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-20240593-CBA1-DE
Issue date	19/03/2025
Valid to	18/03/2030

Hilti Pipe fixation elements made with metal

Hilti AG

Institut Bauen und Umwelt e.V.

www.ibu-epd.com | https://epd-online.com

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-20240593-CBA1-DE

This declaration is based on the product category rules:

Connection, assembly and installation systems, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

19/03/2025

Valid to

18/03/2030

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

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

Hilti Pipe fixation elements made with metal

Owner of the declaration

Hilti Aktiengesellschaft
Feldkircher Strasse 100
9494 Schaan
Liechtenstein

Declared product / declared unit

MP-MX 508 M16/ 1kg

Scope:

This document relates to the MP-MX 508 M16 as a representative product for the Pipe fixation elements made with metal product group designed and sold by Hilti AG. The Pipe clamps without inlay product group refers to round shaped fastening elements made with steel designed to clamp fresh water, wastewater, sanitary, heating, ventilation, and processing pipes in residential and industrial construction. The products are produced in 2 different coating types to accommodate intended use in indoor and outdoor environments. There are various types within the product group, and the different types are produced in outsourced locations in Turkey, Spain, Poland, Switzerland, and China. This EPD is a representative EPD, where the supplier is selected as the representative supplier due to highest production volume in 2022, and the product MP-MX 508 M16 is selected as declared product, because it has the highest net weight amongst the products produced by that supplier.
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

Mrs Kim Allbury,
(Independent verifier)

Product

Product description/Product definition

The MP-MX 508 M16 is designed as a fastening clamp to fix pipes of various materials and sizes. It is intended to be fixed onto Hilti modular support systems or onto base materials in connection with threaded rods, base plates, anchors or beam clamps. The pipe clamps consist of two profiled steel bands, which are designed to be able to surround a pipe circularly. The clamping bands are connected together on both sides by a steel screw and a nut. The clamping bands are pressed onto the outside of the pipe to be fastened by tightening the screws. Each pipe clamp has a designated clamping range. The top clamping band features welded connection heads with M10/M12, M16, ¾', or 1' threads. The steel bands are electro-galvanized for indoor use.

Item designation	Item designation	Item designation
MP-U 13-17 1/4" M8/10	MP-U 57-62 2" M8/10	MP-U 115-121 M8/10
MP-U 16-20 3/8" M8/10	MP-U 62-67 M8/10	MP-U 121-127 M8/10
MP-U 20-24 1/2" M8/10	MP-U 67-72 M8/10	MP-U 128-134 M8/10
MP-U 25-29 3/4" M8/10	MP-U 72-77 2 ½" M8/10	MP-U 135-141 5" M8/10
MP-U 30-34 1" M8/10	MP-U 77-82 M8/10	MP-U 141-147 M8/10
MP-U 34-38 M8/10	MP-U 83-89 3" M8/10	MP-U 147-153 M8/10
MP-U 38-42 M8/10	MP-U 89-95 M8/10	MP-U 153-159 M8/10
MP-U 42-47 1 ¼" M8/10	MP-U 95-101 M8/10	MP-U 160-166 6" M8/10
MP-U 47-52 1 ½" M8/10	MP-U 102-108 M8/10	MP-U 166-172 M8/10
MP-U 52-57 M8/10	MP-U 109-115 4" M8/10	MP-U 170-176 M8/10
MP-U 13-17 1/4" M8/10/½"	MP-U 57-62 2" M8/10/½"	MP-U 115-121 M8/10/½"
MP-U 16-20 3/8" M8/10/½"	MP-U 62-67 M8/10/½"	MP-U 121-127 M8/10/½"
MP-U 20-24 1/2" M8/10/½"	MP-U 67-72 M8/10/½"	MP-U 128-134 M8/10/½"
MP-U 25-29 3/4" M8/10/½"	MP-U 72-77 2 ½" M8/10/½"	MP-U 135-141 5" M8/10/½"
MP-U 30-34 1" M8/10/½"	MP-U 77-82 M8/10/½"	MP-U 141-147 M8/10/½"
MP-U 34-38 M8/10/½"	MP-U 83-89 3" M8/10/½"	MP-U 147-153 M8/10/½"
MP-U 38-42 M8/10/½"	MP-U 89-95 M8/10/½"	MP-U 153-159 M8/10/½"
MP-U 42-47 1 ¼" M8/10/½"	MP-U 95-101 M8/10/½"	MP-U 160-166 6" M8/10/½"
MP-U 47-52 1 ½" M8/10/½"	MP-U 102-108 M8/10/½"	MP-U 166-172 M8/10/½"
MP-U 52-57 M8/10/½"	MP-U 109-115 4" M8/10/½"	MP-U 170-176 M8/10/½"
MP-H 16-20 M8/M10	MP-H 59-66 M8/M10	MP-H119-127 M8/M10
MP-H 20-25 M8/M10	MP-H 66-74 M8/M10	MP-H127-137 M8/M10
MP-H 25-31 M8/M10	MP-H 74-83 M8/M10	MP-H137-145 M8/M10
MP-H 31-38 M8/M10	MP-H 83-92 M8/M10	MP-H145-155 M8/M10
MP-H 38-45 M8/M10	MP-H 92-101 M8/M10	MP-H155-163 M8/M10
MP-H 45-52 M8/M10	MP-H101-110 M8/M10	MP-H163-172 M8/M10
MP-H 52-59 M8/M10	MP-H110-119 M8/M10	
MP-H 16-20 M8/M10 set	MP-H 59-66 M8/M10 set	MP-H 119-127 M8/M10 set
MP-H 20-25 M8/M10 set	MP-H 66-74 M8/M10 set	MP-H 127-137 M8/M10 set
MP-H 25-31 M8/M10 set	MP-H 74-83 M8/M10 set	MP-H 137-145 M8/M10 set
MP-H 31-38 M8/M10 set	MP-H 83-92 M8/M10 set	MP-H 145-155 M8/M10 set
MP-H 38-45 M8/M10 set	MP-H 92-101 M8/M10 set	MP-H 155-163 M8/M10 set
MP-H 45-52 M8/M10 set	MP-H 101-110 M8/M10 set	MP-H 163-172 M8/M10 set
MP-H 52-59 M8/M10 set	MP-H 110-119 M8/M10 set	

Item designation	Item designation	Item designation
MP-P 15-18 3/8"	MP-P 50-54	MP-P 94-102
MP-P 18-23 1/2"	MP-P 57-61 2"	MP-P 107-115 4"
MP-P 24-26 3/4"	MP-P 63-67	MP-P 124-128
MP-P 27-31	MP-P 68-74	MP-P 132-141 5"
MP-P 32-36 1"	MP-P 75-82 2-1/2"	MP-P 139-145
MP-P 38-43 1-1/4"	MP-P 81-87	MP-P 148-156
MP-P 44-49 1-1/2"	MP-P 89-96 3"	MP-P 159-170 6"
MP-M 2" C	MP-M 4" C	MP-M 177.8 C
MP-M 2 1/2" C	MP-M 5" C	MP-M 193.7 C
MP-M 3" C	MP-M 6" C	MP-M 219.1 C
MP-M 3/8" DL	MP-M 1" DL	MP-M 2" DL
MP-M 1/2" DL	MP-M 1 1/4" DL	
MP-M 3/4" DL	MP-M 1 1/2" DL	
MP-M 2 1/2" EL	MP-M 127 EL	MP-M 6" EL
MP-M 3" EL	MP-M 133 EL	MP-M 177.8 EL
MP-M 101.6 EL	MP-M 5" EL	MP-M 193.7 EL
MP-M 4" EL	MP-M 152.4 EL	MP-M 219.1 EL
MP-M 125 EL	MP-M 159 EL	MP-M 212 EL
MP-M-F 1/2"	MP-M-F 1 1/4"	MP-M-F 2"
MP-M-F 3/4"	MP-M-F 1 1/2"	MP-M-F 2 1/2"
MP-M-F 1"	MP-M-F 54/57	MP-M-F 3"
MP-MX 2" M10/M12	MP-MX 6" M16	MP-MX 324 M16
MP-MX 2 1/2" M10/M12	MP-MX 177.8 M16	MP-MX 326 M16
MP-MX 3" M10/M12	MP-MX 193.7 M16	MP-MX 355 M16
MP-MX 4" M16	MP-MX 210 M16	MP-MX 368 M16
MP-MX 125 M16	MP-MX 219 M16	MP-MX 406 M16
MP-MX 133 M16	MP-MX 244.5 M16	MP-MX 457 M16
MP-MX 5" M16	MP-MX 267/274 M16	MP-MX 508 M16
MP-MX 159 M16	MP-MX 275 M16	
MP-MX 2" 3/4"	MP-MX 6" 1"	MP-MX 324 1"
MP-MX 2 1/2" 3/4"	MP-MX 177.8 1"	MP-MX 326 1"
MP-MX 3" 3/4"	MP-MX 193.7 1"	MP-MX 355 1"
MP-MX 4" 3/4"	MP-MX 210 1"	MP-MX 406 1"
MP-MX 125 3/4"	MP-MX 219 1"	MP-MX 457 1"
MP-MX 133 3/4"	MP-MX 244.5 1"	MP-MX 508 1"
MP-MX 5" 1"	MP-MX 267/274 1"	
MP-MX 159 1"	MP-MX 275 1"	
MP-MX-F 2" M10/M12	MP-MX-F 6" M16	MP-MX-F 324 M16
MP-MX-F 2 1/2" M10/M12	MP-MX-F 177.8 M16	MP-MX-F 326 M16
MP-MX-F 3" M10/M12	MP-MX-F 193.7 M16	MP-MX-F 355 M16
MP-MX-F 4" M16	MP-MX-F 210 M16	MP-MX-F 406 M16
MP-MX-F 125 M16	MP-MX-F 219 M16	MP-MX-F 457 M16
MP-MX-F 133 M16	MP-MX-F 244.5 M16	MP-MX-F 508 M16
MP-MX-F 5" M16	MP-MX-F 267/274 M16	
MP-MX-F 159 M16	MP-MX-F 275 M16	

Item designation	Item designation	Item designation
MP-MS 1/2"	MP-MS 68/72	MP-MS 127
MP-MS 3/4"	MP-MS 2 1/2"	MP-MS 133
MP-MS 1"	MP-MS 3"	MP-MS 5"
MP-MS 1 1/4"	MP-MS 106.6	MP-MS 152.4
MP-MS 1 1/2"	MP-MS 4"	MP-MS 159
MP-MS 54/57	MP-MS 117	MP-MS 6"
MP-MS 2"	MP-MS 125	
MP-SPN 3/4"-M8	MP-SPN 1"-M10	MP-SPN 4"-M10
MP-SPN 1"-M8	MP-SPN 1 1/4"-M10	MP-SPN 133 - M12
MP-SPN 1 1/4"-M8	MP-SPN 1 1/2"-M10	MP-SPN 5"- M12
MP-SPN 1 1/2"-M8	MP-SPN 2"-M10	MP-SPN 159- M12
MP-SPN 2"-M8	MP-SPN 2 1/2"-M10	MP-SPN 6"- M12
MP-SPN 3/4"-M10	MP-SPN 3"-M10	MP-SPN 219.1- M16
LH 1/2" M10	LH 4" M10	LH 2"
LH 3/4" M10	LH 6" M12	LH 2 1/2"
LH 1" M10	LH 8" M12	LH 3"
LH 1-1/4" M10	LH 1/2"	LH 4"
LH 1-1/2" M10	LH 3/4"	LH 6"
LH 2" M10	LH 1 1/4"	LH 8"
LH 2-1/2" M10	LH 1 1/2"	
MV-P 80 M8/M10	MV-P 200 M8/M10	MV-P 400 M8/M10
MV-P 100 M8/M10	MV-P 224 M8/M10	MV-P 450 M8/M10
MV-P 125 M8/M10	MV-P 250 M8/M10	MV-P 500 M8/M10
MV-P 140 M8/M10	MV-P 280 M8/M10	MV-P 630 M8/M10
MV-P 150 M8/M10	MV-P 300 M8/M10	MV-P 710
MV-P 160 M8/M10	MV-P 315 M8/M10	MV-P 800
MV-P 180 M8/M10	MV-P 355 M8/M10	MV-P 1000
MP-US 18 3/8" OC	MP-US 77 2-1/2" OC	MP-US 159 6" OC
MP-US 22 1/2" OC	MP-US 90 3" OC	MP-US 169 6" OC
MP-US 28 3/4" OC	MP-US 102 3-1/2" OC	MP-US 221 8" OC
MP-US 34 1" OC	MP-US 108 4" OC	MP-US 275 10" OC
MP-US 43 1-1/4" OC	MP-US 115 4" OC	MP-US 326 12" OC
MP-US 49 1-1/2" OC	MP-US 133 OC	
MP-US 61 2" OC	MP-US 139 5" OC	

Item designation	Item designation	Item designation
MP-UB 21 1/2" M8	MP-UB 102 3-1/2" M12	MP-UB 273 10" M12
MP-UB 26 3/4" M8	MP-UB 108 M12	MP-UB 324 12" M12
MP-UB 33 1" M8	MP-UB 114 4" M12	MP-UB 355 14" M20
MP-UB 42 1-1/4" M8	MP-UB 133 M12	MP-UB 406 16" M20
MP-UB 48 1-1/2" M8	MP-UB 139 5" M12	MP-UB 457 18" M24
MP-UB 60 2" M10	MP-UB 159 M12	MP-UB 508 20" M24
MP-UB 76 2-1/2" M10	MP-UB 168 6" M12	MP-UB 609 24" M24
MP-UB 89 3" M10	MP-UB 219 8" M12	
MP-UB 21 1/2" M8 OC	MP-UB 102 3-1/2" M12 OC	MP-UB 273 10" M12 OC
MP-UB 26 3/4" M8 OC	MP-UB 108 M12 OC	MP-UB 324 12" M12 OC
MP-UB 33 1" M8 OC	MP-UB 114 4" M12 OC	MP-UB 355 14" M20 OC
MP-UB 42 1-1/4" M8 OC	MP-UB 133 M12 OC	MP-UB 406 16" M20 OC
MP-UB 48 1-1/2" M8 OC	MP-UB 139 5" M12 OC	MP-UB 457 18" M24 OC
MP-UB 60 2" M10 OC	MP-UB 159 M12 OC	MP-UB 508 20" M24 OC
MP-UB 76 2-1/2" M10 OC	MP-UB 168 6" M12 OC	MP-UB 609 24" M24 OC
MP-UB 89 3" M10 OC	MP-UB 219 8" M12 OC	
MP-UB 1-1/2" OC	MP-UB 5" OC	MP-UB 16" OC
MP-UB 2" OC	MP-UB 6" OC	MP-UB 18" OC
MP-UB 2-1/2" OC	MP-UB 8" OC	MP-UB 20" OC
MP-UB 3" OC	MP-UB 10" OC	MP-UB 24" OC
MP-UB 3-1/2" OC	MP-UB 12" OC	
MP-UB 4" OC	MP-UB 14" OC	
MFP-CSL	MFP-LD2	MFP-UM2
MFP-CH	MFP-UL	MFP-UHD
MFP-CHD	MFP-UL2	MFP-UHD2
MFP-L	MFP-ULD	MFP-SA M20
MFP-L2	MFP-ULD2	MFP-V/100-150
MFP-LD	MFP-UM	
MFP-BP 16-F set	MFP-AP 1-F set	GF 45/M12 - F
MFP-BP 20-F set	MFP-AP 2D-F set	GF 45/M16 - F
MFP-PC M20 21-22	MFP-PC M20 57-61	MFP-PC M20 154-162
MFP-PC M20 25-27	MFP-PC M20 62-66	MFP-PC M20 162-170
MFP-PC M20 28-30	MFP-PC M20 68-72	MFP-PC M20 192-200
MFP-PC M20 31-33.5	MFP-PC M20 73-78	MFP-PC M20 213-221
MFP-PC M20 34-36	MFP-PC M20 88-93	MFP-PC M20 242-250
MFP-PC M20 39-41	MFP-PC M20 100-105	MFP-PC M20 267-275
MFP-PC M20 42-45	MFP-PC M20 108-115	MFP-PC M20 318-326
MFP-PC M20 47-50	MFP-PC M20 125-133	
MFP-PC M20 53-56	MFP-PC M20 134-142	
MFP-L NW 15 M20-F	MFP-L NW 32 M20-F	MFP-L NW 68/72-F
MFP-L NW 20 M20-F	MFP-L NW 40 M20-F	MFP-L NW 65 M20-F
MFP-L NW 25 M20-F	MFP-L NW 50 M20-F	MFP-L NW 80 M20-F

Item designation	Item designation	Item designation
MFP-NW 100 M20-F	MFP-NW 150 M20-F	MFP-244/250 M20-F
MFP 4" M20-F	MFP-6" M20-F	MFP-NW 250 M20-F
MFP-125/127 M20-F	MFP-193/200 M20-F	
MFP-NW 125 M20-F	MFP-NW 200 M20-F	
MPH M8	MPSG-M8	MRG-D6
MPH M10	MPSG-M10	MRG-UK D6
MPH M12	MRG 2,0 M10/12	MRG-D 225 M12/M16
MPH-I M8	MRG 4,0 M12/16	
MRG 2.0 M10/12-F	MRG-D6-F	
KF 171/1-219	KF 171/1-457	KF 171/2-356
KF 171/1-273	KF 171/1-508	KF 171/2-368
KF 171/1-324	KF 171/1-609	KF 171/2-406
KF 171/1-356	KF 171/2-219	KF 171/2-508
KF 171/1-368	KF 171/2-273	KF 171/2-609
KF 171/1-406	KF 171/2-324	
SDC 1/2" EG	SDC 2" EG	SDC 6" EG
SDC 3/4" EG	SDC 2- 1/2" EG	SDC 8" EG
SDC 1" EG	SDC 3" EG	SDC 10" EG
SDC 1- 1/4" EG	SDC 4" EG	SDC 12" EG
SDC 1- 1/2" EG	SDC 5" EG	
MH-SLC 2" EG	MH-SLC 4" EG	MH-SLC 8" EG
MH-SLC 2 1/2" E	MH-SLC 5" EG	
MH-SLC 3" EG	MH-SLC 6" EG	
MH-R45 1/2" PG rigid	MH-R45 1 1/2" PG rigid	MH-R45 4" PG rigid
MH-R45 3/4" PG rigid	MH-R45 2" PG rigid	MH-R45 6" PG rigid
MH-R45 1" PG rigid	MH-R45 2 1/2" PG rigid	MH-R45 8" PG rigid
MH-R45 1 1/4" PG rigid	MH-R45 3" PG rigid	
MH-EMT45 1/2" PG	MH-EMT45 1" PG	MH-EMT45 1 1/2" PG
MH-EMT45 3/4" PG	MH-EMT45 1 1/4" PG	MH-EMT45 2" PG
MH-EMTV 1/2" PG	MH-EMTV 1 1/2" PG	MH-EMTV 4"
MH-EMTV 3/4" PG	MH-EMTV 2" PG	MH-EMTV 2" FLEX PG
MH-EMTV 1" PG	MH-EMTV 2 1/2" PG	
MH-EMTV 1 1/4" PG	MH-EMTV 3" PG	
MH-RSC 1/2" HDG rigid	MH-RSC 1-1/4" HDG rigid	MH-RSC 2-1/2" HDG rigid
MH-RSC 3/4" HDG rigid	MH-RSC 1-1/2" HDG rigid	MH-RSC 3" HDG rigid
MH-RSC 1" HDG rigid	MH-RSC 2" HDG rigid	MH-RSC 4" HDG rigid
MT-S-SP 2"	MT-S-SP 5"	MT-S-SP 12"
MT-S-SP 2 1/2"	MT-S-SP 6"	MT-S-SP C
MT-S-SP 3"	MT-S-SP 8"	
MT-S-SP 4"	MT-S-SP 10"	

For the placing of 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. For the application and use the respective national provisions apply.
Some of the product have European Technical Assessment (ETA), a declaration of performance based on EAD 280016-00-0602 'Products for installation systems for supporting technical building equipment". However, this is limited to the following product groups in the list table: MP-U and MP-H. Product groups not mentioned here are not covered with the aforementioned ETA.

Application

The MP-MX 508 M16 is developed to clamp heavy duty pipes. It is intended to be fixed onto Hilti modular support systems or onto base materials in connection with threaded rods, base plates, anchors and beam clamps. The product and the product group it represents are intended to be used for the following applications:
- Fixing of fresh water distribution pipes
- Fixing of heating pipes
- Fixing of gas distribution pipes
- Fixing of waste water pipes
- Fixing of light industrial piping
- Fixing of ventilation pipes
- Fixing of sprinkler pipes
- Installation of fixed points and sliding points

Technical Data

The following data pertains to the selected product (MP-MX 508 M16) only:

Constructional data

Name	Value	Unit
Width of material	620	mm
Diameter of material	508	mm
Weight of material	6.040	kg
Load resistance (max. recommended)	19000	N

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no CE-marking).

Base materials/Ancillary materials

The raw material used to produce the declared product MP-MX 508 M16 is DD11 in accordance with EN 10111, 100%. Per piece of item weighs 6.040 kg.

This product/article/at least one partial article contains substances listed in the *REACH SVHC* candidate list (date: 17.01.2023) exceeding 0.1 percentage by mass: NO.

This product/article/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the *candidate list*, exceeding 0.1 percentage by mass: NO.

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) *Ordinance on Biocide Products No. 528/2012)*: NO.

Reference service life

This EPD does not declare the use stages (B1-B7). The lifetime of zinc coated (all galvanization types) steel will depend on the lifetime of the entire installation system with which it has been used in combination, the lifetime of the respective building, and the environmental conditions. Therefore, the service life is not declared in this declaration. However, given that related support system for the typical applications is listed with service lifetime of 50 years, it can be said that the product serves up to the same period.

LCA: Calculation rules

Declared Unit

The declared product is the MP-MX 508 M16 from HILTI AG. The declared unit refers to 1 kg of pipe ring. The packaging is also included in the calculation, as the product is sold by Hilti with packaging. The declared unit is indicated in [kg].

Declared unit and mass reference

Name	Value	Unit
Declared unit (e.g. modular channel system)	1	kg
Gross density	7850	kg/m^3

System boundary

Type of EPD: Cradle to gate with op-tions, modules C1-C4, and module . 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.
• A4, transport to the construction site

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 nine information modules are considered. The information modules A1 to A3 describe the material provision, the transport to the production site, as well as the production processes of the product itself.

The intermediate products are sourced from the European Union. The transport is carried out by truck. The following flow charts illustrate the Underlying production process. 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: Spain

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. The database referred to in this study is LCA for *Experts by Sphera*.

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	0.0048488	kg C

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

End of life (C1-C4)

In the C1 information module, the demolition of the mounting system from the building is calculated. Demolition is carried out by means of an electric screwdriver. The electrical energy consumption for the tool is assumed to be 0.003 MJ for the declared unit. The electricity consumption is calculated with a German electricity mix.

Name	Value	Unit
Collected separately waste type waste type	1	kg
Recycling	1	kg

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

A recycling rate of 95% is assumed in Module D and 85% in Module D1. Module D is intended to reflect a European recycling rate and D1 a global recycling rate.

Name	Value	Unit
Steel recycling (D)	0,950	kg
Steel recycling (D1)	0,850	kg

LCA: Results

LCA RESULTS - additional impact categories according to EN 15804+A2-optional are not declared as experience with the indicators is limited.

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 Hilti Pipe fixation elements made with metal

Parameter	Unit	A1-A3	C1	C2	C3	C4	D	D/1
GWP-total	kg CO_2 eq	2.3E+00	5.41E-04	4.67E-03	1.75E-02	0	-2.08E+00	-1.86E+00
GWP-fossil	kg CO_2 eq	2.3E+00	5.41E-04	4.59E-03	1.75E-02	0	-2.08E+00	-1.86E+00
GWP-biogenic	kg CO_2 eq	8.27E-04	1.22E-07	0	0	0	-7.8E-04	-6.98E-04
GWP-luluc	kg CO_2 eq	1.85E-03	8.09E-08	7.6E-05	2.17E-05	0	-8.77E-04	-7.85E-04
ODP	kg CFC11 eq	2.15E-12	5.94E-15	4.55E-16	1.58E-10	0	-1.75E-12	-1.57E-12
AP	mol H^+ eq	6.71E-03	1.26E-06	1.77E-05	1.17E-04	0	-4.62E-03	-4.13E-03
EP-freshwater	kg P eq	1.28E-05	2.83E-10	1.93E-08	3.16E-07	0	-1.61E-06	-1.44E-06
EP-marine	kg N eq	1.89E-03	2.12E-07	8.31E-06	5.09E-05	0	-1.19E-03	-1.06E-03
EP-terrestrial	mol N eq	1.89E-02	2.27E-06	9.3E-05	5.54E-04	0	-1.28E-02	-1.15E-02
POCP	kg NMVOC eq	4.88E-03	6.31E-07	1.64E-05	1.6E-04	0	-3.93E-03	-3.51E-03
ADPE	kg Sb eq	1.25E-07	2.56E-11	3.85E-10	6.53E-09	0	-8.76E-08	-7.84E-08
ADPF	MJ	2.13E+01	1E-02	5.9E-02	2.75E-01	0	-1.88E+01	-1.68E+01
WDP	m^3 world eq deprived	1.99E-01	3.09E-05	6.73E-05	1.24E-03	0	-2.51E-02	-2.25E-02

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg Hilti Pipe fixation elements made with metal

Parameter	Unit	A1-A3	C1	C2	C3	C4	D	D/1
PERE	MJ	2.72E+00	1.43E-03	4.99E-03	1.88E-02	0	-1.17E+00	-1.05E+00
PERM	MJ	1.07E+00	0	0	0	0	0	0
PERT	MJ	3.79E+00	1.43E-03	4.99E-03	1.88E-02	0	-1.17E+00	-1.05E+00
PENRE	MJ	2E+01	1E-02	5.9E-02	2.75E-01	0	-1.88E+01	-1.68E+01
PENRM	MJ	1.04E+00	0	0	0	0	0	0
PENRT	MJ	2.11E+01	1E-02	5.9E-02	2.75E-01	0	-1.88E+01	-1.68E+01
SM	kg	2.58E-01	0	0	0	0	9.5E-01	8.5E-01
RSF	MJ	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0
FW	m^3	6.59E-03	2.01E-06	5.6E-06	4.37E-05	0	-1.11E-03	-9.92E-04

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg Hilti Pipe fixation elements made with metal

Parameter	Unit	A1-A3	C1	C2	C3	C4	D	D/1
HWD	kg	2.67E-09	1.42E-12	1.91E-12	1.3E-11	0	-2.14E-09	-1.91E-09
NHWD	kg	4.42E-02	2.48E-06	9.18E-06	3.67E-05	0	-2.58E-02	-2.31E-02
RWD	kg	1.85E-04	1.3E-06	7.63E-08	1.27E-05	0	-1.04E-04	-9.32E-05
CRU	kg	0	0	0	0	0	0	0
MFR	kg	2.89E-01	0	0	1E+00	0	0	0
MER	kg	0	0	0	0	0	0	0

EEE	MJ	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 kg Hilti Pipe fixation elements made with metal

Parameter	Unit	A1-A3	C1	C2	C3	C4	D	D/1
PM	Disease incidence	ND	ND	ND	ND	ND	ND	ND
IR	kBq U235 eq	ND	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	ND	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	ND	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	ND	ND	ND	ND	ND	ND	ND
SQP	SQP	ND	ND	ND	ND	ND	ND	ND

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

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.

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