ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	**SALTO Systems**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-SAL-20220219-IBC1-EN
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Valid to	07/02/2028

XS4 One+

SALTO Systems

Institut Bauen und Umwelt e.V.

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1. General Information

SALTO Systems, S.L.	XS4 One+ escutcheon
Programme holder IBU – Institut Bauen und Umwelt e.V. Hegelplatz 1 10117 Berlin Germany	**Owner of the declaration** SALTO SYSTEMS S.L. Arkotz 9, Polígono Lanbarren 20180 Oiartzun - Gipuzkoa Spain
Declaration number EPD-SAL-20220219-IBC1-EN	**Declared product / declared unit** The declared unit consists of 1 piece of XS4 One+ escutcheon.
This declaration is based on the product category rules: Building Hardware products, 11.2017 (PCR checked and approved by the SVR)	**Scope:** This declaration is based on LCA data for SALTO's XS4 One+ escutcheon, not including the mortise lock. Final assembly takes place in SALTO HQ in Oiartzun (Spain), being external suppliers who provide the different elements to be incorporated into the device.
Issue date 08/02/2023	IBU shall not be liable with respect to manufacturer information, LC data and evidence, as SALTO is the only owner of the declaration and the information and data included.
Valid to 07/02/2028	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
Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)	
Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.))	Dr. Matthew Fishwick (Independent verifier)

2. Product

2.1 Product description/Product definition

The Salto Systems XS4 One+ escutcheon is a proximity wireless lock series that provides tailor-made wire-free access control.
The escutcheon includes a proximity reader that uses inductive near- field detection to detect when an object is near the escutcheon, and tries to read the credentials (card, tag, fob, mobile phone,…).
Supported technologies by the reader are radio-frequency identification (RFID) (ISO A & ISO V), Bluetooth LE and near field communication (NFC).
The escutcheon is equipped with SALTO BLUEnet technology.
For the placing on the market in the European Union /European Free Trade Association (EU/EFTA) (with the exception of Switzerland) the following legal provisions apply: *Directive 2014/53/EU*, and the harmonised standards based on these provisions: *ETSI EN 300 328, ETSI EN 300 330, ETSI EN 301 489, EN 62368-1:2014 /A11:2017, EN 62311:2008*.
The CE-marking takes into account the proof of conformity with the respective harmonized standards based on the legal provisions above. For the application and use the respective national provisions apply.

2.2 Application

The XS4 One+ electronic escutcheon sets need no hard wiring and provide a (totally) wire-free networked electronic locking solution with a range of features. The XS4 One escutcheon range is specially designed to fit on most standard doors, and works with the majority of European mortise locks and tubular latches.

The Salto Systems XS4 One+ escutcheon can be installed indoors or outdoors (*), wherever individual access control is needed, e.g. office and government buildings, healthcare, sports facilities, public institutions, education, hospitality and airports.
(*) A specific IP55 version is designed for outdoor installation (the internal part is IP53).

SALTO has an international market and is primarily an exporter. This product is sold all over the world, for example in 2021 148000 units were sold in more than 80 different countries, in 12 different sectors or industries.
The motivations for obtaining EPDs are varied:
1. Customer requirements.
2. To know the points of greatest impact of our products in order to be able to establish improvements and reduce the environmental footprint.
3. To justify the application of the eco-design methodology.

The intended use of the EPD is to communicate environmentally relevant information and LCA results to support the assessment of the sustainable use of resources and of the impact of construction works on the environment.

2.3 Technical Data

The technical properties of XS4 One+ are detailed in the next table:

Technical data

Name	Value	Unit
Power supply (batteries - VDC)	4.5	V
Current Requirements ...Peak opening	0.4	A
Current Requirements ...Standby	0.00005	A
Operating Temperature	-20 - 50	°C
Operating Humidity up to	80	%
Transmit Frequency	13560	kHz
Power Consumption NSC - w/IPM	0.225/ 0.180 standby	mW
Peak Power Draw during card read	0.675	W

VDC - Volts Direct Current
NSC - Normal Standby Current
IPM - Intelligent Power Management Mode

CE marked product *RED Directive* compliance.

Additional internal testing for humidity.

Performance data of the product with respect to its characteristics in accordance with the relevant technical provision which can be applied are mentioned above.

2.4 Delivery status

Units are packed individually in cardboard boxes together with specifications, mounting scheme and batteries.
Cardboard packaging dimensions are: 310 mm x 235 mm x 58 mm.

2.5 Base materials/Ancillary materials

The material composition of a single device is given in percentages (%); packaging and labelling are not included (ESC version).

Name	Value	Unit
Steel	40.5	%
Stainless steel	41.7	%
Batteries (Other)	2.0	%
Bronze	0.1	%
Electronic	1.4	%
Zinc alloy	8.6	%
Plastics	5.6	%

RoHS2 compliance
This product contain Plumbum (Pb), chromium-6 (Cr VI), polybrominated biphenyl (PBB), polybrominated diphenyl ether (PBDE), Diethylhexyl phthalate (DEHP), Benzyl butyl phthalate (BBP), Dibutyl phthalate (DBP) and diisobutyl phthalate (DIBP), cadmium (Cd) and mercury (Hg).
These are exceeding 0.1 percentage by mass: no

2.6 Manufacture

XS4 One+ escutcheons are fully designed and assembled in SALTO Systems' facilities in Oiartzun, Spain. Most of the components included in the device are produced in Spain by different companies except for handles (made in China).
The factory of SALTO has a certification of Quality Management system in accordance with *ISO 9001*.

2.7 Environment and health during manufacturing

SALTO Systems is highly committed to the health and safety of the people working in its facilities and offices. All relevant risks have been evaluated and controlled, training activities promoted and communication plans defined to keep workers protected.
There is a Code of Conduct covering human rights, adequate labour conditions, ethics and respect for the environment, for supplies in risk areas defined by UNESCO.

Environmental protection.
SALTO Systems' factory is *ISO 14001* certified, meaning that environmental aspects (water, energy, wastes, etc.) are identified, monitored and audited periodically, and that there is a verification of complete compliance with environmental legislation.
In addition, SALTO Systems has calculated the carbon footprint of the main products focusing on the life cycle. There are plans to reduce greenhouse gas emissions in the manufacturing and transport processes and other different plans about environmental sustainability in design and manufacture. All wastes generated are controlled, minimized when possible and recycled.

2.8 Product processing/Installation

The installation of XS4 One+ escutcheon is performed with the aid of hand tools by trained installers.
The assembly instructions and mounting scheme are included inside the packaging of each unit.

2.9 Packaging

Product packaging consists of a cardboard box including product labels, batteries, a mounting scheme and instructions in a plastic bag.

Material	Value (%)	Kg
Cardboard/paper	99.41	0.2486
Plastic	0.59	0.0015
TOTAL	100.00	0.2444

All packaging materials are recyclable.
European waste codes:

- Cardboard packaging 15 01 01
- Plastic packaging 15 01 02

2.10 Condition of use

During the use of the device under normal conditions, no maintenance is needed, with the exception of replacement batteries when required.
Special cleaning is not needed.

2.11 Environment and health during use

There are no interactions between the device and the environment or health while it is operating.

2.12 Reference service life

Certified according to /EN 1906-7/ for 200000 cycles which amounts to 400000 openings. Under normal conditions and depending on cycle frequency, door weight etc., it means an approximate duration of 15 years.

2.13 Extraordinary effects

Fire
The Fire resistance is *EN 1634-1/ Ei60* and *Ei120* compliant.
The product is Solid particle resistant, meaning that the quantity of dust ingress is not sufficient to interfere with normal operation.

Water
There is no interaction between the device and water under normal conditions or in case of flood.

Liquid ingress resistant: Water projected against water spray < 60 degrees from vertical (IP53), or against low pressure water jets from any direction (IP55).

Mechanical destruction
During unexpected mechanical destruction, batteries might be broken and their content released.

2.14 Re-use phase

The device can be re-used, moving it from one door to another one until the end of its service life, though this is not a typical procedure.

2.15 Disposal

Disposal of the device is under Waste of Electrical and Electronic Equipment - WEEE) European Directive (*Directive 2012/19/EU WEEE*).
The device can be disassembled and most of the components are recyclable or reused; the rest are used for energy recovery by incineration.
According to *EWC- European Waste Codes,* waste codes are*:*

- EWC/ 16 02 13* discarded equipment containing hazardous components (1) other than those mentioned in 16 02 09 to 16 02 1
- EWC/ 17 04 05 iron, steel
- EWC/ 17 04 01 copper, bronze
- EWC/ 17 04 11 cables
- EWC/ 17 04 04 zinc
- EWC/ 17 02 03 plastic

2.16 Further information

Additional information about SALTO Systems' XS4 One+ escutcheon can be found in:

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3. LCA: Calculation rules

3.1 Declared Unit

The declared unit refers to 1 piece of SALTO XS4 One+ escutcheon as specified in *IBU PCR PART B* requirements on the EPD for Building Hardware products.

Declared unit

Name	Value	Unit
Declared unit for readers	1	pce.
Mass (total system)	1.63	kg
Conversion factor to 1 kg	0.613	-

3.2 System boundary

The EPD is of type "cradle to gate - with options", modules C1- C4, and module D (A1- A3+ C+D and additional modules: A5). The following life cycle stages have been considered under this declaration as part of the system boundaries:
Module A1-A3 – production stage, including raw material extraction and processing, transport to manufacturing plant and manufacturing/ assembly.
Module A5 – installation into building, only packaging waste treatment included.
Module B6 – operational energy use, comprising the production of batteries and their disposal over their life time.
Modules C1, C2, C3, C4 for end-of-life stages including waste processing for thermal recovery of plastic parts and incineration of the printed wired board and recycling of metals. Module C4 covers landfilling of the batteries.
Module D includes benefits and loads beyond the system boundaries resulting from the recycling and recovery processes taking place under modules A5 and C3.

3.3 Estimates and assumptions

For transporting components from European suppliers, a worst-case distance of 590 km has been used (module A2). As a special case, there is a component coming from Germany (NDFB magnet) and the distance of 1200 km has been specifically used. The same happens with the motor which is coming from

Switzerland and the specific distance of 1000 km has been used in the model.
Some components are purchased by Salto Systems from suppliers in China. For these components, the transportation by ship for 10000 km and again 590 km by truck has been modelled in *GaBi*.
In the end-of-life phase, a 100 % collection rate is assumed for the recycling scenarios.

3.4 Cut-off criteria
All available relevant data from the production process have been considered, i.e. all raw materials usage and electric power consumption, and modelled using the best available Life Cycle Inventory (LCI) datasets. Only small amounts of oil used in the laboratory or grease for some machines, as well as production waste, were not considered in the modelling. These represent less than 1 % of the mass and have negligible environmental impact relevance compared with the rest of the materials and energy inputs used to make the product.
Production of capital equipment, facilities and infrastructure required for manufacture are outside the scope of this assessment.
Transport processes for the packaging materials have also been excluded

3.5 Background data
The GaBi Databases have been used as background data to model the Life Cycle Assessment of the declared product using the GaBi Software *GaBi 10 ts*.

3.6 Data quality
Sphera Solutions updates its *GaBi* Databases yearly and performs a variety of checks to ensure high quality of its datasets. The 2021 version of the *GaBi* Databases has been applied in this declaration. The last revision of the background data used in this EPD is less than 10 years ago.

3.7 Period under review
The collection of the foreground data refers to the year 2020 (12 months).

3.8 Allocation
All applied incineration processes are displayed via a partial stream consideration for the combustion process, according to the specific composition of the incinerated material. For the waste incineration plant an R1-value of 0.6 is assumed.
The credits for thermal and electrical energy are calculated via inversion of the life cycle inventory of European average data.
The burdens of paper/board packaging recycling are modelled using a cut-off approach. I.e., the input of waste paper is considered without environmental burden, resulting in waste paper for recycling is not credited. The recycling process and the production process of paper are merged in the production process. The C-balance referring to fresh fibre has been corrected via CO_2 emissions (biotic) (assumption of final decomposition or incineration in the time frame of 100 years).
After collection in the end-of-life stage, the recycling potential is then calculated considering the net scrap and the value of scrap methodology.

3.9 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.

"As a general rule, a comparison or evaluation of EPD data is only possible when all of the data records to be compared have been drawn up in accordance with *EN 15804* and the building context and/or product-specific performance characteristics are taken into consideration."

Background database is *GaBi* CUP 2021.1

4. LCA: Scenarios and additional technical information

Characteristic product properties
Information on biogenic carbon
The biogenic carbon content quantifies the amount of biogenic carbon in a construction product leaving the factory gate, and it shall be separately declared for the product and for any accompanying packaging.
If the total mass of biogenic carbon containing materials is less than 5 % of the total mass of the product and accompanying packaging, the declaration of biogenic carbon content may be omitted. The mass of packaging containing biogenic carbon shall always be declared.
Note: 1 kg biogenic Carbon is equivalent to 44/12 kg of CO_2

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic carbon content in accompanying packaging	0.209	kg C

The following technical information is a basis for the declared modules and can be used for developing specific scenarios in the context of a building assessment if modules are not declared (MND).

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Paper packaging)	0.486	kg
Output substances following waste treatment (Plastic packaging)	0.054	kg

Reference service life certified according to *EN 1906-7* for 400000 cycles. Under normal conditions and depending on cycle frequency, door weight etc., it means an approximate duration of 15 years.

Operational energy use (B6)
Salto Systems' proximity locks are powered using batteries, they are not connected to mains electricity. These batteries are provided by Salto Systems to the supplier as part of the product (production of the batteries considered under B6). During the operation of the escutcheon, the only energy consumption is from the batteries themselves. These must be exchanged five times over the declared RSL.

End of life (C1-C4)

Name	Value	Unit
Collected separately steel, stainless steel, aluminium, plastic, copper and other metals, as well as electronics	1.641	kg
Collected as mixed construction waste	0.034	kg
Recycling steel	0.958	kg
Recycling electronic and metals	0.036	kg

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

In module D, the potential benefits derived from waste treatment processes (e.g. energy recovery and material recycling) that occur in modules A5 and C3 are declared.

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

Name	Value	Unit
Recycling of steel	0.958	kg
Recycling of stainless	0.598	kg
Copper in electronics	0.012	kg
Gold in electronics	1.46E-06	kg
Palladium in electronics	1.46E-06	kg
Platinum in electronics	6.59E-09	kg
Silver in electronics	1.52E-04	kg

5. LCA: Results

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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	ND	X	ND	ND	MNR	MNR	MNR	X	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 piece XS4 One+ escutcheon

Core Indicator	Unit	A1	A2	A3	A5	B6	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	2.20E+1	3.43E-1	-1.68E-1	8.22E-1	1.24E+0	0.00E+0	2.03E-2	1.66E+0	5.25E-4	-9.13E+0
GWP-fossil	[kg CO_2-Eq.]	2.19E+1	3.41E-1	6.59E-1	1.84E-1	1.24E+0	0.00E+0	2.01E-2	1.66E+0	5.21E-4	-9.14E+0
GWP-biogenic	[kg CO_2-Eq.]	6.94E-2	1.39E-4	-8.29E-1	6.38E-1	3.81E-4	0.00E+0	6.06E-5	8.57E-5	1.65E-6	2.26E-2
GWP-luluc	[kg CO_2-Eq.]	1.88E-2	1.95E-3	1.06E-3	1.21E-5	3.76E-4	0.00E+0	1.65E-4	1.01E-4	1.50E-6	-1.26E-2
ODP	[kg CFC11-Eq.]	5.22E-10	5.76E-17	8.30E-14	1.39E-16	4.85E-15	0.00E+0	4.00E-18	9.62E-16	1.93E-18	4.66E-15
AP	[mol H^+-Eq.]	1.03E-1	4.22E-3	1.89E-3	1.98E-4	1.07E-2	0.00E+0	2.21E-4	3.14E-4	3.74E-6	-4.29E-2
EP-freshwater	[kg P-Eq.]	7.34E-5	7.31E-7	4.05E-6	2.45E-8	8.56E-7	0.00E+0	6.01E-8	1.49E-7	8.96E-10	-8.13E-6
EP-marine	[kg N-Eq.]	1.65E-2	1.10E-3	6.15E-4	6.96E-5	1.44E-3	0.00E+0	1.12E-4	7.40E-5	9.63E-7	-6.58E-3
EP-terrestrial	[mol N-Eq.]	1.76E-1	1.21E-2	6.50E-3	9.02E-4	1.56E-2	0.00E+0	1.23E-3	1.42E-3	1.06E-5	-7.13E-2
POCP	[kg NMVOC-Eq.]	5.15E-2	3.06E-3	1.71E-3	1.85E-4	4.45E-3	0.00E+0	2.10E-4	2.03E-4	2.92E-6	-2.07E-2
ADPE	[kg Sb-Eq.]	5.94E-3	2.42E-8	3.72E-7	2.12E-9	6.17E-5	0.00E+0	1.79E-9	1.30E-8	4.68E-11	-1.29E-4
ADPF	[MJ]	3.06E+2	4.42E+0	1.34E+1	2.29E-1	1.38E+1	0.00E+0	2.70E-1	8.62E-1	6.84E-3	-9.78E+1
WDP	[m^3 world-Eq deprived]	4.49E+0	2.37E-3	3.14E-1	9.64E-2	1.70E-1	0.00E+0	1.88E-4	1.72E-1	5.47E-5	-1.83E+0

Caption	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 piece XS4 One+ escutcheon

Indicator	Unit	A1	A2	A3	A5	B6	C1	C2	C3	C4	D
PERE	[MJ]	6.45E+1	1.87E-1	1.14E+0	6.97E+0	1.40E+0	0.00E+0	1.55E-2	2.42E-1	8.96E-4	-1.01E+1
PERM	[MJ]	0.00E+0	0.00E+0	6.92E+0	-6.92E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	6.45E+1	1.87E-1	8.07E+0	4.36E-2	1.40E+0	0.00E+0	1.55E-2	2.42E-1	8.96E-4	-1.01E+1
PENRE	[MJ]	2.82E+2	4.44E+0	1.11E+1	2.55E+0	1.38E+1	0.00E+0	2.71E-1	2.47E+1	6.84E-3	-9.81E+1
PENRM	[MJ]	2.38E+1	0.00E+0	2.33E+0	-2.33E+0	0.00E+0	0.00E+0	0.00E+0	-2.38E+1	0.00E+0	0.00E+0
PENRT	[MJ]	3.06E+2	4.44E+0	1.34E+1	2.29E-1	1.38E+1	0.00E+0	2.71E-1	8.62E-1	6.84E-3	-9.81E+1
SM	[kg]	1.46E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m^3]	1.19E-1	2.16E-4	5.97E-3	2.27E-3	5.12E-3	0.00E+0	1.78E-5	4.14E-3	1.73E-6	-8.02E-2

Caption	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 piece XS4 One+ escutcheon

Indicator	Unit	A1	A2	A3	A5	B6	C1	C2	C3	C4	D
HWD	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NHWD	[kg]	4.40E-6	1.77E-10	4.02E-9	4.23E-11	1.31E-9	0.00E+0	1.43E-11	2.92E-9	1.04E-10	-4.93E-4
RWD	[kg]	1.19E+0	6.25E-4	8.10E-3	2.12E-2	1.89E-1	0.00E+0	4.25E-5	1.74E-1	3.44E-2	-3.39E-2
CRU	[kg]	1.42E-2	7.17E-6	1.06E-3	1.17E-5	3.06E-4	0.00E+0	4.91E-7	4.16E-5	7.79E-8	-9.42E-4
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.97E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	0.00E+0	1.35E+0	0.00E+0	0.00E+0	0.00E+0	3.06E+0	0.00E+0	0.00E+0

Caption	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 piece XS4 One+ escutcheon

Indicator	Unit	A1	A2	A3	A5	B6	C1	C2	C3	C4	D
PM	[Disease Incidence]	1.19E-6	6.77E-8	2.65E-8	1.10E-9	8.81E-8	0.00E+0	1.92E-9	3.94E-9	4.63E-11	-7.62E-7
IRP	[kBq U235-Eq.]	1.48E+0	1.04E-3	1.04E-1	1.83E-3	3.19E-2	0.00E+0	7.18E-5	4.70E-3	8.01E-6	-1.63E-1
ETP-fw	[CTUe]	1.38E+2	3.26E+0	5.33E+0	1.07E-1	3.13E+0	0.00E+0	2.00E-1	3.28E-1	3.91E-3	-4.06E+1
HTP-c	[CTUh]	1.04E-6	6.45E-11	1.70E-10	6.34E-12	2.91E-10	0.00E+0	4.09E-12	2.67E-11	5.79E-13	-7.17E-8
HTP-nc	[CTUh]	4.57E-7	3.26E-9	6.94E-9	2.68E-10	1.05E-8	0.00E+0	2.42E-10	2.57E-9	6.38E-11	-6.45E-8
SQP	[-]	5.66E+1	1.09E+0	3.89E+0	6.00E-2	2.94E+0	0.00E+0	9.27E-2	2.60E-1	1.43E-3	-7.93E+0

Caption	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

6. LCA: Interpretation

The main contributors to the LCA results are the electric and electronic components. The highest contribution comes from the IC dataset used to simulate the control circuit of some subassemblies of the electronic components.
XS4 One+ escutcheons are mainly made of metal materials, above all composed of steel and stainless-steel parts. This is also reflected in the final results, where for all impact categories the main contributors after the electronic components are the steel and stainless-steel parts.
Some exceptions to this trend apply. For instance, in Abiotic Depletion Potential (ADP) elements the main contributor to that result is the component made of zamak (zinc-based part), followed by the electric and electronic components. For the Depletion Potential of the stratospheric ozone layer (ODP), the main contributor is the group of electric and electronic components followed by the use of acrylonitrile butadiene styrene (ABS) and polyvinyl chloride (PVC) in some components (mainly due to chloromethane emissions out of the production of that plastic in the upstream). Lastly, for biogenic Climate Change Potential, the main contributor is the cardboard packaging.
Considering the life cycle phases, the main contribution is seen by modules A1-A3 (representing 50-100 % of the results for the main impact categories). The use stage (module B6) is contributing up to 7 % of the total results for all indicators, except biogenic Climate Change Potential. Module D (credits and loads) represents for most impact categories between 20-30 % of the total results except for biogenic GWP, ODP and ADP elements where it represents below 10 % impact.

7. Requisite evidence

There are no negative impacts on the environment or human health during the use phase of the product.

8. References

Standards

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

EN 1634-1
UNE-EN 1634-1:2016+A1: 2018, Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for door and shutter assemblies and openable windows

EN 1906-7
UNE-EN 1906: 2015, Building hardware - Lever handles and knob furniture - Requirements and test methods

EN 62311:2008
EN 62311: 2008-01, Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)

EN 62368-1:2014 /A11:2017
UNE-EN 62368-1:2014 /A11:2017, Audio/video, information and communication technology equipment - Part 1: Safety requirements

ETSI EN 300 328
ETSI EN 300 328 V2.2.2: 2019-07, Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum

ETSI EN 300 330
ETSI EN 300 330 V2.1.1:2017, Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

ETSI EN 301 489
ETSI EN 301 489-1 V2.2.3: 2019-11, Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for Electromagnetic Compatibility.
ETSI EN 301 489-3 V1.6.1 Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz.
ETSI EN 301 489-17 V3.2.4: 2020-09. Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Broadband Data Transmission Systems; Harmonised Standard for Electromagnetic Compatibility.

ISO 9001
ISO 9001: 2015, Quality management systems - Requirements

ISO 14001
ISO 14001: 2015, Environmental management systems - Requirements with guidance for use

ISO 14025
ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 15686
ISO 15686-5:2017, Buildings and constructed assets -- Service life planning -- Part 5: Life-cycle costing

Further References

Directive 2012/19/EU WEEE
Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE).

Directive 2014/53/EU
Directive 2014/53/EU/ of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC

Directive 2015/863/EU (ROHs 3)
Commission Delegated Directive (EU) 2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances

EWC - European Waste Codes
Commission Decision of 3 May 2000 replacing Decision 94/3/EC, establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC, establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, 2000/532/EC

GaBi
Sphera Solutions GmbH
GaBi Software System and Database for Life Cycle Engineering
CUP Version: 2021.1
University of Stuttgart
Leinfelden Echterdingen

GaBi documentation
GaBi life cycle inventory data documentation (https://www.gabisoftware.com/support/gabi/gabidatabase2020lcidocumentation/)

General Principles
For the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2015/10, www.ibu-epd.de.

IBU PCR PART A
Product category rules for building related products and services. Part A, Calculation rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, version 1.2, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, (01.07.2020)

IBU PCR PART B
PART B PCR – Part B, Requirements of the EPD for Building Hardware products, version 1.2, Institut Bauen und Umwelt e.V., www.bau-umwelt.com, 2017

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

IP 53, IP 55
ANSI/IEC 60529: 2020, Degrees of protection provided by enclosures (IP Code). International Electrotechnical Commission.

RoHS Conformity
RoHS Conformity: EN50581:2012, Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

UNE-EN 60950-1:2007/A11:2009
Information technology equipment - Safety -- Part 1: General requirements

RED Directive
Radio Equipment Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC

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