ENVIRONMENTAL PRODUCT DECLARATION

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

Self-drilling wood screws
Schmid Schrauben Hainfeld

EPD HUB, HUB-1823
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Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Schmid Schrauben Hainfeld
Address	3170 Hainfeld, Landstal 10, Austria
Contact details	info@schrauben.at
Website	www.schrauben.at

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	Philip Kubinger, Christian Leutgoeb
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	Self-drilling wood screws
Additional labels	-
Product reference	-
Place of production	3170 Hainfeld, Landstal 10, Austria
Period for data	2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO2e)	3.28E+00
GWP-total, A1-A3 (kgCO2e)	3.18E+00
Secondary material, inputs (%)	53.5
Secondary material, outputs (%)	85
Total energy use, A1-A3 (kWh)	12.8
Net fresh water use, A1-A3 (m3)	0.02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Schmid Screws Hainfeld is the sole screw manufacturer in Austria, specializing in the production of wood construction screws and custom parts for over 180 years. The screws of the patented own brands “RAPID®” and “StarDrive GPR®” have all building authority approvals as well as CE marking according to ETA. The dimensional range extends from Ø 3-30 mm, with a maximum length of approximately 1.5 m.

PRODUCT DESCRIPTION

Self-drilling wood screws for use in timber constructions, hereinafter referred to as Schmid screws. Schmid screws are divided into a drill tip, optionally a compressor and/or cutting groove, thread, optionally a friction part, shank, and head of the screw. The screws are made from special carbon steel and are hardened. They are anti-friction coated and are electrogalvanized and passivated (yellow or blue) or provided with a zinc-nickel coating. Schmid screws are intended to be used in service classes 1 and 2 according to EN 1995-1-1. Product according to CPR based on an ETA: For the placing of the product on the market in the European Union/European Free Trade Association /EU/EFTA (with the exception of Switzerland) the Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration the respective ETA and the CE-marking.

Further information can be found at: www.schrauben.at.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	100	EUR
Minerals	-	
Fossil materials	-	
Bio-based materials	-	

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	0.0364

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
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	Deconstr./demol.	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.

Self-drilling wood screws are typically manufactured from steel wire. The wire is pulled through a series of dies to reduce its diameter to the desired size while also improving its surface finish and mechanical properties. In a heading machine, the wire material is cut into blanks of the desired length and then cold-formed, which shapes them into the basic screw head configuration. After cold heading, the screws undergo thread rolling. This process involves rolling the screws between two dies to form the threads. Then the screws undergo heat treatment to improve their hardness, strength, and other mechanical properties. This typically involves heating the screws to a high temperature and then rapidly cooling them, followed by tempering to achieve the desired balance of properties. Depending on the desired finish and corrosion resistance properties, the screws undergo surface treatments such as zinc plating and passivation. The manufacturing process requires electricity and fuels for the different equipment as well as heating. Hydraulic oils, cutting emulsions and other lubrication oils are used during the process to reduce the wear of machines and to ensure stable production conditions. Once the screws pass quality inspection, they are then packaged for shipping. The steel waste produced at the manufacturing plant is directed to recycling. The loss of material is considered. Wooden pallets and corrugated board boxes are used as a packaging material for transporting the product from the factory gate.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurring 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 the PCR. Average distance of transportation from production plant to building site is assumed as 402 km and the transportation method is assumed to be lorry. Vehicle capacity utilization volume factor is assumed to be 100 % 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. 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 products are packaged properly. Environmental impacts from installation into the building include generation of waste packaging materials (A5) and release of biogenic carbon dioxide from wood pallets/cardboard boxes. No installation losses happen in this stage if the installation process is carried out appropriately.

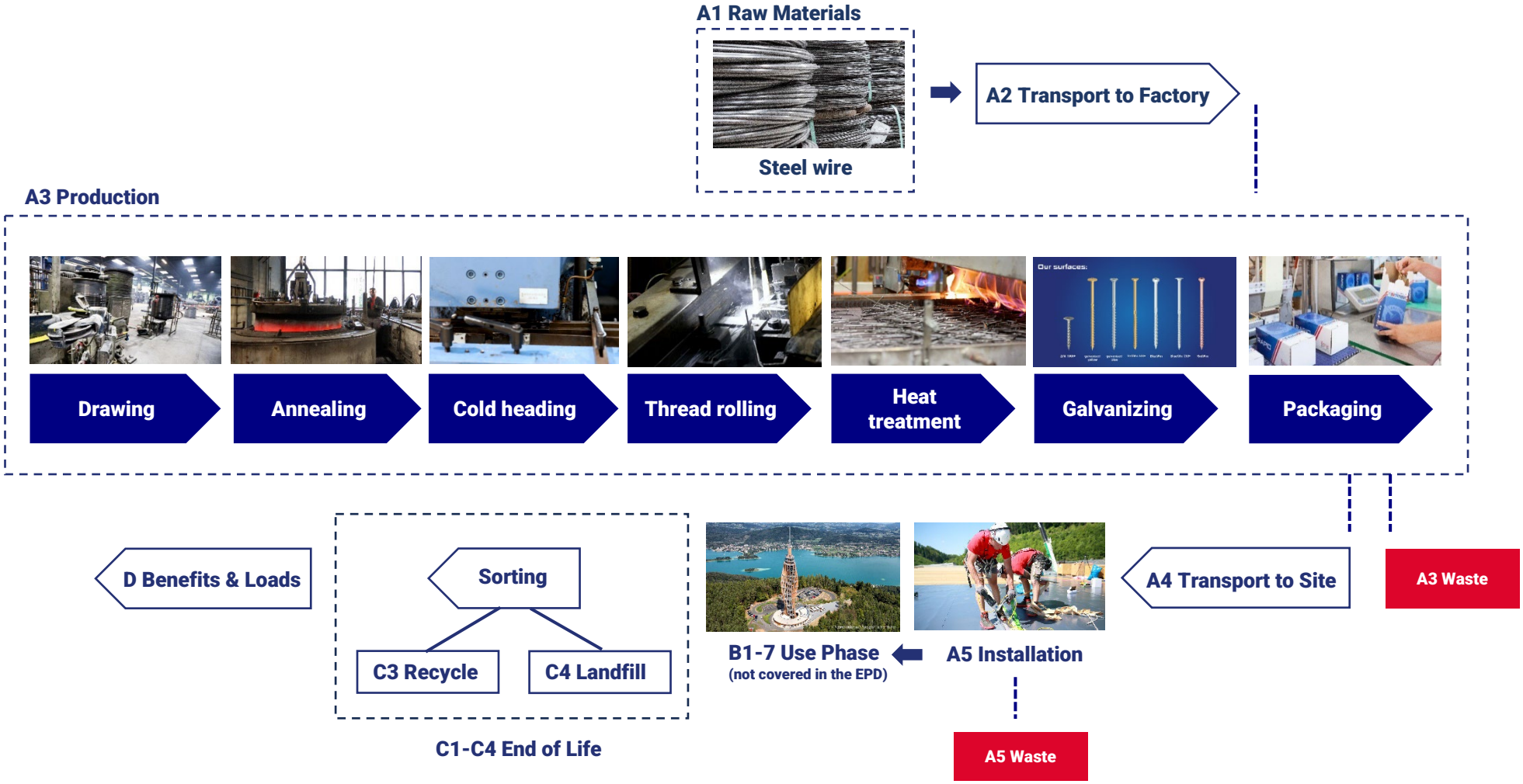
PRODUCT USE AND MAINTENANCE (B1-B7)

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)

It is assumed that 100 % of the waste is collected and transported to the waste treatment centre, the transport distance is assumed to be 50 km by lorry (CO2) Approximately 85 % of steel is assumed to be recycled based on World Steel Association, 2020 (C3). It is assumed that the remaining 15 % of steel is taken to landfill for final disposal (C4). Due to the recycling process, the end-of-life product is converted into recycled steel, while the wooden pallet is incinerated for energy recovery (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.

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	Allocated by mass or volume
Packaging materials	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	- %

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 v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

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	2,66E+00	6,21E-02	4,61E-01	3,18E+00	3,74E-02	1,14E-01	MND	MND	MND	MND	MND	MND	MND	MNR	4,69E-03	1,86E-02	7,91E-04	-7,51E-01
GWP – fossil	kg CO_2e	2,65E+00	6,20E-02	5,72E-01	3,28E+00	3,74E-02	2,32E-03	MND	MND	MND	MND	MND	MND	MND	MNR	4,69E-03	1,86E-02	7,90E-04	-7,52E-01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-1,12E-01	-1,12E-01	0,00E+00	1,12E-01	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP – LULUC	kg CO_2e	4,93E-03	2,29E-05	4,47E-04	5,40E-03	1,45E-05	1,74E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,73E-06	2,44E-05	7,46E-07	8,54E-04
Ozone depletion pot.	kg $CFC_{-11}e$	1,69E-07	1,43E-08	9,16E-08	2,75E-07	8,79E-09	1,80E-10	MND	MND	MND	MND	MND	MND	MND	MNR	1,08E-09	2,30E-09	3,20E-10	-2,02E-08
Acidification potential	mol H^+e	5,25E-02	2,61E-04	1,03E-03	5,38E-02	1,22E-04	1,10E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1,99E-05	2,36E-04	7,43E-06	-2,82E-03
EP-freshwater[2)]	kg Pe	1,54E-04	5,08E-07	6,68E-06	1,61E-04	3,17E-07	5,40E-08	MND	MND	MND	MND	MND	MND	MND	MNR	3,84E-08	9,98E-07	8,28E-09	-6,25E-06
EP-marine	kg Ne	4,01E-03	7,70E-05	2,88E-04	4,37E-03	2,67E-05	1,37E-05	MND	MND	MND	MND	MND	MND	MND	MNR	5,90E-06	4,99E-05	2,57E-06	3,08E-05
EP-terrestrial	mol Ne	2,07E-01	8,50E-04	2,64E-03	2,11E-01	2,97E-04	3,30E-05	MND	MND	MND	MND	MND	MND	MND	MNR	6,51E-05	5,77E-04	2,83E-05	-7,75E-03
POCP ("smog")[3)]	kg NMVOCe	1,10E-02	2,73E-04	1,24E-03	1,25E-02	1,15E-04	1,27E-05	MND	MND	MND	MND	MND	MND	MND	MNR	2,08E-05	1,59E-04	8,23E-06	-4,36E-03
ADP-minerals & metals[4)]	kg Sbe	1,52E-04	1,46E-07	1,98E-06	1,54E-04	9,10E-08	2,23E-08	MND	MND	MND	MND	MND	MND	MND	MNR	1,10E-08	2,51E-06	1,82E-09	-2,40E-05
ADP-fossil resources	MJ	3,07E+01	9,33E-01	9,62E+00	4,13E+01	5,85E-01	2,05E-02	MND	MND	MND	MND	MND	MND	MND	MNR	7,05E-02	2,52E-01	2,17E-02	-6,23E+00
Water use[5)]	m^3e depr.	1,78E+00	4,17E-03	1,38E+02	1,40E+02	2,61E-03	9,02E-04	MND	MND	MND	MND	MND	MND	MND	MNR	3,15E-04	4,89E-03	6,87E-05	3,19E-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, PEF

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	5,86E-07	7,15E-09	1,38E-08	6,07E-07	4,25E-09	1,56E-10	MND	MND	MND	MND	MND	MND	MND	MNR	5,41E-10	3,09E-09	1,50E-10	-2,68E-08
Ionizing radiation6)	kBq U235e	2,12E-01	4,45E-03	2,07E-02	2,37E-01	2,80E-03	1,95E-04	MND	MND	MND	MND	MND	MND	MND	MNR	3,36E-04	2,81E-03	9,80E-05	7,11E-03
Ecotoxicity (freshwater)	CTUe	1,42E+02	8,40E-01	3,98E+00	1,47E+02	5,20E-01	9,50E-02	MND	MND	MND	MND	MND	MND	MND	MNR	6,34E-02	1,14E+00	1,41E-02	-1,67E+01
Human toxicity, cancer	CTUh	2,14E-08	2,06E-11	1,40E-10	2,16E-08	1,27E-11	4,14E-12	MND	MND	MND	MND	MND	MND	MND	MNR	1,56E-12	3,50E-11	3,53E-13	7,96E-09
Human tox. non-cancer	CTUh	1,35E-07	8,30E-10	2,66E-09	1,38E-07	5,01E-10	9,56E-11	MND	MND	MND	MND	MND	MND	MND	MNR	6,27E-11	1,56E-09	9,24E-12	4,77E-08
SQP7)	-	9,03E+00	1,08E+00	7,56E+00	1,77E+01	6,73E-01	1,95E-02	MND	MND	MND	MND	MND	MND	MND	MNR	8,12E-02	5,08E-01	4,63E-02	-5,82E+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 energy8)	MJ	2,83E+00	1,05E-02	3,20E+00	6,04E+00	6,59E-03	1,51E-03	MND	MND	MND	MND	MND	MND	MND	MNR	7,94E-04	4,47E-02	1,88E-04	-9,32E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,08E+00	1,08E+00	0,00E+00	-1,08E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,83E+00	1,05E-02	4,27E+00	7,12E+00	6,59E-03	-1,08E+00	MND	MND	MND	MND	MND	MND	MND	MNR	7,94E-04	4,47E-02	1,88E-04	-9,32E-01
Non-re. PER as energy	MJ	3,07E+01	9,33E-01	8,58E+00	4,02E+01	5,85E-01	2,05E-02	MND	MND	MND	MND	MND	MND	MND	MNR	7,05E-02	2,52E-01	2,17E-02	-6,23E+00
Non-re. PER as material	MJ	0,00E+00	0,00E+00	7,45E-03	7,45E-03	0,00E+00	-7,45E-03	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	3,07E+01	9,33E-01	8,59E+00	4,02E+01	5,85E-01	1,30E-02	MND	MND	MND	MND	MND	MND	MND	MNR	7,05E-02	2,52E-01	2,17E-02	-6,23E+00
Secondary materials	kg	5,35E-01	2,59E-04	4,69E-02	5,82E-01	1,62E-04	3,50E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1,96E-05	2,81E-04	4,55E-06	5,50E-01
Renew. secondary fuels	MJ	2,33E-04	2,61E-06	4,00E-03	4,23E-03	1,64E-06	1,99E-07	MND	MND	MND	MND	MND	MND	MND	MNR	1,97E-07	1,46E-05	1,19E-07	1,86E-03
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	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m3	2,52E-02	1,21E-04	-1,98E-03	2,33E-02	7,55E-05	1,30E-05	MND	MND	MND	MND	MND	MND	MND	MNR	9,13E-06	1,48E-04	2,37E-05	-2,14E-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	8,83E-01	1,24E-03	2,59E-02	9,10E-01	7,71E-04	3,72E-04	MND	MND	MND	MND	MND	MND	MND	MNR	9,34E-05	1,71E-03	0,00E+00	-4,76E-01
Non-hazardous waste	kg	4,98E+00	2,03E-02	1,74E-01	5,18E+00	1,27E-02	1,39E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1,54E-03	5,47E-02	1,50E-01	-1,57E+00
Radioactive waste	kg	8,23E-05	6,24E-06	1,78E-05	1,06E-04	3,94E-06	9,05E-08	MND	MND	MND	MND	MND	MND	MND	MNR	4,71E-07	1,48E-06	0,00E+00	4,99E-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	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	7,80E-02	7,80E-02	0,00E+00	5,82E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	8,50E-01	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	MNR	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	8,15E-02	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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

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 CO2e	2,57E+00	6,14E-02	5,65E-01	3,20E+00	3,70E-02	1,23E-02	MND	MND	MND	MND	MND	MND	MND	MNR	4,64E-03	1,83E-02	7,74E-04	-6,93E-01
Ozone depletion Pot.	kg CFC-11e	1,58E-07	1,13E-08	7,83E-08	2,48E-07	6,96E-09	1,48E-10	MND	MND	MND	MND	MND	MND	MND	MNR	8,55E-10	1,86E-09	2,53E-10	-3,03E-08
Acidification	kg SO2e	3,13E-02	2,03E-04	8,05E-04	3,23E-02	9,87E-05	8,56E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,54E-05	1,91E-04	5,61E-06	-2,23E-03
Eutrophication	kg PO43e	1,04E-02	4,61E-05	3,32E-04	1,07E-02	2,16E-05	3,15E-05	MND	MND	MND	MND	MND	MND	MND	MNR	3,52E-06	6,30E-05	1,21E-06	-1,20E-03
POCP (“smog”)	kg C2H4e	9,53E-04	7,95E-06	5,58E-05	1,02E-03	4,55E-06	2,74E-06	MND	MND	MND	MND	MND	MND	MND	MNR	6,03E-07	7,22E-06	2,35E-07	-5,76E-04
ADP-elements	kg Sbe	1,52E-04	1,41E-07	1,93E-06	1,54E-04	8,84E-08	2,20E-08	MND	MND	MND	MND	MND	MND	MND	MNR	1,07E-08	2,50E-06	1,79E-09	-2,40E-05
ADP-fossil	MJ	3,07E+01	9,33E-01	9,61E+00	4,12E+01	5,85E-01	2,05E-02	MND	MND	MND	MND	MND	MND	MND	MNR	7,05E-02	2,52E-01	2,17E-02	-6,23E+00

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 acting for EPD Hub Limited
30.08.2024