 mm ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	6,35E-6	2,71E-8	2,34E-9	MND	0E0	1,32E-8	1,05E-8	2,29E-8	-6,78E-7
Ionizing radiation ²⁾	kBq U235e	2,04E0	2,19E-2	1,58E-3	MND	0E0	9,88E-3	6,87E-3	1,43E-2	1,08E-1
Ecotoxicity (freshwater)	CTUe	2,36E3	3,83E0	4,9E-1	MND	0E0	1,73E0	1,13E0	2,19E0	-3,13E2
Human toxicity, cancer	CTUh	4,4E-7	9,65E-11	4,77E-11	MND	0E0	4,42E-11	3,37E-11	5,19E-11	-2,09E-9
Human tox. non-cancer	CTUh	2,53E-6	4,37E-9	6,86E-10	MND	0E0	2,05E-9	9,81E-10	1,6E-9	1,62E-6
SQP ¹⁾	-	1,78E2	7,56E0	2,88E-1	MND	0E0	3,41E0	2,49E0	5,91E0	-1,71E1

300 mm ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Particulate matter	Incidence	6,77E-6	3,17E-8	2,34E-9	MND	0E0	1,54E-8	1,05E-8	2,83E-8	-6,78E-7
Ionizing radiation ²⁾	kBq U235e	2,19E0	2,57E-2	1,58E-3	MND	0E0	1,16E-2	6,87E-3	1,76E-2	1,08E-1
Ecotoxicity (freshwater)	CTUe	2,56E3	4,48E0	4,9E-1	MND	0E0	2,03E0	1,13E0	2,7E0	-3,13E2
Human toxicity, cancer	CTUh	4,73E-7	1,13E-10	4,77E-11	MND	0E0	5,18E-11	3,37E-11	6,4E-11	-2,09E-9
Human tox. non-cancer	CTUh	2,68E-6	5,12E-9	6,86E-10	MND	0E0	2,4E-9	9,81E-10	1,97E-9	1,62E-6
SQP ¹⁾	-	2E2	8,85E0	2,88E-1	MND	0E0	4E0	2,49E0	7,28E0	-1,71E1

USE OF NATURAL RESOURCES

100 mm USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	6,01E1	3,57E-2	2,48E-2	MND	0E0	1,6E-2	2,04E-2	1,14E-2	9,39E-1
Renew. PER as material	MJ	4,01E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER ¹⁾	MJ	6,05E1	3,57E-2	2,48E-2	MND	0E0	1,6E-2	2,04E-2	1,14E-2	9,39E-1
Non-re. PER as energy	MJ	5,24E2	2,83E0	4,8E-1	MND	0E0	1,27E0	1,63E0	1,41E0	-7,07E1
Non-re. PER as material	MJ	2,5E1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	5,49E2	2,83E0	4,8E-1	MND	0E0	1,27E0	1,63E0	1,41E0	-7,07E1

Secondary materials	kg	1,95E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	4,48E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	5,43E-1	5,9E-4	1,41E-4	MND	0E0	2,65E-4	1,44E-3	1,55E-3	-6,35E-2

1) PER = Primary energy resources

120 mm USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	6,12E1	3,86E-2	2,48E-2	MND	0E0	1,73E-2	2,04E-2	1,32E-2	9,39E-1
Renew. PER as material	MJ	4,01E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER ¹⁾	MJ	6,16E1	3,86E-2	2,48E-2	MND	0E0	1,73E-2	2,04E-2	1,32E-2	9,39E-1
Non-re. PER as energy	MJ	5,47E2	3,07E0	4,8E-1	MND	0E0	1,38E0	1,63E0	1,63E0	-7,07E1
Non-re. PER as material	MJ	2,5E1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	5,72E2	3,07E0	4,8E-1	MND	0E0	1,38E0	1,63E0	1,63E0	-7,07E1
Secondary materials	kg	1,95E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	4,48E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	5,58E-1	6,38E-4	1,41E-4	MND	0E0	2,87E-4	1,44E-3	1,79E-3	-6,35E-2

150 mm USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	6,46E1	4,54E-2	2,48E-2	MND	0E0	2,05E-2	2,04E-2	1,74E-2	9,39E-1
Renew. PER as material	MJ	4,01E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER ¹⁾	MJ	6,5E1	4,54E-2	2,48E-2	MND	0E0	2,05E-2	2,04E-2	1,74E-2	9,39E-1
Non-re. PER as energy	MJ	6,06E2	3,61E0	4,8E-1	MND	0E0	1,63E0	1,63E0	2,15E0	-7,07E1
Non-re. PER as material	MJ	2,84E1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	6,34E2	3,61E0	4,8E-1	MND	0E0	1,63E0	1,63E0	2,15E0	-7,07E1
Secondary materials	kg	1,98E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	4,48E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

Non-ren. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	5,95E-1	7,52E-4	1,41E-4	MND	0E0	3,38E-4	1,44E-3	2,35E-3	-6,35E-2

175 mm USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	6,68E1	5,05E-2	2,48E-2	MND	0E0	2,28E-2	2,04E-2	2,05E-2	9,39E-1
Renew. PER as material	MJ	4,01E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER ¹⁾	MJ	6,72E1	5,05E-2	2,48E-2	MND	0E0	2,28E-2	2,04E-2	2,05E-2	9,39E-1
Non-re. PER as energy	MJ	6,49E2	4,02E0	4,8E-1	MND	0E0	1,81E0	1,63E0	2,53E0	-7,07E1
Non-re. PER as material	MJ	2,84E1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	6,78E2	4,02E0	4,8E-1	MND	0E0	1,81E0	1,63E0	2,53E0	-7,07E1
Secondary materials	kg	1,99E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	4,48E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	6,24E-1	8,36E-4	1,41E-4	MND	0E0	3,77E-4	1,44E-3	2,77E-3	-6,35E-2

200 mm USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	6,81E1	5,43E-2	2,48E-2	MND	0E0	2,45E-2	2,04E-2	2,27E-2	9,39E-1
Renew. PER as material	MJ	4,01E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER ¹⁾	MJ	6,85E1	5,43E-2	2,48E-2	MND	0E0	2,45E-2	2,04E-2	2,27E-2	9,39E-1
Non-re. PER as energy	MJ	6,73E2	4,31E0	4,8E-1	MND	0E0	1,94E0	1,63E0	2,81E0	-7,07E1
Non-re. PER as material	MJ	2,84E1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	7,02E2	4,31E0	4,8E-1	MND	0E0	1,94E0	1,63E0	2,81E0	-7,07E1
Secondary materials	kg	2E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	4,48E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	6,39E-1	8,97E-4	1,41E-4	MND	0E0	4,05E-4	1,44E-3	3,08E-3	-6,35E-2

240 mm USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	7,22E1	6,31E-2	2,48E-2	MND	0E0	2,85E-2	2,04E-2	2,81E-2	9,39E-1
Renew. PER as material	MJ	4,01E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER ¹⁾	MJ	7,26E1	6,31E-2	2,48E-2	MND	0E0	2,85E-2	2,04E-2	2,81E-2	9,39E-1
Non-re. PER as energy	MJ	7,48E2	5,01E0	4,8E-1	MND	0E0	2,26E0	1,63E0	3,47E0	-7,07E1
Non-re. PER as material	MJ	3,17E1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	7,79E2	5,01E0	4,8E-1	MND	0E0	2,26E0	1,63E0	3,47E0	-7,07E1
Secondary materials	kg	2,03E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	4,48E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	6,86E-1	1,04E-3	1,41E-4	MND	0E0	4,71E-4	1,44E-3	3,8E-3	-6,35E-2

300 mm USE OF NATURAL RESOURCES

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	7,71E1	7,38E-2	2,48E-2	MND	0E0	3,34E-2	2,04E-2	3,46E-2	9,39E-1
Renew. PER as material	MJ	4,01E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER ¹⁾	MJ	7,75E1	7,38E-2	2,48E-2	MND	0E0	3,34E-2	2,04E-2	3,46E-2	9,39E-1
Non-re. PER as energy	MJ	8,37E2	5,87E0	4,8E-1	MND	0E0	2,65E0	1,63E0	4,28E0	-7,07E1
Non-re. PER as material	MJ	3,51E1	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	8,72E2	5,87E0	4,8E-1	MND	0E0	2,65E0	1,63E0	4,28E0	-7,07E1
Secondary materials	kg	2,07E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	4,48E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m ³	7,43E-1	1,22E-3	1,41E-4	MND	0E0	5,52E-4	1,44E-3	4,69E-3	-6,35E-2

END OF LIFE – WASTE

100 mm END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,5E1	2,75E-3	2,47E-3	MND	0E0	1,24E-3	0E0	1,32E-3	-1,15E0
Non-hazardous waste	kg	1,2E2	3,04E-1	6,6E-2	MND	0E0	1,37E-1	0E0	9,6E0	-1,3E1
Radioactive waste	kg	1,31E-3	1,95E-5	1,94E-6	MND	0E0	8,73E-6	0E0	9,35E-6	5,18E-5

120 mm END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,51E1	2,98E-3	2,47E-3	MND	0E0	1,34E-3	0E0	1,52E-3	-1,15E0
Non-hazardous waste	kg	1,23E2	3,3E-1	6,6E-2	MND	0E0	1,48E-1	0E0	1,11E1	-1,3E1
Radioactive waste	kg	1,34E-3	2,11E-5	1,94E-6	MND	0E0	9,46E-6	0E0	1,08E-5	5,18E-5

150 mm END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,55E1	3,51E-3	2,47E-3	MND	0E0	1,58E-3	0E0	2,01E-3	-1,15E0
Non-hazardous waste	kg	1,31E2	3,88E-1	6,6E-2	MND	0E0	1,75E-1	0E0	1,46E1	-1,3E1
Radioactive waste	kg	1,44E-3	2,48E-5	1,94E-6	MND	0E0	1,12E-5	0E0	1,42E-5	5,18E-5

175 mm END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,57E1	3,9E-3	2,47E-3	MND	0E0	1,76E-3	0E0	2,36E-3	-1,15E0
Non-hazardous waste	kg	1,38E2	4,32E-1	6,6E-2	MND	0E0	1,95E-1	0E0	1,72E1	-1,3E1
Radioactive waste	kg	1,51E-3	2,76E-5	1,94E-6	MND	0E0	1,24E-5	0E0	1,68E-5	5,18E-5

200 mm END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,58E1	4,19E-3	2,47E-3	MND	0E0	1,89E-3	0E0	2,62E-3	-1,15E0
Non-hazardous waste	kg	1,41E2	4,63E-1	6,6E-2	MND	0E0	2,09E-1	0E0	1,91E1	-1,3E1
Radioactive waste	kg	1,55E-3	2,96E-5	1,94E-6	MND	0E0	1,33E-5	0E0	1,86E-5	5,18E-5

240 mm END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,62E1	4,87E-3	2,47E-3	MND	0E0	2,2E-3	0E0	3,24E-3	-1,15E0
Non-hazardous waste	kg	1,52E2	5,38E-1	6,6E-2	MND	0E0	2,43E-1	0E0	2,36E1	-1,3E1
Radioactive waste	kg	1,67E-3	3,44E-5	1,94E-6	MND	0E0	1,55E-5	0E0	2,3E-5	5,18E-5

300 mm END OF LIFE – WASTE

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste	kg	1,67E1	5,7E-3	2,47E-3	MND	0E0	2,58E-3	0E0	4E-3	-1,15E0
Non-hazardous waste	kg	1,64E2	6,3E-1	6,6E-2	MND	0E0	2,85E-1	0E0	2,91E1	-1,3E1
Radioactive waste	kg	1,82E-3	4,03E-5	1,94E-6	MND	0E0	1,82E-5	0E0	2,83E-5	5,18E-5

END OF LIFE – OUTPUT FLOWS

100 mm END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,4E-1	MND	0E0	0E0	8,4E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2E-1	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

120 mm END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,4E-1	MND	0E0	0E0	8,4E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2E-1	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

150 mm END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,4E-1	MND	0E0	0E0	8,4E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2E-1	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

175 mm END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,4E-1	MND	0E0	0E0	8,4E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2E-1	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

200 mm END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,4E-1	MND	0E0	0E0	8,4E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2E-1	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

240 mm END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,4E-1	MND	0E0	0E0	8,4E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2E-1	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

300 MM END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	2,4E-1	MND	0E0	0E0	8,4E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2E-1	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	MND	0E0	0E0	0E0	0E0	0E0

KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

100 mm KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	2,44E0	9,7E-3	2,6E-3	MND	0E0	4,55E-3	3,91E-3	2,81E-3	-5,28E-1
ADP-minerals & metals	kg Sbe	2,96E-3	1,73E-7	3,31E-8	MND	0E0	7,75E-8	5,56E-8	2,57E-8	-5,28E-7
ADP-fossil ²⁾	MJ	3,05E1	1,57E-1	2,67E-2	MND	0E0	7,07E-2	9,06E-2	7,85E-2	-3,93E0
Water use	m ³ e depr.	1,49E0	5,85E-4	5,36E-4	MND	0E0	2,63E-4	3,25E-3	3,63E-3	-7,56E-2
Secondary materials	kg	1,08E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	2,49E-1
Biog. C in product ¹⁾	kg C	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	3,5E-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

1) Biog. C = Biogenic carbon content, 2) ADP=Abiotic depletion

120 mm KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	2,36E0	9,7E-3	2,4E-3	MND	0E0	4,55E-3	3,61E-3	3E-3	-4,87E-1
ADP-minerals & metals	kg Sbe	2,74E-3	1,72E-7	3,06E-8	MND	0E0	7,75E-8	5,13E-8	2,74E-8	-4,87E-7
ADP-fossil ²⁾	MJ	2,93E1	1,57E-1	2,46E-2	MND	0E0	7,07E-2	8,37E-2	8,38E-2	-3,63E0
Water use	m ³ e depr.	1,4E0	5,85E-4	4,94E-4	MND	0E0	2,63E-4	3E-3	3,87E-3	-6,98E-2
Secondary materials	kg	1E-1	0E0	0E0	MND	0E0	0E0	0E0	0E0	2,3E-1
Biog. C in product ¹⁾	kg C	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	3,23E-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

150 mm KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	2,22E0	9,68E-3	2,04E-3	MND	0E0	4,55E-3	3,06E-3	3,35E-3	-4,13E-1
ADP-minerals & metals	kg Sbe	2,33E-3	1,72E-7	2,59E-8	MND	0E0	7,75E-8	4,35E-8	3,05E-8	-4,13E-7
ADP-fossil ²⁾	MJ	2,76E1	1,57E-1	2,09E-2	MND	0E0	7,07E-2	7,09E-2	9,34E-2	-3,07E0
Water use	m ³ e depr.	1,26E0	5,84E-4	4,19E-4	MND	0E0	2,63E-4	2,55E-3	4,32E-3	-5,92E-2
Secondary materials	kg	8,6E-2	0E0	0E0	MND	0E0	0E0	0E0	0E0	1,95E-1
Biog. C in product ¹⁾	kg C	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	2,74E-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

175 mm KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	2,14E0	9,67E-3	1,83E-3	MND	0E0	4,55E-3	2,75E-3	3,55E-3	-3,71E-1
ADP-minerals & metals	kg Sbe	2,1E-3	1,72E-7	2,33E-8	MND	0E0	7,75E-8	3,91E-8	3,23E-8	-3,71E-7
ADP-fossil ²⁾	MJ	2,65E1	1,57E-1	1,88E-2	MND	0E0	7,07E-2	6,37E-2	9,89E-2	-2,76E0
Water use	m ³ e depr.	1,17E0	5,83E-4	3,77E-4	MND	0E0	2,63E-4	2,29E-3	4,57E-3	-5,32E-2
Secondary materials	kg	7,79E-2	0E0	0E0	MND	0E0	0E0	0E0	0E0	1,75E-1
Biog. C in product ¹⁾	kg C	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	2,46E-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

200 mm KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	2,07E0	9,67E-3	1,71E-3	MND	0E0	4,55E-3	2,56E-3	3,67E-3	-3,46E-1
ADP-minerals & metals	kg Sbe	1,95E-3	1,72E-7	2,17E-8	MND	0E0	7,75E-8	3,64E-8	3,34E-8	-3,46E-7
ADP-fossil ²⁾	MJ	2,55E1	1,57E-1	1,75E-2	MND	0E0	7,07E-2	5,93E-2	1,02E-1	-2,57E0
Water use	m ³ e depr.	1,11E0	5,83E-4	3,51E-4	MND	0E0	2,63E-4	2,13E-3	4,73E-3	-4,95E-2
Secondary materials	kg	7,29E-2	0E0	0E0	MND	0E0	0E0	0E0	0E0	1,63E-1
Biog. C in product ¹⁾	kg C	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	2,29E-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

240 mm KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	1,98E0	9,65E-3	1,47E-3	MND	0E0	4,55E-3	2,2E-3	3,89E-3	-2,97E-1
ADP-minerals & metals	kg Sbe	1,68E-3	1,72E-7	1,86E-8	MND	0E0	7,75E-8	3,13E-8	3,55E-8	-2,97E-7
ADP-fossil ²⁾	MJ	2,44E1	1,57E-1	1,5E-2	MND	0E0	7,07E-2	5,1E-2	1,09E-1	-2,21E0
Water use	m ³ e depr.	1,02E0	5,82E-4	3,01E-4	MND	0E0	2,63E-4	1,83E-3	5,02E-3	-4,25E-2
Secondary materials	kg	6,35E-2	0E0	0E0	MND	0E0	0E0	0E0	0E0	1,4E-1
Biog. C in product ¹⁾	kg C	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	1,97E-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

300 mm KEY INFORMATION TABLE (RTS) – KEY INFORMATION PER KG OF PRODUCT

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	1,89E0	9,65E-3	1,25E-3	MND	0E0	4,55E-3	1,88E-3	4,1E-3	-2,53E-1
ADP-minerals & metals	kg Sbe	1,44E-3	1,72E-7	1,59E-8	MND	0E0	7,75E-8	2,67E-8	3,73E-8	-2,53E-7
ADP-fossil ²⁾	MJ	2,32E1	1,57E-1	1,28E-2	MND	0E0	7,07E-2	4,35E-2	1,14E-1	-1,89E0
Water use	m ³ e depr.	9,32E-1	5,82E-4	2,57E-4	MND	0E0	2,63E-4	1,56E-3	5,28E-3	-3,63E-2
Secondary materials	kg	5,51E-2	0E0	0E0	MND	0E0	0E0	0E0	0E0	1,19E-1
Biog. C in product ¹⁾	kg C	0E0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	1,68E-4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, high voltage, production mix (Reference product: electricity, high voltage), ecoinvent 3.6, Finland, 2019
Electricity CO2e / kWh	0,23
District heating data source and quality	-
District heating CO2e / kWh	-

Transport scenario documentation (A4)

Scenario parameter	Value
Specific transport CO2e emissions, kg CO2e / tkm	0,17
Average transport distance, km	110
Capacity utilization (including empty return) %	50
Bulk density of transported products	146,3
Volume capacity utilization factor	<1

End of life scenario documentation

Scenario parameter	Value
Collection process – kg collected separately	18-37,5 kg
Collection process – kg collected with mixed waste	0
Recovery process – kg for re-use	0
Recovery process – kg for recycling	8,4 kg
Recovery process – kg for energy recovery	0

Scenario parameter	Value
Disposal (total) – kg for final deposition	9,6-29,1 kg
Scenario assumptions e.g. transportation	Transport 50 km

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.6 (2019) and One Click LCA database.

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

The CEN standard EN 15804+A2 serves as the core PCR. In addition, the RTS PCR (Finnish version, 26.8.2020) is used.

Areco Spirit Panel (Sandwich-element) LCA background report 27.1.2022.

SSAB 2020 Sustainability report.

ABOUT THE MANUFACTURER

Areco Profiles Oy is one of the leading manufacturers of building panel products.

We provide comprehensive range of sheet metal components for the commercial and industrial construction. We have five factories in four countries, which makes us one of the key players in the building panel segment.

Areco Spirit Panels are manufactured in Finland at the Somero plant. Deliveries of elements cover both the Nordic and the Baltic countries.

Production of the Areco Spirit Panel element began in 2009 and the element is a CE-marked construction product used throughout in Europe. Continuous quality control with a third party guarantees the reliable quality of the elements.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	Areco Profiles Oy
EPD author	Jori Jokela, Macon Oy
EPD verifier	Anni Oviir, Rangi Maja OÜ, www.lcasupport.com
EPD program operator	The Building Information Foundation RTS sr
Background data	This EPD is based on Ecoinvent 3.6 (cut-off) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for "Primary Steel and Aluminium and all Metal-Based Product"



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 EN 15804, 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 background report (project report) for this EPD

Why does verification transparency matter? [Read more online.](#)

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Anni Oviir, Rangi Maja OÜ
EPD verification started on	21.10.2021
EPD verification completed on	12.01.2022
Approver of the EPD verifier	The Building Information

Author & tool verification	Answer
EPD author	Jori Jokela, Macon Oy
EPD author training completion	21.1.2021
EPD Generator module	Primary Steel and Aluminium and all Metal-Based Product
Independent software verifier	Anni Oviir, Rangi Maja OÜ
Software verification date	25.9.2020

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 EN 15804:2012+A2:2019.

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.



ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

100 mm ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	4,22E1	1,73E-1	4,6E-2	MND	0E0	8,11E-2	6,92E-2	4,96E-2	-9,11E0
Ozone depletion Pot.	kg CFC ₁₁ e	3,13E-6	3,41E-8	3,1E-9	MND	0E0	1,53E-8	1,89E-8	1,65E-8	-2,25E-7
Acidification	kg SO ₂ e	2,89E-1	3,71E-4	8,78E-5	MND	0E0	1,66E-4	2,48E-4	2E-4	-2,9E-2
Eutrophication	kg PO ₄ ³ e	9,26E-2	7,49E-5	9,57E-5	MND	0E0	3,36E-5	5,52E-5	3,87E-5	-1,6E-2
POCP ("smog")	kg C ₂ H ₄ e	2,01E-2	2,13E-5	7,97E-6	MND	0E0	1,05E-5	1,7E-5	1,47E-5	-7,5E-3
ADP-elements	kg Sbe	5,34E-2	3,11E-6	5,96E-7	MND	0E0	1,4E-6	1E-6	4,62E-7	-9,5E-6
ADP-fossil	MJ	5,49E2	2,83E0	4,8E-1	MND	0E0	1,27E0	1,63E0	1,41E0	-7,07E1

120 mm ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	4,41E1	1,87E-1	4,6E-2	MND	0E0	8,78E-2	6,92E-2	5,74E-2	-9,11E0
Ozone depletion Pot.	kg CFC ₁₁ e	3,23E-6	3,69E-8	3,1E-9	MND	0E0	1,66E-8	1,89E-8	1,91E-8	-2,25E-7
Acidification	kg SO ₂ e	3,03E-1	4,01E-4	8,78E-5	MND	0E0	1,8E-4	2,48E-4	2,31E-4	-2,9E-2
Eutrophication	kg PO ₄ ³ e	9,55E-2	8,1E-5	9,57E-5	MND	0E0	3,64E-5	5,52E-5	4,48E-5	-1,6E-2
POCP ("smog")	kg C ₂ H ₄ e	2,1E-2	2,31E-5	7,97E-6	MND	0E0	1,14E-5	1,7E-5	1,7E-5	-7,5E-3
ADP-elements	kg Sbe	5,34E-2	3,36E-6	5,96E-7	MND	0E0	1,51E-6	1E-6	5,34E-7	-9,5E-6
ADP-fossil	MJ	5,72E2	3,07E0	4,8E-1	MND	0E0	1,38E0	1,63E0	1,63E0	-7,07E1

150 mm ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	4,9E1	2,2E-1	4,6E-2	MND	0E0	1,04E-1	6,92E-2	7,55E-2	-9,11E0
Ozone depletion Pot.	kg CFC ₁₁ e	3,59E-6	4,34E-8	3,1E-9	MND	0E0	1,95E-8	1,89E-8	2,51E-8	-2,25E-7
Acidification	kg SO ₂ e	3,39E-1	4,73E-4	8,78E-5	MND	0E0	2,13E-4	2,48E-4	3,04E-4	-2,9E-2

Eutrophication	kg PO ₄ ³ e	1,03E-1	9,54E-5	9,57E-5	MND	0E0	4,3E-5	5,52E-5	5,89E-5	-1,6E-2
POCP ("smog")	kg C ₂ H ₄ e	2,34E-2	2,72E-5	7,97E-6	MND	0E0	1,35E-5	1,7E-5	2,23E-5	-7,5E-3
ADP-elements	kg Sbe	5,35E-2	3,96E-6	5,96E-7	MND	0E0	1,78E-6	1E-6	7,03E-7	-9,5E-6
ADP-fossil	MJ	6,34E2	3,61E0	4,8E-1	MND	0E0	1,63E0	1,63E0	2,15E0	-7,07E1

175 mm ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	5,27E1	2,45E-1	4,6E-2	MND	0E0	1,15E-1	6,92E-2	8,89E-2	-9,11E0
Ozone depletion Pot.	kg CFC ₋₁₁ e	3,79E-6	4,83E-8	3,1E-9	MND	0E0	2,17E-8	1,89E-8	2,96E-8	-2,25E-7
Acidification	kg SO ₂ e	3,66E-1	5,25E-4	8,78E-5	MND	0E0	2,37E-4	2,48E-4	3,58E-4	-2,9E-2
Eutrophication	kg PO ₄ ³ e	1,09E-1	1,06E-4	9,57E-5	MND	0E0	4,78E-5	5,52E-5	6,93E-5	-1,6E-2
POCP ("smog")	kg C ₂ H ₄ e	2,5E-2	3,02E-5	7,97E-6	MND	0E0	1,5E-5	1,7E-5	2,63E-5	-7,5E-3
ADP-elements	kg Sbe	5,36E-2	4,4E-6	5,96E-7	MND	0E0	1,99E-6	1E-6	8,28E-7	-9,5E-6
ADP-fossil	MJ	6,78E2	4,02E0	4,8E-1	MND	0E0	1,81E0	1,63E0	2,53E0	-7,07E1

200 mm ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	5,47E1	2,63E-1	4,6E-2	MND	0E0	1,24E-1	6,92E-2	9,87E-2	-9,11E0
Ozone depletion Pot.	kg CFC ₋₁₁ e	3,9E-6	5,18E-8	3,1E-9	MND	0E0	2,34E-8	1,89E-8	3,28E-8	-2,25E-7
Acidification	kg SO ₂ e	3,82E-1	5,64E-4	8,78E-5	MND	0E0	2,54E-4	2,48E-4	3,98E-4	-2,9E-2
Eutrophication	kg PO ₄ ³ e	1,12E-1	1,14E-4	9,57E-5	MND	0E0	5,14E-5	5,52E-5	7,7E-5	-1,6E-2
POCP ("smog")	kg C ₂ H ₄ e	2,59E-2	3,25E-5	7,97E-6	MND	0E0	1,61E-5	1,7E-5	2,92E-5	-7,5E-3
ADP-elements	kg Sbe	5,37E-2	4,73E-6	5,96E-7	MND	0E0	2,13E-6	1E-6	9,19E-7	-9,5E-6
ADP-fossil	MJ	7,02E2	4,31E0	4,8E-1	MND	0E0	1,94E0	1,63E0	2,81E0	-7,07E1

240 mm ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	6,08E1	3,06E-1	4,6E-2	MND	0E0	1,44E-1	6,92E-2	1,22E-1	-9,11E0
Ozone depletion Pot.	kg CFC ₁₁ e	4,32E-6	6,02E-8	3,1E-9	MND	0E0	2,72E-8	1,89E-8	4,06E-8	-2,25E-7
Acidification	kg SO ₂ e	4,27E-1	6,56E-4	8,78E-5	MND	0E0	2,96E-4	2,48E-4	4,92E-4	-2,9E-2
Eutrophication	kg PO ₄ ³ e	1,22E-1	1,32E-4	9,57E-5	MND	0E0	5,98E-5	5,52E-5	9,51E-5	-1,6E-2
POCP ("smog")	kg C ₂ H ₄ e	2,89E-2	3,77E-5	7,97E-6	MND	0E0	1,87E-5	1,7E-5	3,61E-5	-7,5E-3
ADP-elements	kg Sbe	5,39E-2	5,5E-6	5,96E-7	MND	0E0	2,48E-6	1E-6	1,14E-6	-9,5E-6
ADP-fossil	MJ	7,79E2	5,01E0	4,8E-1	MND	0E0	2,26E0	1,63E0	3,47E0	-7,07E1

300 mm ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	6,82E1	3,58E-1	4,6E-2	MND	0E0	1,69E-1	6,92E-2	1,5E-1	-9,11E0
Ozone depletion Pot.	kg CFC ₁₁ e	4,81E-6	7,05E-8	3,1E-9	MND	0E0	3,18E-8	1,89E-8	5E-8	-2,25E-7
Acidification	kg SO ₂ e	4,81E-1	7,68E-4	8,78E-5	MND	0E0	3,47E-4	2,48E-4	6,06E-4	-2,9E-2
Eutrophication	kg PO ₄ ³ e	1,34E-1	1,55E-4	9,57E-5	MND	0E0	7E-5	5,52E-5	1,17E-4	-1,6E-2
POCP ("smog")	kg C ₂ H ₄ e	3,24E-2	4,42E-5	7,97E-6	MND	0E0	2,2E-5	1,7E-5	4,45E-5	-7,5E-3
ADP-elements	kg Sbe	5,4E-2	6,43E-6	5,96E-7	MND	0E0	2,91E-6	1E-6	1,4E-6	-9,5E-6
ADP-fossil	MJ	8,72E2	5,87E0	4,8E-1	MND	0E0	2,65E0	1,63E0	4,28E0	-7,07E1