



# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

FS One Max / CFS-FIL

Hilti AG



**EPD HUB, HUB-3482**

Published on 17.06.2025, last updated on 17.06.2025, valid until 17.06.2030

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	Hilti AG
Address	Feldkircherstrasse 100, FL-9494, Schaan, Liechtenstein
Contact details	sustainability@hilti.com
Website	www.hilti.group

### EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Siti Nur Syaza Abdul Rahman, Hilti AG
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. 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	FS One Max / CFS-FIL
Product reference	2101535, 2101534, 2101536, 2052899
Place(s) of raw material origin	Germany
Place of production	Kaufering, Germany
Period for data	Calendar year 2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3 (%)	+/- 48%
A1-A3 Specific data (%)	30,1

### ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of FS One Max / CFS-FIL
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO <sub>2</sub> e)	1,07E+00
GWP-total, A1-A3 (kgCO <sub>2</sub> e)	1,08E+00
Secondary material, inputs (%)	2,23
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	4,88
Net freshwater use, A1-A3 (m <sup>3</sup> )	0,01

## PRODUCT AND MANUFACTURER

### ABOUT THE MANUFACTURER

The Hilti Group supplies the worldwide construction and energy industries with technologically leading products, systems, software and services. With about 34,000 team members in over 120 countries the company stands for direct customer relationships, quality and innovation. The headquarters of the Hilti Group have been located in Schaan, Liechtenstein, since its founding in 1941. The company is privately owned by the Martin Hilti Family Trust, which ensures its long-term continuity. The Hilti Group's purpose is making construction better, based on a passionate and inclusive global team and a caring and performance-oriented culture.

### PRODUCT DESCRIPTION

FS One Max/CFS-FIL is a water-based, intumescent firestop sealant designed to protect both combustible and non-combustible penetrations for up to four hours. Suitable for a wide range of applications, it effectively seals common through penetrations in concrete, masonry, and drywall, including metal pipes (copper, steel, EMT), insulated metal pipes, and plastic pipes, whether closed or vented. This versatile, easy-to-use, and cost-effective solution is paintable, ethylene glycol-free, and offers industry-leading low VOC emissions.

FS-One Max and CFS-FIL have been assessed and are certified according to the Cradle to Cradle Certification Scheme achieving rating Bronze. They have also been tested and fulfil requirements for VOC Emissions according to California Department of Public Health (CDPH) Standard Method v1.2-2017, VOC Content according to SCAQMD Rule 1168 (fulfilling VOC Limit Value for "All Other Architectural Sealants), AgBB (Auschuß für die gesundheitliche Bewertung von Bauprodukten (Stand:2018), Belgian Royal Decree establishing threshold levels for the emissions to the indoor environment from construction products for specific purposes and achieved Class A+ according to the French VOC Labelling and CMR Emissions regulation.

The product density is  $1,35 \pm 1 \text{ g/cm}^3$ .

Further information can be found at: [www.hilti.group](http://www.hilti.group)

### PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	1,5	Germany
Minerals	40	Germany
Fossil materials	58	Germany
Bio-based materials	0,5	Germany

### BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0,00158
Biogenic carbon content in packaging, kg C	0,00

### FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of FS One Max / CFS-FIL
Mass per declared unit	1 kg
Functional unit	
Reference service life	

### **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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The product is a proprietary chemical formulation packaged in foil packaging (that comprises oriented polypropylene (OPP) film laminated with aluminum foil bonded using laminating adhesive and complemented by aluminum clips) or plastic. The raw materials are sourced throughout Germany (transport assumed to be 400 km by truck), except for graphite from a third party (assumed distance of 400 km by truck and 1,200 km by ship) prior to transport to Hilti's production facility in Kaufering, Germany, where the main manufacturing processes include mixing, assembly and packaging. The finished product is packaged before being sent to the installation site.

The use of green energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

## 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 distance is defined according to the PCR. A sales-weighted average transport distance from the production plant in southern Germany to a representative place of installation in each sales region is used for A4 (equating to 950 km by truck and 6,076 km by container ship for this product due to its global distribution). Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints. Transportation does not cause losses as products are packaged properly. Also, volume capacity utilization factor is assumed to be 1 for the nested packaged products. Disposal of the packaging, including some residual product within, is accounted for in A5. Emissions due to

installation are assumed to be negligible as they are typically performed using simple manual tools which do not consume energy.

### **PRODUCT USE AND MAINTENANCE (B1-B7)**

This EPD does not cover the use phase.

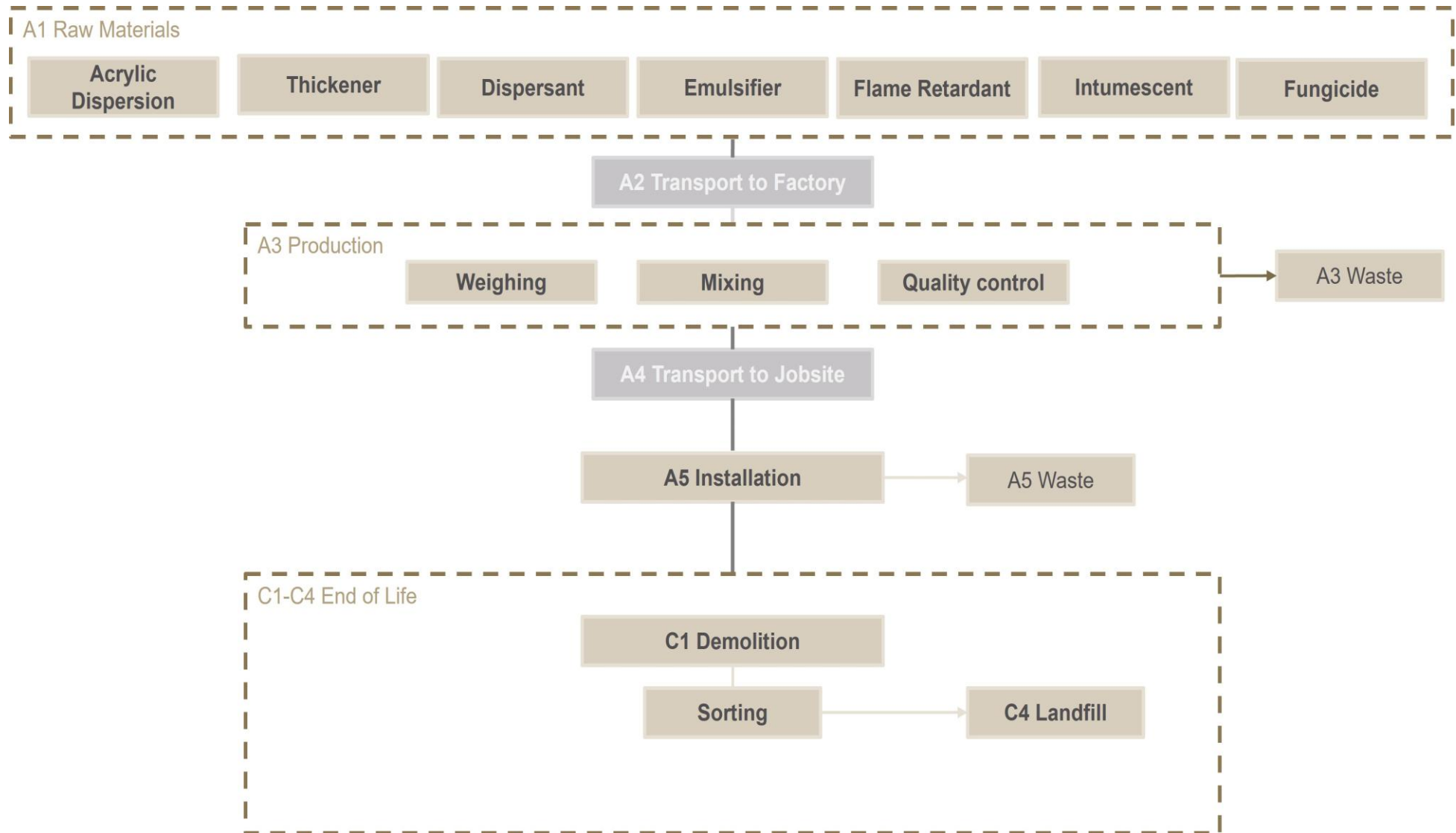
Air, soil, and water impacts during the use phase have not been studied.

### **PRODUCT END OF LIFE (C1-C4, D)**

Consumption of energy and natural resources in demolition process is assumed to be negligible. As a wet-applied chemical formulation which cannot be economically separated from the concrete to which it is applied, it is assumed that the product must be disposed of entirely in landfill. Transportation distance to landfill is assumed as 50 km and the transportation method is assumed to be lorry (C2). The benefits and loads of packaging recycling are included in Model D.



## 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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

This LCA study includes the provision of all materials, transportation, energy, and emission flows, and end-of-life processing of product. All industrial processes from raw material acquisition, pre-processing, production, product distribution, installation and end-of-life management are included. Due to lack of data, no ancillary materials data are included in the model, but they do not exceed the 1% cut-off criteria. These include materials which are used in the product manufacturing only in very small amounts and have a negligible impact on the emissions of the product. The production of capital equipment, construction activities, infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

### VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data

as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

### 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	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

All estimations and assumptions regarding the cut-off criteria and the allocation data are declared in the part Cut-off Criteria except the estimations/assumptions below:

1) Proxy data is used for certain materials due to their unavailability in the database

ACRONAL V278 = Acrylic dispersion production, with water, in 58% solution state (Reference product: acrylic dispersion, with water, in 58% solution state)

Lutensol TO-89 BASF = Ethoxylated alcohol (AE3) production, petrochemical (Reference product: ethoxylated alcohol (AE3))

Natrosol 250 HHR = Hydroxy-ethylcellulose, excluding packaging, dry matter content 95 %



Kaolin Capsil 2004 = Kaolin production (Reference product: kaolin)

Ammonium polyphosphate = Polyphosphoric acid-based liquid additive for asphalt mix, 1190 kg/m<sup>3</sup>, SOSTANZA ATTIVA FOSFORICA (STAR ASPHALT SPA)

2) Module A1: Due to lack of detailed background data on some of the raw materials, the following estimates were done in the modelling:

Blowing graphite = Graphite production (Reference product: graphite)

Diammonium phosphate production = ammonium polyphosphate

Poraver Foamed Glass Filler = Polymer foaming (Reference product: polymer foaming)

Monopropylene glycol = Propylene glycol production, liquid (Reference product: propylene glycol, liquid)

Polybutane = PB-1 ((Polybutylene)

Two raw materials can't be identified/proxy in the database (Dispersant Tamol 851 and Fungicide Polyphase AF3) and is much less than 1%, hence the raw materials are not included in the data of A1

3) Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation emission in total results is small, the variety in load is assumed to be negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints.

4) All raw material is from German (except graphite), and it is assumed to be 400 km by truck except for Graphite is assumed to be 400 km by truck and 1200 km by ship.

5) ACRONAL V278 proxy has 2x impacts on the GWP thus only 51% allocation was included in the impact's calculation. The Product Carbon Footprint has been attached for reference.

## PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	Multiple products
Grouping method	Based on a representative product
Variation in GWP-fossil for A1-A3, %	+/- 48%

FS One Max/CFS-FIL is available in multiple packaging variants: a foil packing, plastic cartridge or plastic pail. The chemical formulation, manufacturing processes and locations remain identical in every case. The version in a foil packing is used as the representative product for this EPD as it accounts for the clear majority of sales, and the variability in GWP-fossil for A1-A3 is within the allowed range. All product variants were assessed separately and in full in order to document this.

## 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

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

### 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 <sup>1)</sup>	kg CO <sub>2</sub> e	9,49E-01	4,37E-02	8,64E-02	1,08E+00	2,49E-01	1,55E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,39E-03	0,00E+00	6,24E-03	-4,05E-02
GWP – fossil	kg CO <sub>2</sub> e	9,42E-01	4,37E-02	8,04E-02	1,07E+00	2,48E-01	1,54E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,38E-03	0,00E+00	6,24E-03	-3,96E-02
GWP – biogenic	kg CO <sub>2</sub> e	6,06E-03	9,83E-06	5,94E-03	1,20E-02	4,67E-05	6,69E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,22E-06	0,00E+00	-1,99E-06	-1,29E-04
GWP – LULUC	kg CO <sub>2</sub> e	1,06E-03	1,96E-05	3,29E-05	1,11E-03	9,96E-05	1,24E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,41E-06	0,00E+00	3,57E-06	-8,15E-04
Ozone depletion pot.	kg CFC <sub>-11</sub> e	1,74E-08	6,45E-10	4,59E-10	1,85E-08	4,62E-09	2,38E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,95E-11	0,00E+00	1,81E-10	-3,31E-10
Acidification potential	mol H <sup>+</sup> e	9,23E-03	1,61E-04	3,00E-04	9,69E-03	2,86E-03	1,28E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,84E-05	0,00E+00	4,43E-05	-3,13E-04
EP-freshwater <sup>2)</sup>	kg Pe	3,54E-04	3,38E-06	5,47E-06	3,63E-04	1,43E-05	3,84E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,19E-07	0,00E+00	5,13E-07	-1,21E-05
EP-marine	kg Ne	8,24E-04	5,18E-05	6,72E-05	9,43E-04	8,85E-04	1,99E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,03E-06	0,00E+00	1,69E-05	-4,04E-05
EP-terrestrial	mol Ne	8,20E-03	5,64E-04	7,23E-04	9,48E-03	9,74E-03	2,00E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,56E-05	0,00E+00	1,84E-04	-4,16E-04
POCP (“smog”) <sup>3)</sup>	kg NMVOCe	4,95E-03	2,27E-04	2,31E-04	5,40E-03	2,92E-03	8,60E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,70E-05	0,00E+00	6,60E-05	-1,54E-04
ADP-minerals & metals <sup>4)</sup>	kg Sbe	1,52E-05	1,21E-07	1,92E-07	1,56E-05	6,68E-07	1,65E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,50E-08	0,00E+00	9,92E-09	-6,86E-08
ADP-fossil resources	MJ	1,89E+01	6,33E-01	1,15E+00	2,07E+01	3,39E+00	2,47E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,81E-02	0,00E+00	1,53E-01	-3,96E-01
Water use <sup>5)</sup>	m <sup>3</sup> e depr.	7,78E-01	3,12E-03	2,61E-02	8,07E-01	1,50E-02	8,30E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,86E-04	0,00E+00	4,42E-04	-3,13E-02

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 PO<sub>4</sub>e; 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	5,00E-08	4,34E-09	9,29E-10	5,53E-08	2,16E-08	8,14E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,39E-10	0,00E+00	1,01E-09	-4,25E-09
Ionizing radiation <sup>6)</sup>	kBq 11235e	8,86E-02	5,49E-04	1,21E-03	9,04E-02	3,68E-03	9,57E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,80E-05	0,00E+00	9,63E-05	-3,34E-03
Ecotoxicity (freshwater)	CTUe	7,60E+00	8,92E-02	2,92E-01	7,98E+00	4,01E-01	8,72E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,10E-02	0,00E+00	1,29E-02	-9,97E-02
Human toxicity, cancer	CTUh	4,30E-10	7,23E-12	1,26E-11	4,50E-10	8,36E-11	5,61E-12	MND	MND	MND	MND	MND	MND	MND	0,00E+00	8,88E-13	0,00E+00	1,15E-12	-4,64E-11
Human tox. non-cancer	CTUh	1,80E-08	4,08E-10	2,06E-10	1,86E-08	2,27E-09	2,20E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,06E-11	0,00E+00	2,64E-11	-3,33E-10
SQP <sup>7)</sup>	-	2,75E+00	6,32E-01	1,02E-01	3,48E+00	1,61E+00	6,21E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,87E-02	0,00E+00	3,02E-01	-5,42E-02

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 <sup>8)</sup>	MJ	1,28E+00	8,64E-03	9,31E-01	2,21E+00	5,10E-02	2,29E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,07E-03	0,00E+00	1,48E-03	-2,84E-01
Renew. PER as material	MJ	4,26E-02	0,00E+00	0,00E+00	4,26E-02	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-4,26E-02	0,00E+00
Total use of renew. PER	MJ	1,32E+00	8,64E-03	9,31E-01	2,26E+00	5,10E-02	2,29E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,07E-03	0,00E+00	-4,12E-02	-2,84E-01
Non-re. PER as energy	MJ	1,37E+01	6,33E-01	1,02E+00	1,54E+01	3,39E+00	3,33E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,81E-02	0,00E+00	1,53E-01	-3,96E-01
Non-re. PER as material	MJ	8,20E+00	0,00E+00	1,30E-01	8,33E+00	0,00E+00	-1,30E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	-8,20E+00	1,90E-02
Total use of non-re. PER	MJ	2,19E+01	6,33E-01	1,15E+00	2,37E+01	3,39E+00	-9,67E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,81E-02	0,00E+00	-8,05E+00	-3,77E-01
Secondary materials	kg	2,23E-02	2,70E-04	2,50E-04	2,28E-02	1,56E-03	2,48E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,32E-05	0,00E+00	3,85E-05	5,29E-03
Renew. secondary fuels	MJ	7,76E-05	3,40E-06	1,23E-04	2,04E-04	1,59E-05	2,34E-06	MND	MND	MND	MND	MND	MND	MND	0,00E+00	4,22E-07	0,00E+00	7,97E-07	-1,60E-06
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	m³	1,31E-02	9,31E-05	4,81E-04	1,36E-02	4,04E-04	1,31E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,15E-05	0,00E+00	1,59E-04	-6,75E-04

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	7,69E-02	1,07E-03	1,65E-03	7,96E-02	4,76E-03	8,77E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,32E-04	0,00E+00	1,69E-04	-1,23E-02
Non-hazardous waste	kg	3,81E+00	1,98E-02	7,87E-02	3,91E+00	9,27E-02	5,72E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	2,45E-03	0,00E+00	3,87E-03	-5,61E-02
Radioactive waste	kg	3,20E-05	1,34E-07	4,30E-05	7,51E-05	9,12E-07	7,64E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,67E-08	0,00E+00	2,35E-08	-7,29E-07

## 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	0,00E+00	0,00E+00	0,00E+00	4,77E-03	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy rec	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
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,30E-03	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	3,10E-03	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	4,20E-03	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 <sub>2</sub> e	9,23E-01	4,35E-02	7,91E-02	1,05E+00	2,47E-01	1,52E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,35E-03	0,00E+00	6,19E-03	-3,98E-02
Ozone depletion Pot.	kg CFC <sub>-11</sub> e	1,47E-08	5,15E-10	3,88E-10	1,56E-08	3,68E-09	1,99E-10	MND	MND	MND	MND	MND	MND	MND	0,00E+00	6,34E-11	0,00E+00	1,44E-10	-2,83E-10
Acidification	kg SO <sub>2</sub> e	2,35E-02	1,23E-04	2,47E-04	2,39E-02	2,21E-03	2,62E-04	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,40E-05	0,00E+00	3,28E-05	-2,69E-04
Eutrophication	kg PO <sub>4</sub> <sup>3</sup> e	6,57E-03	2,86E-05	3,85E-04	6,98E-03	3,49E-04	7,39E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	3,41E-06	0,00E+00	1,04E-05	-3,55E-05
POCP (“smog”)	kg C <sub>2</sub> H <sub>4</sub> e	1,75E-03	1,06E-05	1,87E-05	1,78E-03	1,35E-04	1,94E-05	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,25E-06	0,00E+00	3,10E-06	-2,51E-05
ADP-elements	kg Sbe	1,21E-05	1,18E-07	1,84E-07	1,24E-05	6,53E-07	1,34E-07	MND	MND	MND	MND	MND	MND	MND	0,00E+00	1,46E-08	0,00E+00	9,72E-09	-5,89E-08
ADP-fossil	MJ	1,67E+01	6,24E-01	1,05E+00	1,83E+01	3,33E+00	2,22E-01	MND	MND	MND	MND	MND	MND	MND	0,00E+00	7,70E-02	0,00E+00	1,52E-01	-3,48E-01

## 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 <sup>9)</sup>	kg CO <sub>2</sub> e	9,43E-01	4,37E-02	8,05E-02	1,07E+00	2,48E-01	1,54E-02	MND	MND	MND	MND	MND	MND	MND	0,00E+00	5,38E-03	0,00E+00	6,25E-03	-4,04E-02

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 - CH<sub>4</sub> fossil, CH<sub>4</sub> 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 CO<sub>2</sub> is set to zero.

## SCENARIO DOCUMENTATION

### Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, wind, 1-3MW turbine, onshore (Reference product: electricity, high voltage)
Electricity CO2e / kWh	0,0151
District heating data source and quality	
District heating CO2e / kWh	



## THIRD-PARTY 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  
17.06.2025

