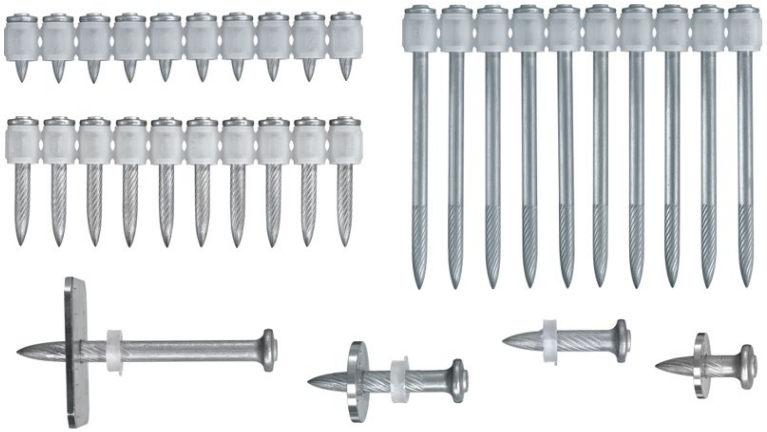
ENVIRONMENTAL PRODUCT DECLARATION

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

X-U nails portfolio
Hilti Aktiengesellschaft



EPD HUB, HUB-1955
Published on 30.08.2024, last updated on 30.08.2024, valid until 30.08.2029

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Hilti Aktiengesellschaft
Address	Feldkircherstrasse 100, FL-9494 Schaan, LIECHTENSTEIN
Contact details	sustainability@hilti.com
Website	https://www.hilti.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 und 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	Christina Aoun (HIlti AG)
EPD verification	Unabhängige Verifizierung dieser EPD und der Daten gemäß ISO 14025: ☐ Interne Prüfung ☑ Externe Verifizierung
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	X-U nails portfolio
Additional labels	view Appendix
Product reference	
Place of production	Schaan, Liechtenstein
Period for data	calendar year 2023
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	0 to 12.5 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Kilogram
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	2,18E+00
GWP-total, A1-A3 ($kgCO_2e$)	2,07E+00
Secondary material, inputs (%)	0.61
Secondary material, outputs (%)	85
Total energy use, A1-A3 (kWh)	11.1
Net freshwater use, A1-A3 (m^3)	0.02

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 33,000 team members in over 120 countries the company stands for direct customer relationships, quality and innovation. Hilti generated annual sales of more than CHF 6.3 billion in 2022. 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

Features
- Galvanised nails for fastenings on concrete or steel
- Fully-knurled point for higher application limits on steel and suitability for use on hard concrete
- High application limits, high ultimate tensile loads
- One nail for almost any application
- Thermo-pulled ballistic point for optimum driving characteristics

Applications
- Fastenings on concrete and steel
- Fastening metal track for plasterboard/dry lining to concrete
- Fastening wall ties
- Fastening wood to concrete
- Setting up formwork and safety barriers

Further information can be found at https://www.hilti.com/.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	100	Europe
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	0.0323

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Kilogram
Mass per declared unit	1 kg
Functional unit	1 kg
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		
×	×	×	×	×	MND	MND	MND	MND	MND	MND	MND	×	×	×	×	×		
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.

The nails representing 75% of X-U nail sales were used to represent the entire X-U family. For each of these nails, the percentage of volume they occupied in 2023 sales was calculated. Subsequently, for each nail, the sales box, export box, and components were weighted.
By using these percentages and the weights of the various packaging items, we calculated a weighted average for each. This data was then entered into OneClick LCA.

Plant 1 in Schaan operates entirely on renewable energy sourced from wind turbines (89%) and solar panels (11%). Therefore, when entering the energy consumption data for our product's life cycle, we should use a dataset specific to wind and solar energy to accurately reflect the CO2 emissions.

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.

To approximate the emissions associated with the transport of X-U family items, we began by consulting the Sales department for data on X-U product sales worldwide, categorized by region. Using this information, we determined the percentage of sales for each region. Distances to regional hubs were then calculated.
Once these distances and the different transport legs were established, the data was input into OneClick LCA. The percentage of sales was used to weight the distances, making the emissions calculations more representative.

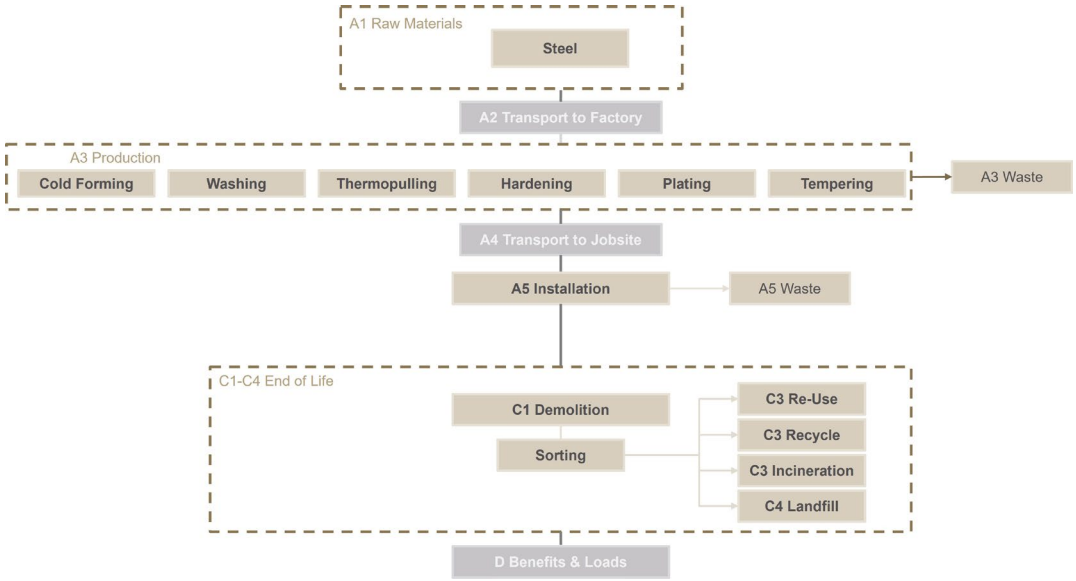
PRODUCT USE AND MAINTENANCE (B1-B7)

The use phase is not relevant for the life cycle emissions of this product and is, therefore, not accounted into the assessment.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

The product is considered to be dismantled by a power tool and with negligible energy use.
It is assumed that the steel waste is collected separately and transported to the waste treatment facility.
Transportation distance to waste treatment plant and to landfill is assumed to be 100 km, the transportation method is assumed to be lorry.
Module C3 accounts for energy and resource inputs for sorting and treating of steel for recycling. Landfilled material is included in module C4.
Due to the material recovery potential of the product and material and energy recovery potential of its packaging, recycled raw materials lead to avoided virgin material production and the energy recovered from incineration replaces electricity and heat from primary sources.
Benefits and loads from incineration and recycling are included in Module D.
Recycling rate of 85% in the calculation is based on world average. Actual recyclability may vary between regions.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

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

ALLOCATION, ESTIMATES AND ASSUMPTIONS

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

Data type	Allocation
Raw materials	No allocation
Packaging material	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	Multiple products
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	0 to 12.5 %

The averaging of products is calculated based on the lightest and heaviest product in the series. The declared unit 1 kg of x-u 16 p8 nails is representative for a product consisting of a nail with total weight of 0.00194kg.
Certain variability (not more than 0% to 12.5%) is possible for products in the series depending on their size and thickness.

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	1,18E+00	3,66E-02	8,51E-01	2,07E+00	1,76E-01	1,24E-01	MND	MND	MND	MND	MND	MND	MND	MNR	9,39E-03	1,86E-02	7,91E-04	-7,12E-01
GWP – fossil	kg CO_2e	1,18E+00	3,65E-02	9,70E-01	2,18E+00	1,76E-01	5,86E-03	MND	MND	MND	MND	MND	MND	MND	MNR	9,38E-03	1,86E-02	7,90E-04	-6,81E-01
GWP – biogenic	kg CO_2e	0,00E+00	0,00E+00	-1,19E-01	-1,19E-01	0,00E+00	1,19E-01	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	-3,10E-02
GWP – LULUC	kg CO_2e	5,02E-03	1,35E-05	4,27E-04	5,46E-03	1,20E-04	6,12E-06	MND	MND	MND	MND	MND	MND	MND	MNR	3,46E-06	2,44E-05	7,46E-07	-3,50E-04
Ozone depletion pot.	kg $CFC\text{-}_{11}$e	1,09E-08	8,41E-09	1,07E-07	1,27E-07	3,47E-08	5,43E-10	MND	MND	MND	MND	MND	MND	MND	MNR	2,16E-09	2,30E-09	3,20E-10	-1,28E-08
Acidification potential	mol H^+e	3,42E-03	1,55E-04	2,71E-03	6,29E-03	3,31E-03	1,79E-05	MND	MND	MND	MND	MND	MND	MND	MNR	3,97E-05	2,36E-04	7,43E-06	-5,01E-03
EP-freshwater[2)]	kg Pe	2,97E-05	2,99E-07	1,62E-03	1,65E-03	1,69E-06	4,98E-08	MND	MND	MND	MND	MND	MND	MND	MNR	7,68E-08	9,98E-07	8,28E-09	-2,62E-05
EP-marine	kg Ne	7,63E-04	4,60E-05	4,95E-04	1,30E-03	8,99E-04	7,12E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,18E-05	4,99E-05	2,57E-06	-6,36E-04
EP-terrestrial	mol Ne	8,02E-03	5,07E-04	5,40E-03	1,39E-02	9,96E-03	6,72E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1,30E-04	5,77E-04	2,83E-05	-7,09E-03
POCP ("smog")[3)]	kg NMVOCe	2,28E-03	1,62E-04	2,75E-03	5,19E-03	2,62E-03	1,94E-05	MND	MND	MND	MND	MND	MND	MND	MNR	4,17E-05	1,59E-04	8,23E-06	-2,03E-03
ADP-minerals & metals4)	kg Sbe	1,43E-06	8,57E-08	1,80E-05	1,96E-05	4,80E-07	1,03E-08	MND	MND	MND	MND	MND	MND	MND	MNR	2,20E-08	2,51E-06	1,82E-09	-3,91E-07
ADP-fossil resources	MJ	1,47E+00	5,49E-01	1,21E+01	1,41E+01	2,37E+00	4,29E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-01	2,52E-01	2,17E-02	-6,26E+00
Water use[5)]	m^3e depr.	4,14E-01	2,46E-03	7,41E-01	1,16E+00	1,26E-02	1,84E-03	MND	MND	MND	MND	MND	MND	MND	MNR	6,31E-04	4,89E-03	6,87E-05	-6,93E-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 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	5,40E-09	4,21E-09	2,64E-08	3,60E-08	1,44E-08	2,98E-10	MND	MND	MND	MND	MND	MND	MND	MNR	1,08E-09	3,09E-09	1,50E-10	-8,58E-08
Ionizing radiation[6)]	kBq U235e	2,06E-02	2,61E-03	4,54E-02	6,86E-02	1,27E-02	2,35E-04	MND	MND	MND	MND	MND	MND	MND	MNR	6,71E-04	2,81E-03	9,80E-05	-2,87E-02
Ecotoxicity (freshwater)	CTUe	2,93E+00	4,94E-01	1,25E+01	1,59E+01	2,02E+00	4,72E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1,27E-01	1,14E+00	1,41E-02	-2,19E+01
Human toxicity, cancer	CTUh	6,83E-10	1,21E-11	7,02E-09	7,72E-09	1,19E-10	2,60E-12	MND	MND	MND	MND	MND	MND	MND	MNR	3,11E-12	3,50E-11	3,53E-13	-1,96E-10
Human tox. non-cancer	CTUh	4,01E-09	4,89E-10	1,58E-08	2,03E-08	1,84E-09	8,74E-11	MND	MND	MND	MND	MND	MND	MND	MNR	1,25E-10	1,56E-09	9,24E-12	-6,37E-09
SQP[7)]	-	5,81E-01	6,32E-01	1,19E+01	1,31E+01	1,09E+00	4,21E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1,62E-01	5,08E-01	4,63E-02	-3,91E+00

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

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	2,99E+00	6,18E-03	1,19E+01	1,49E+01	4,37E-02	1,21E-03	MND	MND	MND	MND	MND	MND	MND	MNR	1,59E-03	4,47E-02	1,88E-04	-8,17E-01
Renew. PER as material	MJ	0,00E+00	0,00E+00	1,04E+00	1,04E+00	0,00E+00	-1,04E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	2,70E-01
Total use of renew. PER	MJ	2,99E+00	6,18E-03	1,29E+01	1,59E+01	4,37E-02	-1,04E+00	MND	MND	MND	MND	MND	MND	MND	MNR	1,59E-03	4,47E-02	1,88E-04	-5,46E-01
Non-re. PER as energy	MJ	1,45E+01	5,49E-01	9,90E+00	2,50E+01	2,37E+00	4,29E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-01	2,52E-01	2,17E-02	-6,23E+00
Non-re. PER as material	MJ	0,00E+00	0,00E+00	1,73E-01	1,73E-01	0,00E+00	-1,73E-01	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	4,90E-02
Total use of non-re. PER	MJ	1,45E+01	5,49E-01	1,01E+01	2,52E+01	2,37E+00	-1,31E-01	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-01	2,52E-01	2,17E-02	-6,18E+00
Secondary materials	kg	6,08E-03	1,52E-04	1,16E-02	1,78E-02	1,29E-03	2,58E-05	MND	MND	MND	MND	MND	MND	MND	MNR	3,91E-05	2,81E-04	4,55E-06	2,92E-04
Renew. secondary fuels	MJ	4,69E-06	1,54E-06	3,51E-02	3,51E-02	7,14E-06	3,09E-07	MND	MND	MND	MND	MND	MND	MND	MNR	3,95E-07	1,46E-05	1,19E-07	-3,88E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MNR	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,15E-02	7,11E-05	5,32E-03	1,69E-02	3,22E-04	9,03E-06	MND	MND	MND	MND	MND	MND	MND	MNR	1,83E-05	1,48E-04	2,37E-05	-1,89E-03

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	7,85E-02	7,28E-04	1,95E-01	2,75E-01	4,93E-03	8,39E-05	MND	MND	MND	MND	MND	MND	MND	MNR	1,87E-04	1,71E-03	0,00E+00	-4,14E-02
Non-hazardous waste	kg	2,51E-01	1,20E-02	7,07E-01	9,70E-01	7,00E-02	5,41E-02	MND	MND	MND	MND	MND	MND	MND	MNR	3,07E-03	5,47E-02	1,50E-01	-1,08E+00
Radioactive waste	kg	3,45E-04	3,67E-06	4,24E-05	3,91E-04	1,58E-05	2,02E-07	MND	MND	MND	MND	MND	MND	MND	MNR	9,43E-07	1,48E-06	0,00E+00	-1,14E-05

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	3,00E-02	3,00E-02	0,00E+00	0,00E+00	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	5,35E+00	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 CO_2e	1,73E-01	3,62E-02	9,62E-01	1,17E+00	1,75E-01	7,71E-03	MND	MND	MND	MND	MND	MND	MND	MNR	9,29E-03	1,83E-02	7,74E-04	-6,64E-01
Ozone depletion Pot.	kg CFC_{-11}e	1,04E-08	6,66E-09	9,69E-08	1,14E-07	2,75E-08	4,33E-10	MND	MND	MND	MND	MND	MND	MND	MNR	1,71E-09	1,86E-09	2,53E-10	-1,05E-08
Acidification	kg SO_2e	4,27E-04	1,20E-04	2,24E-03	2,79E-03	2,61E-03	1,35E-05	MND	MND	MND	MND	MND	MND	MND	MNR	3,09E-05	1,91E-04	5,61E-06	-4,29E-03
Eutrophication	kg PO_4^3e	4,24E-04	2,74E-05	5,76E-03	6,21E-03	3,68E-04	9,29E-05	MND	MND	MND	MND	MND	MND	MND	MNR	7,03E-06	6,30E-05	1,21E-06	-9,56E-04
POCP (“smog”)	kg C_2H_4e	3,71E-05	4,69E-06	1,20E-04	1,61E-04	7,04E-05	9,32E-07	MND	MND	MND	MND	MND	MND	MND	MNR	1,21E-06	7,22E-06	2,35E-07	-2,01E-04
ADP-elements	kg Sbe	1,33E-06	8,30E-08	1,72E-05	1,86E-05	4,70E-07	9,96E-09	MND	MND	MND	MND	MND	MND	MND	MNR	2,13E-08	2,50E-06	1,79E-09	-3,88E-07
ADP-fossil	MJ	1,47E+00	5,49E-01	1,03E+01	1,23E+01	2,37E+00	4,29E-02	MND	MND	MND	MND	MND	MND	MND	MNR	1,41E-01	2,52E-01	2,17E-02	-6,26E+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 Iamkaddam, as an authorized verifier acting for EPD Hub Limited

30.08.2024