# ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

| | |
|---|---|
| Owner of the Declaration | Hilti Aktiengesellschaft |
| Publisher | Institut Bauen und Umwelt e.V. (IBU) |
| Programme holder | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number | EPD-HIL-20250283-CBN1-EN |
| Issue date | 10.09.2025 |
| Valid to | 09.09.2030 |

## HAS 8.8. HAS 8.8 HDG, HAS 5.8, HAS 5.8 HDG, HAS meter

## Hilti AG

Institut Bauen und Umwelt e.V.

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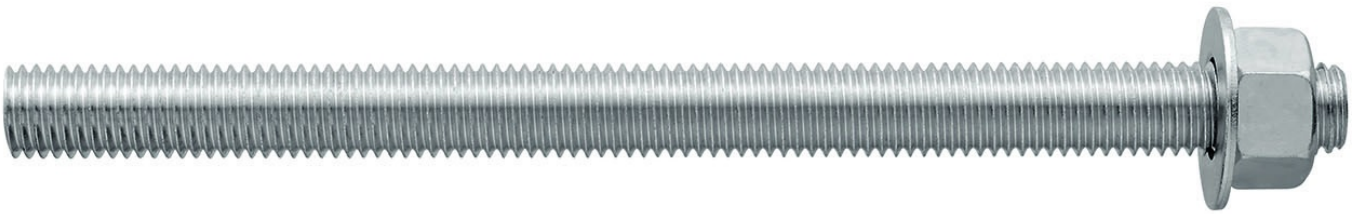
ECO PLATFORM EPD VERIFIED



## General Information

### Hilti AG

**Programme holder**

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

**Declaration number**

EPD-HIL-20250283-CBN1-EN

**This declaration is based on the product category rules:**

Screws, 01.06.2023
(PCR checked and approved by the SVR)

**Issue date**

10.09.2025

**Valid to**

09.09.2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

### HAS 8.8. HAS 8.8 HDG, HAS 5.8, HAS 5.8 HDG, HAS meter

**Owner of the declaration**

Hilti Aktiengesellschaft
Feldkircher Strasse 100
9494 Schaan
Liechtenstein

**Declared product / declared unit**

HAS 8.8 (carbon steel) / 1 kg product + packaging

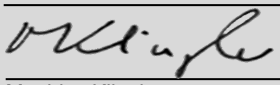
**Scope:**

This document refers to HAS 8.8 M12x220 a representative product for the HAS portfolio. The HAS 8.8 M12x220 was selected as a representative product because it is the best-selling item in the portfolio. Specific data from the HILTI AG manufacturing plant in Shanghai was collected for the preparation of the LCA. The input and output flows used in this calculation were collected as annual average consumption for the year 2023. The procedure for allocating the data to the declared unit is described in the chapter Allocation. The owner of the declaration is responsible for the underlying information and evidence; any liability of the IBU regarding manufacturer information, eco-balance data and evidence is excluded. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

**Verification**

| |
|---|
| The standard EN 15804 serves as the core PCR |
| Independent verification of the declaration and data according to ISO 14025:2011 |
| ☐ internally ☒ externally |



Matthias Klingler,
(Independent verifier)

## Product

**Product description/Product definition**

HAS products are threaded rods used for anchoring applications to resist static and seismic structural loads in the construction industry. The HAS rods are used together with Hilti injection mortars. The carbon steel variants of the HAS family is described further in this report.

For placing the product on the market in the European Union European Free Trade Association EU/EFTA (with the exception of Switzerland) *Regulation (EU) No. 305/2011 (CPR)* applies. The product needs a declaration of performance based on the European Technical Approval. HAS rods are present in several ETA approvals of Hilti Injection Mortars. Please see table for an overview of ETA approvals with HAS rods.

| IT- Number | Product name | Weight total [kg] |
|---|---|---|
| 2390236 | Anchor rod HAS 8.8 M12x220 | 0,1836 |
| | | |
| 2390194 | HAS 5.8 M8x80 | 0,0325 |
| 2390195 | HAS 5.8 M8x110 | 0,0421 |
| 2390196 | HAS 5.8 M8x150 | 0,0549 |
| 2390197 | HAS 5.8 M10x115 | 0,0727 |
| 2390198 | HAS 5.8 M10x130 | 0,0803 |
| 2390199 | HAS 5.8 M10x150 | 0,0903 |
| 2390200 | HAS 5.8 M10x170 | 0,1002 |
| 2390201 | HAS 5.8 M10x190 | 0,1102 |
| 2390126 | HAS 5.8 M12x120 | 0,1109 |
| 2390202 | HAS 5.8 M12x160 | 0,1406 |
| 2390203 | HAS 5.8 M12x180 | 0,1546 |
| 2390204 | HAS 5.8 M12x200 | 0,1696 |
| 2390205 | HAS 5.8 M12x220 | 0,1836 |
| 2390206 | HAS 5.8 M16x150 | 0,2446 |
| 2390207 | HAS 5.8 M16x190 | 0,2966 |
| 2390208 | HAS 5.8 M16x220 | 0,3356 |
| 2390209 | HAS 5.8 M16x260 | 0,3876 |
| 2390210 | HAS 5.8 M20x180 | 0,4816 |
| 2390211 | HAS 5.8 M20x260 | 0,4566 |
| 2433424 | HAS 5.8 M16x300 | 0,6556 |
| 2434581 | HAS 5.8 M20x240 | 0,6166 |
| 2434428 | HAS 5.8 M20x300 | 0,6976 |
| 2434429 | HAS 5.8 M24x300 | 1,0313 |
| 2390212 | HAS 5.8 HDG M8x110 | 0,0421 |
| 2390213 | HAS 5.8 HDG M8x150 | 0,0549 |
| 2390214 | HAS 5.8 HDG M10x115 | 0,0727 |
| 2390215 | HAS 5.8 HDG M10x130 | 0,0803 |
| 2390216 | HAS 5.8 HDG M12x120 | 0,1109 |
| 2390217 | HAS 5.8 HDG M12x160 | 0,1406 |
| 2390218 | HAS 5.8 HDG M12x220 | 0,1836 |
| 2390219 | HAS 5.8 HDG M16x150 | 0,2446 |
| 2390220 | HAS 5.8 HDG M16x190 | 0,2966 |
| 2390221 | HAS 5.8 HDG M16x220 | 0,3356 |
| 2390222 | HAS 5.8 HDG M20x180 | 0,4656 |
| 2390223 | HAS 5.8 HDG M20x260 | 0,4566 |
| 2433425 | HAS 5.8 HDG M16x300 | 0,6166 |
| 2434590 | HAS 5.8 HDG M20x300 | 0,6776 |
| 2434582 | HAS 5.8 HDG M24x300 | 1,0073 |
| 2390224 | HAS 8.8 M8x80 | 0,0325 |
| 2390225 | HAS 8.8 M8x110 | 0,0421 |
| 2390226 | HAS 8.8 8 M8x150 | 0,0549 |
| 2390227 | HAS 8.8 M10x115 | 0,0727 |
| 2390228 | HAS 8.8 M10x130 | 0,0803 |
| 2390229 | HAS 8.8 M10x150 | 0,0903 |

| | | |
|---|---|---|
| 2390230 | HAS 8.8 M10x170 | 0,1002 |
| 2390231 | HAS 8.8 M10x190 | 0,1102 |
| 2390232 | HAS 8.8 M12x120 | 0,1109 |
| 2390233 | HAS 8.8 M12x160 | 0,1406 |
| 2390234 | HAS 8.8 M12x180 | 0,1546 |
| 2390235 | HAS 8.8 M12x200 | 0,1696 |
| 2390236 | HAS 8.8 M12x220 | 0,1836 |
| 2390237 | HAS 8.8 M16x150 | 0,2326 |
| 2390238 | HAS 8.8 M16x190 | 0,2606 |
| 2390239 | HAS 8.8 M16x220 | 0,2446 |
| 2390240 | HAS 8.8 M16x260 | 0,2966 |
| 2390241 | HAS 8.8 M20x180 | 0,3506 |
| 2390242 | HAS 8.8 M20x260 | 0,3356 |
| 2434065 | HAS 8.8 M12x260 | 0,3906 |
| 2433426 | HAS 8.8 M12x300 | 0,3876 |
| 2434583 | HAS 8.8 M16x200 | 0,4816 |
| 2434591 | HAS 8.8 M16x230 | 0,5476 |
| 2433427 | HAS 8.8 M16x300 | 0,5866 |
| 2433428 | HAS 8.8 M16x350 | 0,4566 |
| 2433429 | HAS 8.8 M16x380 | 0,5336 |
| 2434584 | HAS 8.8 M20x220 | 0,6556 |
| 2434066 | HAS 8.8 M20x240 | 0,6166 |
| 2434592 | HAS 8.8 M20x300 | 0,6976 |
| 2434592 | HAS 8.8 M20x350 | 0,8006 |
| 2434067 | HAS 8.8 M20x400 | 0,9026 |
| 2434068 | HAS 8.8 M24x300 | 1,0313 |
| 2434069 | HAS 8.8 M24x450 | 1,4753 |
| 2390243 | HAS 8.8 HDG M8x110 | 0,0421 |
| 2390244 | HAS 8.8 HDG M8x150 | 0,0549 |
| 2390245 | HAS 8.8 HDG M10x115 | 0,0727 |
| 2390246 | HAS 8.8 HDG M10x130 | 0,0803 |
| 2390247 | HAS 8.8 HDG M12x120 | 0,1109 |
| 2390248 | HAS 8.8 HDG M12x160 | 0,1406 |
| 2390249 | HAS 8.8 HDG M12x220 | 0,1836 |
| 2390250 | HAS 8.8 HDG M16x150 | 0,2446 |
| 2390251 | HAS 8.8 HDG M16x190 | 0,2966 |
| 2390252 | HAS 8.8 HDG M16x220 | 0,3356 |
| 2390253 | HAS 8.8 HDG M20x180 | 0,4656 |
| 2390254 | HAS 8.8 HDG M20x260 | 0,4566 |
| 2434585 | HAS 8.8 HDG M16x300 | 0,6166 |
| 2434600 | HAS 8.8 HDG M20x300 | 0,6776 |
| 2434610 | HAS 8.8 HDG M20x400 | 0,8766 |
| 2434611 | HAS 8.8 HDG M24x300 | 1,0073 |
| 2390274 | HAS 5.8 M8x1000 | 0,3124 |
| 2390289 | HAS 5.8 M10x1000 | 0,4914 |
| 2390290 | HAS 5.8 M12x1000 | 0,7121 |
| 2390291 | HAS 5.8 M16x1000 | 1,3099 |

| | | |
|---|---|---|
| 2390292 | HAS 5.8 M20x1000 | 2,0524 |
| 2390127 | HAS 5.8 M24x1000 | 2,9609 |
| 2390293 | HAS 5.8 M27x1000 | 3,8268 |
| 2390294 | HAS 5.8 M30x1000 | 4,6942 |
| 2390295 | HAS 5.8 M33x1000 | 5,7701 |
| 2390296 | HAS 5.8 M36x1000 | 6,8251 |
| 2390297 | HAS 5.8 M39x1000 | 8,1656 |
| 2390298 | HAS 5.8 M8x3000 | 0,9372 |
| 2390299 | HAS 5.8 M10x3000 | 1,4742 |
| 2390300 | HAS 5.8 M12x3000 | 2,1364 |
| 2390125 | HAS 5.8 M16x3000 | 3,9298 |
| 2390128 | HAS 5.8 M20x3000 | 6,1572 |
| 2390129 | HAS 5.8 M24x3000 | 8,8826 |
| 2390160 | HAS 5.8 M27x3000 | 11,4804 |
| 2390161 | HAS 5.8 M30x3000 | 14,0825 |
| 2390162 | HAS 5.8 M33x3000 | 17,3103 |
| 2390163 | HAS 5.8 M36x3000 | 20,4752 |
| 2390164 | HAS 5.8 M39x3000 | 24,4969 |
| 2390165 | HAS 8.8 M8x1000 | 0,3124 |
| 2390166 | HAS 8.8 M10x1000 | 0,4914 |
| 2390167 | HAS 8.8 M12x1000 | 0,7121 |
| 2390168 | HAS 8.8 M16x1000 | 1,3099 |
| 2390169 | HAS 8.8 M20x1000 | 2,0524 |
| 2390170 | HAS 8.8 M24x1000 | 2,9609 |
| 2390171 | HAS 8.8 M27x1000 | 3,8268 |
| 2390172 | HAS 8.8 M30x1000 | 4,6942 |
| 2390173 | HAS 8.8 M33x1000 | 5,7701 |
| 2390174 | HAS 8.8 M36x1000 | 6,8251 |
| 2390175 | HAS 8.8 M39x1000 | 8,1656 |
| 2390176 | HAS 8.8 M8x3000 | 0,9372 |
| 2390177 | HAS 8.8 M10x3000 | 1,4742 |
| 2390178 | HAS 8.8 M12x3000 | 2,1364 |
| 2390179 | HAS 8.8 M16x3000 | 3,9298 |
| 2390180 | HAS 8.8 M20x3000 | 6,1572 |
| 2390181 | HAS 8.8 M24x3000 | 8,8826 |
| 2390182 | HAS 8.8 M27x3000 | 11,4804 |
| 2390183 | HAS 8.8 M30x3000 | 14,0825 |
| 2390184 | HAS 8.8 M33x3000 | 17,3103 |
| 2390185 | HAS 8.8 M36x3000 | 20,4752 |
| 2390186 | HAS 8.8 M39x3000 | 24,4969 |
| 2390187 | HAS 8.8 HDG M10x1000 | 0,4914 |
| 2390188 | HAS 8.8 HDG M12x1000 | 0,7121 |
| 2390189 | HAS 8.8 HDG M16x1000 | 1,3099 |
| 2390190 | HAS 8.8 HDG M20x1000 | 2,0524 |
| 2390191 | HAS 8.8 HDG M24x1000 | 2,9609 |
| 2390192 | HAS 8.8 HDG M27x1000 | 3,8268 |
| 2390275 | HAS 8.8 HDG M30x1000 | 4,6942 |
| 2390276 | HAS 8.8 HDG M33x1000 | 5,7701 |
| 2390277 | HAS 8.8 HDG M36x1000 | 6,8251 |
| 2390411 | HAS 8.8 HDG M39x1000 | 8,1656 |

**Application**

The core use of the product is in various construction applications where threaded rods are needed. Including commercial, industrial, residential and infrastructure segments. The main application of HAS rod is in structural connections of steel to concrete, where the HAS rod with appropriate Hilti Injection Mortar serves as a fastener of a steel baseplate into concrete or masonry base material.

**Technical Data**

For each application and use the respective national provisions apply.

The Hilti HAS threaded rod is an anchor fastener for use with Hilti Injection Mortars in concrete or masonry. The rod is

installed into a drilled hole and after curing time of the mortar nut and washer are installed and nut is torqued.

Performance data of the products are described in related ETA certificates. Hilti technical data for specific Hilti Injection Mortar used with HAS rod. This is also referred in declaration of performance.

Mechanical properties of HAS 5.8 (HDG)

fuk = 500 N/mm²

fyk = 400 N/mm²

Elongation at fracture (l0=5d) > 8% ductile

Electroplated zinc coated ≥ 5 µm

(HDG) hot dip galvanized ≥ 45 µm

Mechanical properties of HAS 8.8 (HDG)

fuk = 800 N/mm²

fyk = 640 N/mm²

Elongation at fracture (l0=5d) > 12% ductile

Electroplated zinc coated ≥ 5 µm

(HDG) hot dip galvanized ≥ 45 µm

**Constructional data**

Constructional data for reference product

| Name | Value | Unit |
|---|---|---|
| Screw diameter | 12 | mm |
| Plate diameter | 13 | mm |
| Usage category as per ETA | - | - |
| Characteristic tension resistance | - | kN |

**Base materials/Ancillary materials**

**Base materials**

| Name | Value | Unit |
|---|---|---|
| Steel | 100 | % |

Base materials of HAS 5.8 (HDG)

HAS 5.8 follows ISO 898-1
nut follows DIN 934, grade 8,
washer follows DIN 125-140 HV

Base materials of HAS 8.8 (HDG)

HAS 8.8 follows ISO 898-1,
nut follows DIN 934, grade 8,
washer follows DIN 125-140 HV

Information on pre- and post consumer recycled content:

100% of the declared product derives from basic oxygen furnace (BOF) produced steel and carries a secondary material (recycled material) content of 20%. Based on the most comprehensive market information and internal evaluations available, the pre-consumer share is on average approximately 25% (out of 20%), which means a 5% share of the steel components, while the post-consumer share is on average approximately 75% (out of 20%), which means a 15% share of the steel components

**Reference service life**

The lifetime of the HAS rod is defined in EAD 330499-01-0601 and depends on the Hilti Injection Mortar used.

## LCA: Calculation rules

**Declared Unit**

The product declared here is a screw from HILTI AG with the designation 'HAS 8.8 M12x220', representative of the HAS portfolio. The declared unit refers to 1 kg of the fastening system. The packaging, based on 1 kg, is also included in the calculation at 0.018 kg. The following table shows the data for the decarbonized unit.

**Declared unit and mass reference**

| Name | Value | Unit |
|---|---|---|
| Declared unit | 1 | kg |
| Gross density | 7850 | kg/m$^3$ |
| Conversion factor to 1 kg | 1 | |

**System boundary**

Type of EPD:From the cradle to the factory gate with modules C1-C4 and module D. The following information modules are defined as system boundaries in this study:

Production stage (A1- A3):

- A1, Raw material,
- A2, Transport to the manufacturer,
- A3, Production.

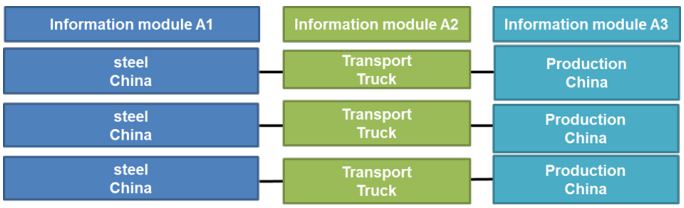
End of life (C1- C4):

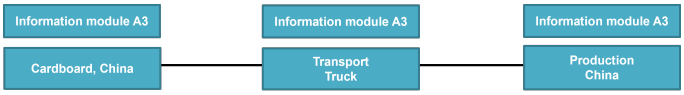
- C1, Dismantling/demolition,
- C2, Transport,
- C3, Waste treatment,
- C4, Disposal.

Reuse, recovery and recycling potential (D)

To accurately record the indicators and environmental impacts of the declared unit, a total of eight information modules are considered. The information modules A1 to A3 cover the material provision, transport to the production site, and the production processes of the product itself.

The intermediate products are sourced from Asia and transported by truck.




Information modules C1 to C4 cover the dismantling or demolition of the product from the building, transportation for waste disposal, waste treatment and final disposal of the product. Additionally, reuse, recovery and recycling potentials are adressed in information module D.

### Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Global

### Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. Sphera LCA for experts

## LCA: Scenarios and additional technical information

### Characteristic product properties of biogenic carbon

No renewable raw materials are used; therefore, the biogenic carbon is reported as zero. However, the packaging contains the following raw material that includes biogenic carbon.

### Information on describing the biogenic carbon content at factory gate

| Name | Value | Unit |
|---|---|---|
| Biogenic carbon content in product | - | kg C |
| Biogenic carbon content in accompanying packaging | 0.001 | kg C |

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of $CO_2$.

### End of life (C1-C4)

Removing the screw from the building is calculated in the information module C1.
Demolition is carried out using an electric screwdriver. The power consumption for the tool is assumed to be 0.5 MJ for the specified unit. The power consumption is calculated based on a European electricity mix.
In the information module C3, the waste treatment of the waste from the declared unit that is generated during the demolition of the building is calculated in the waste treatment plant. RER: Construction waste treatment plant is used as the background data set. The approx. 3% mass loss is process-related from the data set and is stored in the data set.

| Name | Value | Unit |
|---|---|---|
| Collected as mixed construction waste | 1 | kg |
| Recycling | 0.97 | kg |

### Reuse, recovery and/or recycling potentials (D), relevant scenario information

Module D presents the substitution potential of primer steel through a recycling scenario.

| Name | Value | Unit |
|---|---|---|
| Steel for recycling Net flow | 0,773 | kg |

## LCA: Results

The impact assessment of environmental loads is carried out in accordance with EN 15804+A2. The characterisation factors are selected in accordance with PCR (EF3.1).

**DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)**

| Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Benefits and loads beyond the system boundaries |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Raw material supply | Transport | Manufacturing | Transport from the gate to the site | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| X | X | X | MND | MND | MND | MND | MNR | MNR | MNR | MND | MND | X | X | X | X | X |

**RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg HAS 8.8**

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| Global Warming Potential total (GWP-total) | kg $CO_2$ eq | 3.9E+00 | 6.96E-02 | 4.99E-03 | 2.72E-03 | 0 | -1.33E+00 |
| Global Warming Potential fossil fuels (GWP-fossil) | kg $CO_2$ eq | 3.9E+00 | 6.96E-02 | 4.79E-03 | 2.68E-03 | 0 | -1.34E+00 |
| Global Warming Potential biogenic (GWP-biogenic) | kg $CO_2$ eq | 1.15E-03 | 1.57E-05 | 2.03E-04 | 0 | 0 | 7.92E-03 |
| Global Warming Potential luluc (GWP-luluc) | kg $CO_2$ eq | 2.72E-03 | 1.04E-05 | 6.45E-07 | 3.63E-05 | 0 | -1.79E-04 |
| Depletion potential of the stratospheric ozone layer (ODP) | kg CFC11 eq | 1.02E-11 | 7.65E-13 | 6.23E-16 | 4.84E-15 | 0 | 1.8E-12 |
| Acidification potential of land and water (AP) | mol $H^+$ eq | 1.14E-02 | 1.63E-04 | 2.39E-05 | 1.34E-05 | 0 | -3.29E-03 |
| Eutrophication potential aquatic freshwater (EP-freshwater) | kg P eq | 2.67E-06 | 3.64E-08 | 1.31E-09 | 1.04E-08 | 0 | -3.13E-07 |
| Eutrophication potential aquatic marine (EP-marine) | kg N eq | 2.61E-03 | 2.73E-05 | 1.17E-05 | 6.18E-06 | 0 | -5.28E-04 |
| Eutrophication potential terrestrial (EP-terrestrial) | mol N eq | 2.84E-02 | 2.92E-04 | 1.28E-04 | 6.83E-05 | 0 | -4.73E-03 |
| Formation potential of tropospheric ozone photochemical oxidants (POCP) | kg NMVOC eq | 8.33E-03 | 8.13E-05 | 2.4E-05 | 1.71E-05 | 0 | -2.14E-03 |
| Abiotic depletion potential for non fossil resources (ADPE) | kg Sb eq | 3.38E-07 | 3.29E-09 | 1.34E-10 | 2.81E-09 | 0 | -7.61E-06 |
| Abiotic depletion potential for fossil resources (ADPF) | MJ | 3.96E+01 | 1.29E+00 | 6.64E-02 | 5.02E-02 | 0 | -1.34E+01 |
| Water use (WDP) | $m^3$ world eq deprived | 6.2E-01 | 3.98E-03 | 1.25E-05 | 5.13E-04 | 0 | -9.06E-02 |

**RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg HAS 8.8**

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| Renewable primary energy as energy carrier (PERE) | MJ | 6.34E+00 | 1.84E-01 | 4.86E-04 | 5.35E-03 | 0 | 5.27E-01 |
| Renewable primary energy resources as material utilization (PERM) | MJ | 2.7E-01 | 0 | 0 | 0 | 0 | 0 |
| Total use of renewable primary energy resources (PERT) | MJ | 6.61E+00 | 1.84E-01 | 4.86E-04 | 5.35E-03 | 0 | 5.27E-01 |
| Non renewable primary energy as energy carrier (PENRE) | MJ | 3.96E+01 | 1.29E+00 | 6.64E-02 | 5.02E-02 | 0 | 0 |
| Non renewable primary energy as material utilization (PENRM) | MJ | 0 | 0 | 0 | 0 | 0 | 0 |
| Total use of non renewable primary energy resources (PENRT) | MJ | 3.96E+01 | 1.29E+00 | 6.64E-02 | 5.02E-02 | 0 | -1.34E+01 |
| Use of secondary material (SM) | kg | 2E-01 | 0 | 0 | 0 | 0 | 7.73E-01 |
| Use of renewable secondary fuels (RSF) | MJ | 0 | 0 | 0 | 0 | 0 | 0 |
| Use of non renewable secondary fuels (NRSF) | MJ | 0 | 0 | 0 | 0 | 0 | 0 |
| Use of net fresh water (FW) | $m^3$ | 1.7E-02 | 2.59E-04 | 5.31E-07 | 1.49E-05 | 0 | -1.36E-01 |

**RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg HAS 8.8**

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| Hazardous waste disposed (HWD) | kg | 1.38E-08 | 1.83E-10 | 2.41E-12 | 7.26E-12 | 0 | -9.99E-08 |
| Non hazardous waste disposed (NHWD) | kg | 3.47E-02 | 3.2E-04 | 6.91E-06 | 1.38E-05 | 0 | 1.62E-01 |
| Radioactive waste disposed (RWD) | kg | 5.51E-04 | 1.67E-04 | 1.06E-07 | 6.31E-07 | 0 | 1.46E-06 |
| Components for re-use (CRU) | kg | 0 | 0 | 0 | 0 | 0 | 0 |
| Materials for recycling (MFR) | kg | 3E-03 | 0 | 0 | 1E+00 | 0 | 0 |
| Materials for energy recovery (MER) | kg | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported electrical energy (EEE) | MJ | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported thermal energy (EET) | MJ | 0 | 0 | 0 | 0 | 0 | 0 |

**RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg HAS 8.8**

| Parameter | Unit | A1-A3 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|
| Incidence of disease due to PM emissions (PM) | Disease incidence | ND | ND | ND | ND | ND | ND |
| Human exposure efficiency relative to U235 (IR) | kBq U235 eq | ND | ND | ND | ND | ND | ND |
| Comparative toxic unit for ecosystems (ETP-fw) | CTUe | ND | ND | ND | ND | ND | ND |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Comparative toxic unit for humans (carcinogenic) (HTP-c) | CTUh | ND | ND | ND | ND | ND | ND |
| Comparative toxic unit for humans (noncarcinogenic) (HTP-nc) | CTUh | ND | ND | ND | ND | ND | ND |
| Soil quality index (SQP) | SQP | ND | ND | ND | ND | ND | ND |

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. 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 or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

## References


**DIN 125 – Hardened Plain Washers (140 HV)**
Specifies flat washers with Vickers hardness of 140 HV.
Includes:
Form A (no chamfer), steel or stainless steel (A2), 140 HV
Form B (with chamfer), steel, 140 HV
These washers conform to DIN 125-1 and ISO 7089, commonly used under nuts and bolt heads to distribute load

**DIN 934 – Hexagon Nuts**
Defines metric hex nuts M1–M160, product grades A (≤ M16) and B (> M16), equivalent to ISO 4032
ISO 898-1 – Mechanical Properties of Fasteners (Part 1)
Specifies mechanical and physical properties of carbon and alloy steel bolts, screws, and studs with coarse and fine pitch threads, tested at ambient temperatures (10–35 °C). Defines property classes and test methods

**DIN EN ISO 14025**
DIN EN /ISO 14025:2011-10/, Environmental labels and declarations - Type III Environment
Declarations - Principles and Procedures

**DIN EN ISO 14044**
DIN EN ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidance (ISO 14044:2006); German and English version EN ISO 14044:2006

**EN 15804+A2**
EN 15804:2019-04+A2, Sustainability of construction works – Environmental product declarations – Basic rules for the product category of construction products.

**EN/TR 15941**
CEN/TR 15941:2010-03: Sustainability of Buildings – Environmental Product Declarations- M
methods for the selection and use of generic data; German version CEN/TR

**ETA-14/0009**
Hilti HIT-HY 100. Bonded injection type anchor for use in cracked (threaded rods M10, M12, M16 and rebars Ø10, Ø12, Ø14, Ø16) and non-cracked concrete (sizes M8 to M30)
Date of issue: 24.09.2023

**ETA-15/0882**
Injection system Hilti HIT-RE 100. Bonded anchor for use in concrete
Date of issue: 06.09.2023

**ETA-16/0143**
Injection system Hilti HIT-RE 500 V3. Bonded Fastener with threaded rods, rebar, internally sleeve and Hilti tension anchor HZA for use in concrete
Date of issue: 25.09.2023

**ETA-16/0239**
Hilti HIT-MM Plus. Injection system for use in masonry
Date of issue: 19.10.2023

**ETA-17/0005**
HIT-1 (CE). Bonded injection type anchor for use in uncracked concrete
Date of issue: 02.07.2023

**ETA-19/0160**
Hilti HIT-HY 270 with HAS and HAS-U. Injection system for use in masonry
Date of issue: 30.10.2023

**ETA-19/0161**
Hilti HIT-HY 170 with HAS and HAS-U. Injection system for use in masonry
Date of issue: 19.10.2023

**ETA-19/0465**
Hilti HIT-HY 170 with HAS-U. Bonded fasteners and bonded expansion fasteners for use in concrete
Date of issue: 10.09.2024

**ETA-19/0601**
Injection System Hilti HIT-HY 200-A V3 and HIT-HY 200-R V3. Bonded fastener and bonded expansion fasteners for use in concrete
Date of issue: 29.01.2024

**ETA-20/0541**
Injection system Hilti HIT-RE 500 V4. Bonded fastener with threaded rods, rebar, internally threaded sleeve HIS-(R)N and Hilti Tension anchor HZA(-R) for use in concrete for a working life of 50 and 100 years
Date of issue: 09.06.2023

**ETA-20/0697**
Connector Hilti HCC-U with Injectionmortar Hilti HIT-HY 200-A V3, Hilti HIT-HY 200-R V3, Hilti HIT-RE 500 V3, Hilti HIT-RE 500 V4 and Hilti HIT-HY 170
Date of issue: 28.08.2023

**ETA-20/0834**
HIT-RE 500 V4. Glued-in rods for timber connections
Date of issue: 12.11.2023

**ETA-22/0395**
Injection system Hilti HIT-HY 270 in solid bricks. Metal injection anchors for use in masonry under seismic actions.
Date of issue: 25.09.2023

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**Product Category Rules Construction Products Part A**
Product Category Rules for Construction Products and Services - Calculation Rules for Ecology and Requirements for the Background Report V1.4, Institut Bauen und Umwelt e.V., 04.2024.

**Product Category Rules Part B**
PCR Screws, 01/06/2023

**Regulation (EU) No. 305/2011 (Construction Products Regulation – CPR)**

**Sphera**
LCA for Experts: Holistic balancing
Leinfelden-Echterdingen; Sphera Solution GmbH (Hrsg.)
Product Sustainability Data Search | Sphera (GaBi) (4.12.2024)

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