



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Stainless Steel Frame Anchors

HRD-CR / HRD-CR2 / HRD-HR / HRD-HR2 / HRD-KR2 / HRD-PR2

Hilti AG



EPD HUB, HUB-7366

Published on 27.08.2026, last updated on 27.08.2026, valid until 26.08.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 Mar 2025) 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	Graham Barry, Hilti AG
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Vera Durao as an authorized verifier for EPD Hub

This EPD is intended for business-to-business 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	Stainless Steel Frame Anchors HRD-CR / HRD-CR2 / HRD-HR / HRD-HR2 / HRD-KR2 / HRD-PR2
Additional labels	See appendix
Product reference	423889 HRD-HR 10x80
Place(s) of raw material origin	Vietnam and Germany
Place of production	Nersingen, Germany
Place(s) of installation and use	Worldwide
Period for data	Calendar year 2025
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	0
GTIN (Global Trade Item Number)	-
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	9,84

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of HRD stainless steel anchors
Declared unit mass	1 kg
Mass of packaging	0,04 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	5,71
GWP-total, A1-A3 (kgCO ₂ e)	5,71
Secondary material, inputs (%)	58,9
Total energy use, A1-A3 (kWh)	24,8
Net freshwater use, A1-A3 (m ³)	0,09

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

Hilti HRD stainless steel frame anchor is a mechanical anchor with stainless steel screw and polymer sleeve for fastening to concrete and masonry in corrosion resistance class CRC II (CR2, HR2, KR2, PR2) to corrosion class CRC III (CR, HR). A European Technical Assessment (ETA) in accordance with the applicable European Assessment Document (EAD) is available which documents the mechanical and fire performance, in addition to the environmental performance described in this EPD.

Typical applications:

- Rainscreen/ventilated façades – fastening façade mounting brackets to concrete and masonry.
- Metal fabrication – fastening handrails, balustrades, railings, window bars and other architectural metalwork to concrete and masonry
- Window frame fastenings

Further information can be found at: www.hilti.group

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	90	Vietnam/Germany
Minerals	0	-
Fossil materials	10	Germany
Bio-based materials	0	-

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	0,018

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of HRD stainless steel anchors
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	ND	ND	ND	ND	ND	ND	ND	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

Not declared = ND

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 consists of two components: a stainless steel screw, and a reinforced polyamide sleeve. The steel screw is produced by external partners in Germany (10%) and Vietnam (90%), whereas production of the polymer component and final assembly take place in one of Hilti's own facilities in Germany. Raw materials are sourced in the same country as the production: steel from Germany (10%) and Vietnam (90%); polyamide from Germany, and cardboard packaging from Germany. The main means of transport during the production process is road haulage (25-160 km), plus container ships (17500 km) to transport the finished screws from Vietnam to the place of final assembly in Germany. According to the supplier, the screws have a minimum recycled content of 80%. All other materials are assessed on the basis of no recycled content in the absence of trustworthy information to the contrary. Production losses of 3-5% occur (steel scrap and polyamide residue) but are recycled internally.

Polyamide molding, assembly with the steel screw and packaging take place at a Hilti production facility in Nersingen, Germany. As with all Hilti facilities worldwide, the factory is powered by 100% green electricity through certification. The external partners producing the screws use the standard residual mix. To accurately reflect this decentralized production process, production steps performed by third parties are accounted for in module A1, while in-house steps are covered by the green electricity declared in module A3. For the A3 module, annual consumption was provided by the plant and allocated to the declared unit. Lubricant oil and compressed air are also consumed during production. All plant data was provided as annual total consumption, then allocated to the functional unit of this declaration based on plant's annual total output.

For relevant production locations, the use of renewable 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.

Module A4 is represented by a sales-weighted average transport distance from Hilti's Global Logistics Hub in Liechtenstein to a representative urban center in each distribution region. A combination of container ship and lorry is considered, with the former accounting for a considerable share of emissions due to the availability of these products on nearly every continent.

Module A5 impacts are due to the disposal of the packaging. Installation is considered to have a negligible impact as only handheld power tools, and no ancillary materials are consumed. Apart from the packaging, there is no waste or material loss during installation. Road transport is assumed to be the only mode used to process the cardboard waste (Recycling 250 km, Incineration 150 km, Landfill 50 km).

PRODUCT END OF LIFE (C1-C4, D)

All parts of the fasteners are assumed to be collected and processed for recycling when the building they are in is demolished. Energy consumption due to demolition is considered negligible as only manual or handheld cordless power tools are needed. For the screw part, the typical end-of-life treatment of stainless steel, as published by World Stainless in 2024, has been applied in this assessment. Accordingly, 95% of the virgin material is considered for recycling (module C3) with the rest assumed to be destined for landfill (module C4). The use of regional facilities is reflected in the use of truck transport up to 250 km for recycling, 150 km for incineration and 50 km for landfill.

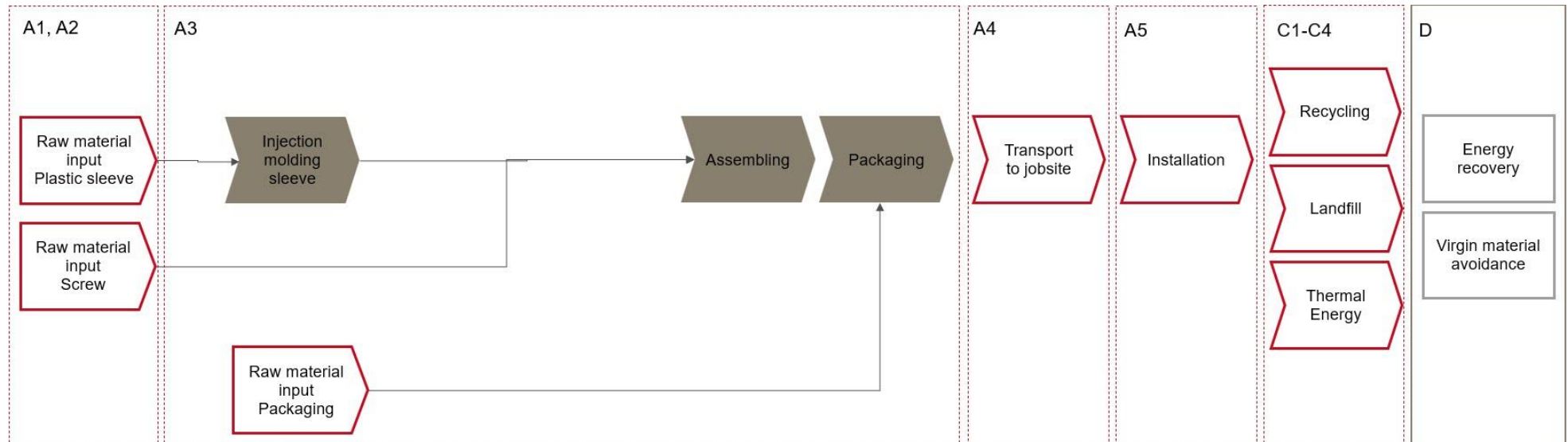
For the reinforced polymer component, the scenario applied is derived from

academic literature (see bibliography). Accordingly, this assessment assumes 90% of the mass is sent to landfill (module C4) with 10% being incinerated with energy recovery (module C3). Due to the lack of widely available and economically viable facilities for such, no material recycling of the reinforced polymer is assumed. Therefore, no secondary material flow from the reinforced polymer contributes to Module D.

In Module D, the virgin share of stainless steel scrap is assumed to substitute virgin stainless-steel production. No downgrading factor is applied, i.e. 1 kg of end-of-waste stainless scrap is assumed to displace 1 kg of virgin stainless steel.

For the reinforced polymer, energy recovery via incineration is assumed to substitute electricity and heat production. The recovered energy is calculated at a rate of 35.58 MJ/kg, with ABS being used as a proxy for polyamide. The substituted processes are [reference electricity mix] and [reference heat supply, e.g. natural gas boiler or district heating mix], as represented in the LCA database.

LIFE CYCLE FLOW DIAGRAM



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.

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	Physical Properties
Ancillary materials	Physical Properties
Manufacturing energy and waste	Physical Properties

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	0

This EPD is product and factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub V3 and EPD Process Certification v3.2.5. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

Electricity transmission and transformation loss rate:

IEA/World Bank statistics, <https://www.ceicdata.com/en/finland/energy-production-and-consumption/fi-electric-power-transmission-and-distribution-losses--of-output>

End-of-life scenarios:

Stainless steel, World Stainless 2024 & ICDA 2023;
worldstainless.org/media/press-releases/stainless-steel-in-figures-2024/

Reinforced polyamide, Polymers 2014, 6(6), 1810-1826;
<https://doi.org/10.3390/polym6061810>.

Cardboard packaging, EUROSTAT, 2025;
https://ec.europa.eu/eurostat/databrowser/view/env_waspac__custom_8519259/default/table?lang=en

Biogenic carbon content of cardboard:

Indicative value from Ecoinvent,
<https://support.ecoinvent.org/hubfs/Knowledge%20Base/Database/Releases/3.12/Change%20Report%20v3.12.pdf?hsLang=en>

Calorific value of polymers used in module D:

Mario Rosato, 2000;
<https://www.scribd.com/document/946557203/Heating-value-table>

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, EF 3.1

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 ₂ e	5,47E+00	1,52E-01	8,29E-02	5,71E+00	2,46E-01	5,44E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,34E-02	1,93E-02	3,25E-02	-8,50E-01
GWP – fossil	kg CO ₂ e	5,42E+00	1,52E-01	1,35E-01	5,71E+00	2,46E-01	1,29E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,33E-02	1,93E-02	3,25E-02	-8,40E-01
GWP – biogenic	kg CO ₂ e	4,72E-02	2,41E-05	-5,30E-02	-5,84E-03	4,84E-05	5,31E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,44E-06	-4,10E-05	-7,19E-06	-9,48E-03
GWP – LULUC	kg CO ₂ e	5,99E-03	8,15E-05	8,56E-04	6,93E-03	1,20E-04	8,99E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,91E-05	2,38E-05	1,04E-06	-8,44E-04
Ozone depletion pot.	kg CFC-11e	3,61E-08	2,18E-09	2,29E-09	4,06E-08	3,55E-09	1,34E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,13E-10	2,60E-10	4,31E-11	-5,78E-09
Acidification potential	mol H ⁺ e	2,86E-02	4,29E-03	7,36E-04	3,36E-02	3,68E-03	6,51E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,44E-04	2,30E-04	1,50E-05	-4,73E-03
EP-freshwater ²⁾	kg Pe	4,73E-03	5,29E-06	6,33E-05	4,79E-03	1,82E-05	3,44E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,36E-06	1,24E-05	2,10E-07	-2,60E-04
EP-marine	kg Ne	5,19E-03	1,07E-03	1,62E-04	6,42E-03	9,54E-04	6,72E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,68E-05	5,09E-05	1,93E-04	-8,43E-04
EP-terrestrial	mol Ne	5,42E-02	1,19E-02	1,54E-03	6,76E-02	1,06E-02	2,06E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,09E-04	5,75E-04	6,51E-05	-8,99E-03
POCP (“smog”) ³⁾	kg NMVOCe	1,82E-02	3,23E-03	5,34E-04	2,20E-02	3,09E-03	8,05E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,01E-04	1,70E-04	2,17E-05	-2,87E-03
ADP-minerals & metals ⁴⁾	kg Sbe	1,25E-04	1,61E-07	1,56E-06	1,27E-04	4,97E-07	9,49E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,42E-07	1,37E-06	4,46E-09	-2,14E-05
ADP-fossil resources	MJ	6,39E+01	1,87E+00	1,99E+00	6,78E+01	3,28E+00	1,32E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,08E-01	2,59E-01	3,41E-02	-9,19E+00
Water use ⁵⁾	m ³ e depr.	3,89E+00	5,52E-03	5,94E-02	3,95E+00	1,51E-02	3,63E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,83E-03	4,66E-03	1,70E-03	-2,43E-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, EF 3.1

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	4,38E-07	4,96E-09	1,38E-08	4,57E-07	1,66E-08	2,74E-10	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,44E-09	3,12E-09	2,38E-10	-6,66E-08
Ionizing radiation ⁶⁾	kBq 11235e	3,17E-01	8,80E-04	2,00E-02	3,38E-01	2,23E-03	3,99E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	5,00E-04	2,20E-03	3,69E-05	-4,16E-02
Ecotoxicity (freshwater)	CTUe	2,29E+02	1,51E-01	1,69E+00	2,31E+02	5,03E-01	4,99E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,57E-02	1,51E-01	3,59E-01	-2,84E+00
Human toxicity, cancer	CTUh	6,20E-09	3,19E-11	6,84E-11	6,30E-09	4,46E-11	1,94E-12	ND	ND	ND	ND	ND	ND	ND	0,00E+00	7,37E-12	1,73E-11	3,08E-12	-7,43E-10
Human tox. non-cancer	CTUh	9,65E-08	4,93E-10	2,19E-09	9,92E-08	1,54E-09	8,97E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,81E-10	1,17E-09	2,74E-10	-1,65E-08
SQP ⁷⁾	-	2,53E+01	2,34E-01	5,17E+00	3,07E+01	2,05E+00	9,96E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,63E-01	5,05E-01	6,71E-02	-4,38E+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	1,43E+01	1,49E-02	7,98E+00	2,23E+01	3,73E-02	-6,36E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,40E-03	4,83E-02	6,33E-04	-2,22E+00
Renew. PER as material	MJ	8,07E-02	0,00E+00	4,39E-01	5,19E-01	0,00E+00	-4,39E-01	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-7,26E-02	-8,07E-03	4,24E-02
Total use of renew. PER	MJ	1,44E+01	1,49E-02	8,42E+00	2,28E+01	3,73E-02	-1,07E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,40E-03	-2,43E-02	-7,44E-03	-2,18E+00
Non-re. PER as energy	MJ	6,31E+01	1,87E+00	1,88E+00	6,69E+01	3,28E+00	1,32E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,08E-01	2,59E-01	-3,60E+00	-9,19E+00
Non-re. PER as material	MJ	1,90E+00	0,00E+00	2,49E-02	1,92E+00	0,00E+00	-2,49E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	-1,71E+00	-1,90E-01	1,78E-01
Total use of non-re. PER	MJ	6,50E+01	1,87E+00	1,90E+00	6,88E+01	3,28E+00	-1,17E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,08E-01	-1,45E+00	-3,79E+00	-9,02E+00
Secondary materials	kg	5,89E-01	8,88E-04	5,47E-03	5,95E-01	1,45E-03	2,16E-05	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,73E-04	3,16E-04	1,41E-05	9,62E-02
Renew. secondary fuels	MJ	1,32E-03	2,36E-06	7,84E-03	9,16E-03	1,20E-05	1,25E-07	ND	ND	ND	ND	ND	ND	ND	0,00E+00	3,48E-06	1,47E-05	3,26E-07	-1,82E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	8,98E-02	1,35E-04	1,42E-03	9,13E-02	3,70E-04	-7,96E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	8,06E-05	1,38E-04	-2,99E-04	-7,34E-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	7,25E+00	2,96E-03	5,57E-02	7,31E+00	1,42E-02	2,26E-04	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,06E-03	1,70E-03	4,58E-04	-8,05E-01
Non-hazardous waste	kg	2,35E+01	4,37E-02	3,79E-01	2,40E+01	2,70E-01	1,57E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,98E-02	6,12E-02	4,59E-01	-1,73E+00
Radioactive waste	kg	8,17E-05	2,14E-07	5,07E-06	8,70E-05	5,37E-07	9,75E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,23E-07	5,63E-07	9,11E-09	-1,03E-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	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	5,68E-03	0,00E+00	4,00E-02	4,57E-02	0,00E+00	3,32E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	8,55E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	5,67E-04	0,00E+00	1,50E-03	2,07E-03	0,00E+00	0,00E+00	ND	ND	ND	ND	ND	ND	ND	0,00E+00	0,00E+00	0,00E+00	1,00E-02	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,56E-02	ND	ND	ND	ND	ND	ND	ND	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	6,40E-03	ND	ND	ND	ND	ND	ND	ND	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	9,20E-03	ND	ND	ND	ND	ND	ND	ND	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 ₂ e	5,04E+00	1,51E-01	1,36E-01	5,33E+00	2,44E-01	5,92E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,31E-02	1,93E-02	3,21E-02	-8,37E-01
Ozone depletion Pot.	kg CFC ₁₁ e	3,04E-08	1,73E-09	1,87E-09	3,40E-08	2,83E-09	1,11E-11	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,90E-10	2,14E-10	3,52E-11	-4,88E-09
Acidification	kg SO ₂ e	2,30E-02	3,43E-03	6,02E-04	2,71E-02	2,92E-03	5,02E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,10E-04	1,85E-04	1,10E-05	-3,93E-03
Eutrophication	kg PO ₄ ³ e	4,06E-03	3,79E-04	1,98E-04	4,64E-03	3,79E-04	5,56E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	2,69E-05	2,68E-05	1,14E-05	-5,36E-04
POCP (“smog”)	kg C ₂ H ₄ e	1,43E-03	1,70E-04	4,69E-05	1,64E-03	1,58E-04	1,63E-06	ND	ND	ND	ND	ND	ND	ND	0,00E+00	9,91E-06	1,10E-05	2,01E-06	-2,39E-04
ADP-elements	kg Sbe	1,24E-04	1,59E-07	1,53E-06	1,26E-04	4,85E-07	9,32E-09	ND	ND	ND	ND	ND	ND	ND	0,00E+00	1,39E-07	1,37E-06	3,86E-09	-2,13E-05

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
ADP-fossil	MJ	5,34E+01	1,86E+00	1,62E+00	5,69E+01	3,25E+00	1,26E-02	ND	ND	ND	ND	ND	ND	ND	0,00E+00	6,00E-01	2,21E-01	3,36E-02	-8,56E+00

ADDITIONAL INDICATOR – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ⁹⁾	kg CO ₂ e	5,43E+00	1,52E-01	1,36E-01	5,72E+00	2,46E-01	1,29E-03	ND	ND	ND	ND	ND	ND	ND	0,00E+00	4,34E-02	1,93E-02	3,25E-02	-8,41E-01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. In addition, the characterisation factors for the flows – CH₄ fossil, CH₄ biogenic and Dinitrogen monoxide – were updated. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterisation factor for biogenic CO₂ is set to zero

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Electricity production, wind, 1-3MW turbine, onshore, Finland, Ecoinvent, 0.0190 kgCO₂e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry, >32 metric ton, diesel, EURO 5, 1184.0 km
2. Transport, freight, sea, container ship, 10230.0 km

Transport to the building site (A4) - Scenario documentation

Scenario parameter	Value
Capacity utilization (including empty return) %	50
Bulk density of transported products	416
Volume capacity utilization factor	1

Installation at the building site (A5) - Scenario documentation

Scenario parameter	Value
Energy: type and consumption (MJ or kWh)	-
Water use (m ³)	-
Ancillary materials: type and mass (kg)	-
Waste materials: type and mass (kg)	Cardboard packaging, 0.04 kg.
Waste materials: output routes	Recycling 83%, Incineration 8%, Landfill 9%.
Direct emissions (kg)	-

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	0
Collection process: Mixed waste (kg)	1
Recovery: re-use (kg)	0
Recovery: recycling (kg)	0,85
Recovery: energy recovery (kg)	0,01
Disposal (kg)	0,14
Scenario assumptions e.g. transportation (mode, km) & other	Recycling 250 km, Incineration 150 km, Landfill 50 km.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Vera Durao as an authorized verifier for EPD Hub Limited 27.08.2026



APPENDIX

The environmental impact data in this document applies to all items listed below. They share the same raw materials, undergo the same production flow and, although they vary in size, the proportion of each raw material remains constant.

Item number	Description	Weight per piece (kg)
2022681	Frame anchor HRD-CR 8x60	0.01476
2022682	Frame anchor HRD-CR 8x80	0.0196
2022683	Frame anchor HRD-CR 8x100	0.02454
2022684	Frame anchor HRD-CR 8x120	0.02964
2022685	Frame anchor HRD-CR 8x140	0.03436
423885	Frame anchor HRD-CR 10x60	0.02324
2023722	Frame anchor HRD-CR 10x80	0.03168
423886	Frame anchor HRD-CR 10x100	0.03688
2010113	Frame anchor HRD-CR 10x120	0.0438
423887	Frame anchor HRD-CR 10x140	0.0508
423892	Frame anchor HRD-CR2 10x60	0.02392
423893	Frame anchor HRD-CR2 10x80	0.0298
423894	Frame anchor HRD-CR2 10x100	0.0371
423895	Frame anchor HRD-CR2 10x120	0.044
423896	Frame anchor HRD-CR2 10x140	0.05084
423907	Frame anchor HRD-PR2 10x60	0.03038
423908	Frame anchor HRD-PR2 10x80	0.03484

Item number	Description	Weight per piece (kg)
423888	Frame anchor HRD-HR 10x60	0.03072
423889	Frame anchor HRD-HR 10x80	0.0388
423890	Frame anchor HRD-HR 10x100	0.04556
423891	Frame anchor HRD-HR 10x140	0.0592
423897	Frame anchor HRD-HR2 10x60	0.03088
423898	Frame anchor HRD-HR2 10x80	0.03782
423899	Frame anchor HRD-HR2 10x100	0.04516
423900	Frame anchor HRD-HR2 10x120	0.05116
423901	Frame anchor HRD-HR2 10x140	0.05824
423902	Frame anchor HRD-KR2 10x60	0.0308
423903	Frame anchor HRD-KR2 10x80	0.0386
423904	Frame anchor HRD-KR2 10x100	0.04418
423905	Frame anchor HRD-KR2 10x120	0.05086
423906	Frame anchor HRD-KR2 10x140	0.05754
2009767	Frame anchor HRD-KR2 10x160	0.06446
2009768	Frame anchor HRD-KR2 10x180	0.0711
2009769	Frame anchor HRD-KR2 10x200	0.07776