

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	Leviat GmbH
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-LEV-20240102-CBA1-EN
Issue date	20.09.2024
Valid to	19.09.2029

Halfen Powerclick®
Leviat GmbH

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



General Information

Leviat GmbH

Programme holder

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Hegelplatz 1
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Germany

Declaration number

EPD-LEV-20240102-CBA1-EN

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

20.09.2024

Valid to

19.09.2029



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



Florian Pronold
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Halfen Powerclick®

Owner of the declaration

Leviat GmbH
Liebigstraße 14
40764 Langenfeld
Germany

Declared product / declared unit

The declared unit is 1.0 kg of Powerclick.

Scope:

The EPD declares 1.0 kg of Powerclick and the LCA results of different product variants can be approximated by scaling.

The results declared in this document are describing 1.0 kg of a standard frame of the product Halfen Powerclick 63, comprising 3.4 meter Powerclick channels (HZL 63/63) with 2 base-plates (HCS VT 63-11/2) and 2 corner connectors (HCS VT 63-21/4) with a total weight of 43.58 kg.

The data can be used to calculate all other variants of Halfen Powerclick modular support systems (HZL 63/63; HZL 100/100) and their accessories (HCS VT 63; HCS VT 100). HALFEN modular support systems are produced from carbon steel and are manufactured by Leviat.

Specific data from the Leviat production facility in Langenfeld/Germany and its suppliers was recorded for the LCA.

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



Ms Emma Wilde,
(Independent verifier)

Product

Product description/Product definition

The product portfolio of Halfen Powerclick Modular Support Systems comprises Halfen Mounting Channels HZL as well as Halfen Connectors HCS VT.

HALFEN Mounting Channels comprise a square profile with welded-in C-profile made of carbon steel with corresponding channel connectors both in hot-dipped galvanized quality, which is considered for this EPD. The Halfen Connectors are pre-assembled using t-bolts with spring. This spring is made of stainless steel. The HALFEN Channels HZL 63/63 and HZL 100/100 differ in terms of mass in relation to running meters (6.23 kg/m - 9.58 kg/m).

The declared reference product refers to a standard frame of Halfen Powerclick 63 with in total 43.58 kg comprising 3.4 meter Powerclick Channels with 2 Powerclick Base-plates and 2 Halfen Corner connectors.

The EPD declares 1 kg of Powerclick and the LCA results of different product variants can be approximated by scaling. The LCA results can be applied to the following HALFEN products by approximately scaling the mass to the specific product weight by using the data in the EPD:

item:	weight [kg/pc.]	weight [kg/m]
HZL 100/100-FV-3000	28.80	9.60
HZL 100/100-FV-4000	38.40	9.60
HZL 63/63-FV-3000	19.05	6.35
HZL 63/63-FV-4000	25.04	6.35
HZL 63/63-FV-6000	38.10	6.35
HCS - VT 100 - 12/3 - FV	9.00	
HCS - VT 100 - 13/3 - FV	10.20	
HCS - VT 63 - 11/2 - FV	5.15	
HCS - VT 63 - 12/2 - FV	6.78	
HCS - VT 63 - 13/2 - FV	9.15	
HCS - VT 100 - 21/6 - FV	9.56	
HCS - VT 100 - 63 - 21/6 - FV	7.84	
HCS - VT 63 - 21/4 - FV	3.50	
HCS - VT 63 - 23/6 - FV	5.20	
HCS - VT 63 - 41/2 - FV	5.00	
HCS - VT 63 - 42/2 - FV	7.90	
HCS - VT 63 - 31/2 - FV	4.30	
HCS - VT 63 - 14/0 - FV	6.45	
HCS - VT 63 - 15/0 - FV	7.75	
HCS - VT 63 - 16/0 - FV	10.40	
HCS - VT 63 - 22/3 - FV	2.75	

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

Application

Halfen Powerclick Modular Support System can be used for both indoor and outdoor applications. For example:

- Data centers and server rooms

- Chemical plant engineering
- Process industry
- Power stations
- Mechanical engineering
- Logistics centers and production facilities
- Conveyor technology
- Supply lines in tunnel and bridge construction

The efficient Halfen Powerclick Modular Support System remains adjustable and meets the high demands as a simple, versatile, time- and cost-effective system for use in modern plant construction and mechanical engineering.

In all applications Halfen Powerclick offer:

- pre-assembled components; simplifies handling at every stage of a project - no small parts to lose on-site and quick assembly
- safe and reliable with defined load transfer - all connections are force-locked

Technical Data

Load capacities in accordance with EN 1993-1 (Eurocode 3) and EN 13480-3, additional technical data are not relevant for the product declared in this EPD.

Constructional data Halfen Powerclick HZL 63/63

Name	Value	Unit
Thickness of material	2.5	mm
Height of channels	63	mm
Width of channels	63	mm
Channel weight	6.35	kg/m
Moment of inertia I _y	33.07	cm ⁴
Bending load capacity at span L=1m	5.6	kN

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no CE-marking). Additional technical data are not relevant for the product declared in this EPD.

Base materials/Ancillary materials

The Halfen Powerclick Channel profiles and Connectors are available in hot-dipped galvanized steel only. The pre-assembled Halfen Connectors use a little stainless steel spring to ensure a fast and user friendly connection between the channels and connectors.

Name	Value	Unit
Channel profiles hot-dipped galvanized	100	%
Connectors hot-dipped galvanized	99.8	%
Spring in T-bolts stainless-steel	0.2	%

The product weight with respect to the declared unit of 1.0 kg of Halfen Powerclick is ca. 43.58 kg per support (average value).

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

This product/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

Reference service life

A service life of at least 50 years is applicable for Halfen Powerclick Modular Support Systems.

This service life refers to a static design approach and not to reference service life according to ISO 15686.

LCA: Calculation rules

Declared Unit

The EPD declares 1.0 kg of Powerclick and the LCA results of different product variants can be approximated by scaling.

The results declared in this document are describing environmental load of 1.0 kg of a standard frame of the product Halfen Powerclick 63, comprising 3.4 meter Powerclick channels (HZL 63/63) with 2 base-plates (HCS VT 63-11/2) and 2 corner connectors (HCS VT 63-21/4) with a total weight of 43.58 kg.

The data can be used to calculate all other variants of Halfen Powerclick modular support systems (HZL 63/63; HZL 100/100) and their accessories (HCS VT 63; HCS VT 100).

Declared unit and mass reference

Name	Value	Unit
Declared unit Halfen Powerclick Modular Support System	1	kg
Gross density cold-drawn steel	7830	kg/m ³

By scaling the environmental indicators with respect to 1.0 kg of Halfen Powerclick Modular Support System the LCA results of different product variations can be approximated.

System boundary

Type of EPD: Cradle to gate with options, modules C1–C4, and module D (A1–A3 + C + D and additional modules A4 and A5).

- Production Stage (A1-A3):
The production stage includes:
 - A1 Raw material supply and processing,
 - A2 Transport of raw materials to the manufacturer by lorry,
 - A3 Production of pipe support system (incl. energy provision, water provision, disposal of production waste,

production of packaging material)

- Construction Stage (A4-A5): The stage of construction includes:
 - A4 Transport to the construction site 100km by lorry (for scaling purposes by the user),
 - A5 Load free manual installation, loads from the treatment of packaging materials.
- End of Life stage (C1-C4): The end of life (EoL) stage consists of:
 - C1 Load free, manual deconstruction, by use of a torque wrench
 - C2 Transport of 50km to waste processing unit by truck
 - C3 Material recycling without expenses for separation and sorting
 - C4 Not relevant
- Benefits and loads beyond the System Boundary (D):
Module D includes: Recovery from steel recycling, energy recovery potentials from the electricity and thermal recycling of the packaging.

Geographic Representativeness

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

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 background database used is LCAFE software version CUP2023.2.

LCA: Scenarios and additional technical information

Characteristic product properties of 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	0.0492	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO₂.

Transport from the gate to the site (A4)

Name	Value	Unit
Transport distance	100	km

Assembly (A5)

The wooden pallets- 0.12 kg and pallet cage (steel)- 0.04 kg used for packaging are subjected to packaging EOL in the module A5, since the treatment of packaging is included in this module.

Name	Value	Unit
Output substances following waste treatment on site (Packaging)	0.16	kg

End of life (C1-C4)

Name	Value	Unit
Reuse	1	kg
Recycling	1	kg

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

Recovery from steel recycling, energy recovery potentials from the electricity and thermal recycling of the packaging.

LCA: Results

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	X	X	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 Leviat Powerclick

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO ₂ eq	2.02E+00	7.97E-03	1.83E-01	0	3.98E-03	0	0	-1.29E+00
GWP-fossil	kg CO ₂ eq	2.2E+00	7.87E-03	3.58E-03	0	3.94E-03	0	0	-1.3E+00
GWP-biogenic	kg CO ₂ eq	-1.78E-01	1.8E-05	1.8E-01	0	9.02E-06	0	0	6.5E-03
GWP-luluc	kg CO ₂ eq	8.33E-04	7.39E-05	8.35E-07	0	3.69E-05	0	0	-1.87E-04
ODP	kg CFC11 eq	4.3E-12	1.04E-15	3.28E-14	0	5.19E-16	0	0	6.7E-13
AP	mol H ⁺ eq	4.99E-03	1.17E-05	3.71E-05	0	5.83E-06	0	0	-3.23E-03
EP-freshwater	kg P eq	2.27E-06	2.92E-08	8.59E-09	0	1.46E-08	0	0	-5.8E-07
EP-marine	kg N eq	1.24E-03	4.22E-06	9.37E-06	0	2.11E-06	0	0	-5.25E-04
EP-terrestrial	mol N eq	1.34E-02	5E-05	1.59E-04	0	2.5E-05	0	0	-4.8E-03
POCP	kg NMVOC eq	4.18E-03	1.02E-05	2.48E-05	0	5.11E-06	0	0	-2.08E-03
ADPE	kg Sb eq	2.37E-05	5.29E-10	2.46E-10	0	2.64E-10	0	0	-2.69E-05
ADPF	MJ	2.11E+01	1.09E-01	4.83E-02	0	5.43E-02	0	0	-1.34E+01
WDP	m ³ world eq deprived	5.02E-02	9.64E-05	2E-02	0	4.82E-05	0	0	-9.33E-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 Leviat Powerclick

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5.68E+00	7.91E-03	1.79E+00	0	3.95E-03	0	0	-4.72E-02
PERM	MJ	1.78E+00	0	-1.78E+00	0	0	0	0	0
PERT	MJ	7.45E+00	7.91E-03	1.61E-02	0	3.95E-03	0	0	-4.72E-02
PENRE	MJ	2.12E+01	1.09E-01	4.83E-02	0	5.45E-02	0	0	-1.34E+01
PENRM	MJ	0	0	0	0	0	0	0	0
PENRT	MJ	2.12E+01	1.09E-01	4.83E-02	0	5.45E-02	0	0	-1.34E+01
SM	kg	3.82E-01	0	0	0	0	0	0	6.61E-01
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m ³	6.44E-03	8.66E-06	4.71E-04	0	4.33E-06	0	0	-1.21E-01

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 Leviat Powerclick

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	2.71E-08	3.38E-13	2.02E-13	0	1.69E-13	0	0	-8.86E-08
NHWD	kg	3.01E-02	1.66E-05	2.65E-03	0	8.31E-06	0	0	1.44E-01
RWD	kg	2.84E-04	2.04E-07	1.66E-06	0	1.02E-07	0	0	-6.71E-05
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	4.1E-02	0	4E-02	0	0	1E+00	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	2.15E-01	0	0	0	0	0
EET	MJ	0	0	5.07E-01	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 Leviat Powerclick

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	9.31E-08	1E-10	2.47E-10	0	5.02E-11	0	0	-3.11E-08
IR	kBq U235 eq	2.93E-02	3.04E-05	1.75E-04	0	1.52E-05	0	0	1.94E-02
ETP-fw	CTUe	4.05E+00	7.78E-02	1.87E-02	0	3.89E-02	0	0	-1.04E+00
HTP-c	CTUh	5.75E-09	1.58E-12	1.77E-12	0	7.9E-13	0	0	6.58E-10
HTP-nc	CTUh	1.01E-08	7.03E-11	7.86E-11	0	3.51E-11	0	0	2.56E-08
SQP	SQP	2.88E+01	4.54E-02	1.71E-02	0	2.27E-02	0	0	-4.43E-01

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.

References

EN 15804

EN 15804:2012+A1 2013, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

EN 15804+A2

EN 15804:2012+A2:2019+AC:2021, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14025

EN ISO 14025:2011, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

IBU 2021

Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V., Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021
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PCR Part A

PCR - Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report, Berlin: Institut Bauen und Umwelt e.V., www.ibu-epd.com, Version 1.3, 08/2022

PCR Part B

PCR Part B: Product Category Rules for Building-Related Products and Services. Part B: Requirements on the EPD for Connection, assembly and installation systems, Version 8. Berlin: Institut Bauen und Umwelt e.V. (ed.), 30/04/2024

LCAFE

Sphera Solutions GmbH, LCAFE Software System and Database
CUP Version: 2023.2 University of Stuttgart Leinfelden Echterdingen

LCAFE Database

LCAFE life cycle inventory data documentation
(<https://sphera.com/life-cycle-assessment-lca-software/>)



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