ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	ASSA ABLOY
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20180017-IBA1-EN
Issue date	10.01.2018
Valid to	09.01.2023

Aperio® H100 Door handle set

ASSA ABLOY

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

1. General Information

ASSA ABLOY	Aperio H100 – Door handle set
Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Owner of the Declaration** ASSA AB Kungsgatan 71, 632 21 Eskilstuna, Sweden
Declaration number EPD-ASA-20180017-IBA1-EN	**Declared product / Declared unit** The declaration represents 1 door handle set – Aperio® H100 – consisting of the following items: • 2 handles mounted on rose • 1 plastic bag including 2 spindles; 2 screws and 1 CR 132 battery
This Declaration is based on the Product Category Rules - PCR: Building Hardware products, 02.2016 (PCR tested and approved by the SVR)	**Scope:** This declaration and its LCA study are relevant to the Aperio® H100 manufactured in China. 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.
Issue date 10.01.2018	
Valid to 09.01.2023	**Verification** The CEN Standard EN 15804 serves as the core PCR Independent verification of the declaration according to ISO 14025 ☐ internally ☒ externally
Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)	Dr. Wolfram Trinius (Independent verifier appointed by SVR)
Dr.-Ing. Burkhart Lehmann (Managing Director IBU)	

2. Product

2.1 Product description

Product name: Aperio® H100

Product characteristic:

- Aperio® H100 consist of two handles with rose made of chromed zinc
- The set includes accessories for installation on 35-80mm doors (M5 screws + 8 / 7mm spindle)
- Indoor rose includes six countersunk drilled holes, for both Scandinavian and Europe/DIN standards (The Scandinavian Standard refers to the diagonal position of the screw hole placement on the lock cases. On the other hand in Europe/DIN it is horizontal)
- Outdoor rose includes six threaded holes

For the placing on the market in the EU/EFTA (with the exception of Switzerland) the following legal provisions apply:

- RED Directive 2014/53/EU

Standards:

EN 62368-1	2014+A11:2017
EN 62479	2010
EN 301 489-1	V2.1.1
EN 301 489-3	V1.6.1
EN 301 489-17	V3.1.1
EN 50 130-4	2011
EN 300 328	V2.1.1
EN 300 330	V2.1.1

The CE-marking takes into account the proof of conformity with the respective harmonized norms based on the legal provisions above.

Additional products standards, which apply, are:

EN 1906: 2012
EN 1363-1:1999

For the use and application of the product the respective national provisions at the place of use apply, in Germany for example the Building Codes and the corresponding national specifications.

2.2 Application

With easy retrofitting to almost any interior door and comprehensive RFID compatibility, the new Aperio® H100 handle makes extending access control to more doors cost-effective by integrating with a vast range of third-party systems. The Aperio® H100 is specified with maximum flexibility and designed to fit almost any format of interior door.
The Aperio® H100 is compatible with most common European (EN)) mortise locks, in wooden, steel, tubular frame or glass doors with standard lock cases. It comes in left- and right-hand versions for a door between 35mm and 80mm thickness. The Aperio® H100 is compatible with multiple RFID technologies, including iCLASS®/ISO14443B, iCLASS® SE, Seos®, MIFARE® Classic, Plus and EV1, and DESFire® SE.

2.3 Technical Data

Parameter	Value
Available Finishes	Satin chrome
Available Sizes	One size
Width	73
Height	56
Length	164

Technical information of the door handle set Aperio® H100 according to the classification in EN 1906:

Classes	Required technical characteristics	Defined grades
1	Category of use	2
2	Durability	6
3	Test door mass	-
4	Suitability for use in fire resistance & smoke control doors	B
5	Safety	0
6	Corrosion resistance	1
7	Security - burglar resistance	0
8	Type of operation	B

2.4 Delivery status

Aperio® H100 are delivered packed by 1 sets in a box size - 205 mm x 161 mm x 63 mm

2.5 Base materials / Ancillary materials

The composition of the Aperio® H100 in percentage (%) of total mass per unit is, as follows:

Component	Percentage in mass (%)
Zinc	68.98
Steel	24.30
Stainless steel	2.22
Electro-mechanics	2.10
Plastics	1.82
Other (incl. 1 CR 132 cell)	0.58
Total	**100.0**

2.6 Manufacture

The following manufacturing processes occur at the factory in China are summarized as follows:

1) Zinc die casting for plates and handles
2) Plastic injection
3) Machining and forming
4) Chrome plating for rose and handle
5) Machining of spindle and packaging with screws
6) Electronic manufacturing and assembly
7) Assembly and packaging of the complete sets

2.7 Environment and health during manufacturing

ASSA ABLOY is committed to producing and distributing door opening solutions with minimal environmental impact, where health & safety is the primary focus for all employees and associates.

- Environmental operations, GHG, energy, water, waste, VOC, surface treatment and H&S are routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and effectiveness of Environment Management is evaluated. The factory of ASSA ABLOY Guliin China has a quality management system certified according to ISO 9001:2015.
- Code of Conduct covers human rights, labour practices and decent work. Management of ASSA ABLOY is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability and recognizing outstanding performance.
- Any waste metals during machining are separated and recycled.

2.8 Product processing/Installation

Aperio® H100 are distributed through and installed by trained installation technicians, such as locksmiths, carpenters etc., adhering to local/national standards and requirements.

2.9 Packaging

Aperio® H100 is packed by 1 set in a cardboard box. The packaging is fully recyclable. Package with dimensions: 205 mm x 161 mm x 63 mm.
100% of carton is made from recycled material.

Material	Percentage in mass (%)
Cardboard	100
Total	**100.0**

2.10 Condition of use
Indoors use only to avoid corrosion. Cleaning with a wet soft cloth would be adequate during the use phase.

2.11 Environment and health during use
There is no harmful emissive potential. No damage to health or impairment is expected under normal use corresponding to the intended use of the product.

2.12 Reference service life
Approved for 100,000 cycles under normal working conditions, Reference service life is 10 years depending on cycle frequency.

2.13 Extraordinary effects
Fire
Not approved for use on fire/smoke door assemblies. The product does not contribute to a spread of fire in case of fire and there is no harmful potential for environment and health. In case of fire, CR 132 cell will burn themselves out and would not contribute to the spread of the fire.

Water
Contain no substances that have any impact on water in case of flood.

Only in the case of using damaged or crashed CR 132 cell, the contents of an open cell, when exposed to water, may result in a fire and/or explosion. If CR 132 Cell is exposed to body of water, it might have negative health and environmental impacts on the whole ecosystem due to heavy metal content of the cells.

Mechanical destruction
No danger to the environment can be anticipated during mechanical destruction. During destruction, if CR 132 Cell is opened and leaking, exposure should be avoided due to irritations on human health.

2.14 Re-use phase
The product is possible to re-use during the reference service life and be moved from one door to another. The majority, of components is zinc which can be recycled. The handle can be mechanically dissembled to separate the different materials. The plastic components can be used for energy recovery in an incineration plant.

2.15 Disposal
No disposal is foreseen for the product nor for the corresponding packaging.
Waste codes according to European Waste Catalogue and Hazardous Waste List - Valid from 1 January 2002.
EWC 15 01 01 paper and cardboard packaging
EWC/ 17 04 04 zinc
EWC/ 17 04 05 iron and steel
EWC/ 17 02 03 plastic
Local regulations shall be applied for safe disposal and recycling of CR 132 cells.

2.16 Further information
ASSA AB
Kungsgatan 71,
632 21 Eskilstuna, Sweden

3. LCA: Calculation rules

3.1 Declared Unit
The declaration refers to the functional unit of 1 piece of door handle set Aperio® H100, consisting of the following items: 2 handles mounted on rose, 1 plastic bag including 2 spindles and 2 screws.

Declared unit

Name	Value	Unit
Declared unit	1.213	1 piece of Aperio® H100 in kg
Mass (total system – incl. 1 CR 132 cell)	0.153	kg
Conversion factor to 1 kg	1.09	-

3.2 System boundary
Type of the EPD: cradle to gate - with Options
The following life cycle stages were considered:

Production stage:
- A1 – Raw material extraction and processing
- A2 – Transport to the manufacturer and
- A3 – Manufacturing

Construction stage:
- A4 – Transport from the gate to the site
- A5 – Packaging waste processing

End-of-life stage:
- C2 – Transport to waste processing
- C3 – Waste processing
- C4 – Disposal (landfill)

This includes provision of all materials, products and energy, packaging processing and its transport, as well as waste processing up to the end-of waste state or disposal of final residues.
- D – Declaration of all benefits and loads

3.3 Estimates and assumptions
Transportation: Data on mode of transport and distances, as reported by suppliers were used for those materials and parts contributing more than 2% of total product mass. In case of unknown transport distances for parts and materials, contributing less than 2% to the total product mass, transport by road over an average distance of 500 km and 1000 km by ship was assumed.

EoL: In the End-of-Life stage, for all the materials, which can be recycled, a recycling scenario with 95% collection rate was assumed

3.4 Cut-off criteria
In the assessment, all available data from the production process are considered, i.e. all raw materials used, auxiliary materials (e.g. lubricants), thermal energy consumption and electric power consumption - including material and energy flows contributing less than 1% of mass or energy (if available). In case a specific flow contributing less than

1% in mass or energy is not available, worst-case assumption proxies are selected to represent the respective environmental impacts.

Impacts relating to the production of machines and facilities required during production are out of the scope of this assessment.

3.5 Background data

For life cycle modelling of the considered products, the GaBi 6 Software System for Life Cycle Engineering, developed by thinkstep AG, is used /GaBi 6 2013/. The GaBi-database contains consistent and documented datasets which are documented in the online GaBi-documentation /GaBi 6 2013D/.
To ensure comparability of results in the LCA, the basic data of GaBi database were used for energy, transportation and auxiliary materials.

3.6 Data quality

The requirements for data quality and background data correspond to the specifications of the /IBU PCR PART A/.
thinkstep performed a variety of tests and checks during the entire project to ensure high quality of the completed project. This obviously includes an extensive review of project-specific LCA models as well as the background data used.
The technological background of the collected data reflects the physical reality of the declared products. The datasets are complete and conform to the system boundaries and the criteria for the exclusion of inputs and outputs.
All relevant background datasets are taken from the GaBi 6 software database. The last revision of the used background data has taken place not longer than 10 years ago.

3.7 Period under review

The period under review is 2015/16 (12-month average).

3.8 Allocation

Regarding incineration, the software model for the waste incineration plant (WIP) is adapted according to the material composition and heating value of the combusted material. In this EPD, the following specific life cycle inventories for the WIP are considered for:

- Waste incineration of cardboard and paper

Regarding the recycling material of metals, the metal parts in the EoL are declared as end-of-waste status. Thus, these materials are considered in module D. Specific information on allocation within the background data is given in the GaBi dataset documentation.

3.9 Comparability

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.

4. LCA: Scenarios and additional technical information

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

Transport to the building site (A4)

Name	Value	Unit
Truck transport		
Litres of fuel diesel with maximum load (27t payload)	39.4	l/100km
Transport distance truck	500	km
Capacity utilization (incl. empty runs) of truck	85	%
Ship transport		
Max payload	27500	t
Transport distance ship	1000	km
Litres of fuel per 100 km	5295	km

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment (Paper packaging)	0.11	kg

Replacement (B4)

Name	Value	Unit
Replacement cycle	10 CR 132 cells/ 10 yrs	Number/RSL

End of life (C2-C4)

Name	Value	Unit
Collected separately (including packaging)	1.03	kg
Recycling Zinc	0.635	kg
Recycling Steel	0.224	kg
Recycling Stainless Steel	0.020	kg
Recovery Electro-mechanics	0.019	kg
Recovery Electronics	0.005	kg
Incineration of Paper	0.107	kg
Incineration Plastics Parts	0.017	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	1.03	kg
Recycling Zinc	61.79	%
Recycling Steel	21.77	%
Recycling Stainless Steel	1.99	%
Recovery Electro-mechanics	1.88	%
Recovery Electronics	0.52	%
Incineration of Paper	10.42	%
Incineration Plastics Parts	1.63	%

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5. LCA: Results

Results shown below were calculated using CML 2000 – Apr. 2013 Methodology.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	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	MND	X	MND	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 door handle set – Aperio® H100

Parameter	Parameter	Unit	A1-3	A4	A5	B4	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	1,19E+01	4,60E-02	1,52E-01	1,59E+00	1,05E-03	3,64E-03	4,78E-02	-3,85E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1,68E-09	1,99E-13	6,93E-13	6,26E-11	5,02E-15	2,49E-12	1,46E-13	-8,67E-10
AP	Acidification potential of land and water	[kg SO_2-Eq.]	6,43E-02	6,56E-04	3,45E-05	5,98E-03	4,80E-06	1,72E-05	1,42E-05	-2,02E-02
EP	Eutrophication potential	[kg $(PO_4)^{3-}$-Eq.]	1,44E-02	8,30E-05	6,03E-06	3,36E-02	1,10E-06	9,68E-07	1,42E-06	-1,14E-03
POCP	Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen Eq.]	5,03E-03	-1,13E-05	2,45E-06	4,80E-04	-1,55E-06	1,02E-06	7,97E-07	-1,32E-03
ADPE	Abiotic depletion potential for non-fossil resources	[kg Sb Eq.]	5,65E-03	1,53E-09	2,74E-09	1,24E-05	3,95E-11	5,04E-10	4,03E-09	-4,89E-03
ADPF	Abiotic depletion potential for fossil resources	[MJ]	1,34E+02	6,08E-01	4,25E-02	1,86E+01	1,45E-02	4,14E-02	2,42E-02	-4,62E+01

RESULTS OF THE LCA - RESOURCE USE: 1 door handle set – Aperio® H100

Parameter	Parameter	Unit	A1-3	A4	A5	B4	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	2,85E+01	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	2,85E+01	1,60E-02	3,96E-03	1,50E+00	5,70E-04	1,19E-02	1,97E-03	-1,47E+01
PENRE	Non-renewable primary energy as energy carrier	[MJ]	1,58E+02	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	1,58E+02	6,10E-01	4,98E-02	2,04E+01	1,45E-02	6,48E-02	2,70E-02	-6,05E+01
SM	Use of secondary material	[kg]	8,01E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	Use of renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	Use of non-renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	Use of net fresh water	[m^3]	1,11E-01	1,23E-05	4,41E-04	1,22E-02	4,02E-07	2,93E-05	1,16E-04	-5,48E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 door handle set – Aperio® H100

Parameter	Parameter	Unit	A1-3	A4	A5	B4	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1,38E-02	1,15E-06	3,42E-06	1,49E-03	3,31E-08	8,99E-06	2,14E-06	-5,82E-03
NHWD	Non-hazardous waste disposed	[kg]	8,07E-01	5,08E-05	3,81E-03	1,15E+00	1,82E-06	2,09E-05	2,09E-02	3,55E-03
RWD	Radioactive waste disposed	[kg]	9,68E-03	7,82E-07	2,91E-06	7,05E-04	1,90E-08	9,34E-06	1,09E-06	-5,76E-03
CRU	Components for re-use	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	Materials for recycling	[kg]	0,00E+00	0,00E+00	9,20E-02	0,00E+00	0,00E+00	1,07E+00	0,00E+00	0,00E+00
MER	Materials for energy recovery	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EEE	Exported electrical energy	[MJ]	0,00E+00	0,00E+00	1,92E-01	0,00E+00	0,00E+00	0,00E+00	8,49E-02	0,00E+00
EET	Exported thermal energy	[MJ]	0,00E+00	0,00E+00	5,41E-01	0,00E+00	0,00E+00	0,00E+00	2,33E-01	0,00E+00

6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. Stated percentages in the whole interpretation are related to the overall life cycle, excluding credits (module D).

The production stage (modules A1-A3) contributes between 97% and 100% to the overall results for all the environmental impact assessment categories hereby considered.

Zinc and steel accounts in total with app. 93 % to the overall mass of the product, therefore, the impacts are in line with the mass composition of the product. The environmental impacts for the transport (A2) have a negligible impact within this stage.

In the end-of-life stage, there are loads and benefits (module D, negative values) considered. The benefits are considered beyond the system boundaries and are declared for the recycling potential of the metals and for the credits from the incineration process (energy substitution).

7. Requisite evidence

Not applicable in this EPD.

8. References

Institut Bauen und Umwelt
Institut Bauen und Umwelt e.V., Berlin (pub.): Generation of Environmental Product Declarations (EPDs);

General principles
For the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013-04
www.bau-umwelt.de

PCR Part A
Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report. April 2013
www.bau-umwelt.de

PCR Part B
IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services. From the range of Environmental Product Declarations of Institute Construction and Environment e.V. (IBU). Part B: Requirements on the EPD for Locks and fittings.
www.bau-umwelt.com

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

EN 15804
EN 15804: 2012+A1:2014: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

ISO 14001
Environmental management systems - Requirements with guidance for use (ISO 14001:2004 + Cor. 1:2009)

GaBi 6 2013
GaBi 6 2013: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Leinfelden-Echterdingen, 1992-2013.

GaBi 6 2013D
GaBi 6 2013D: Documentation of GaBi 6: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, Leinfelden-Echterdingen, 1992-2013. http://documentation.gabi-software.com/

ISO 9001:2008
Quality management systems - Requirements with guidance for use

EN 1906
Building Hardware. Lever handles and knobs furniture. Requirements and tests methods. ISBN 978 0 580 67832 5

EMC Directive 2014/53/EU
Radio equipment directive

9. Annex

Results shown below were calculated using TRACI Methodology.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement[1)]	Refurbishment[1)]	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	MND	X	MND	MND	MND	MND	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 door handle set – Aperio® H100

Parameter	Parameter	Unit	A1-3	A4	A5	B4	C2	C3	C4	D
GWP	Global warming potential	[kg CO_2-Eq.]	1,19E+01	4,60E-02	1,52E-01	1,59E+00	1,05E-03	3,64E-03	4,78E-02	-3,85E+00
ODP	Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	1,79E-09	2,11E-13	7,37E-13	6,66E-11	5,34E-15	2,65E-12	1,55E-13	-9,28E-10
AP	Acidification potential of land and water	[kg SO_2-Eq.]	6,61E-02	7,24E-04	4,19E-05	6,68E-03	6,27E-06	1,63E-05	1,68E-05	-1,91E-02
EP	Eutrophication potential	[kg N-eq.]	6,39E-03	3,03E-05	2,41E-06	1,23E-02	4,43E-07	6,92E-07	7,01E-07	-6,69E-04
Smog	Ground-level smog formation potential	[kg O_3-eq.]	1,04E+00	1,36E-02	9,77E-04	8,56E-02	1,29E-04	1,47E-04	1,98E-04	-1,80E-01
Resources	Resources – resources fossil	[MJ]	8,39E+00	8,75E-02	4,98E-03	1,69E+00	2,08E-03	2,95E-03	2,54E-03	-3,90E+00

RESULTS OF THE LCA - RESOURCE USE: 1 door handle set – Aperio® H100

Parameter	Parameter	Unit	A1-3	A4	A5	B4	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	[MJ]	2,85E+01	-	-	-	-	-	-	-
PERM	Renewable primary energy resources as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PERT	Total use of renewable primary energy resources	[MJ]	2,85E+01	1,60E-02	3,96E-03	1,50E+00	5,70E-04	1,19E-02	1,97E-03	-1,47E+01
PENRE	Non-renewable primary energy as energy carrier	[MJ]	1,58E+02	-	-	-	-	-	-	-
PENRM	Non-renewable primary energy as material utilization	[MJ]	0,00E+00	-	-	-	-	-	-	-
PENRT	Total use of non-renewable primary energy resources	[MJ]	1,58E+02	6,10E-01	4,98E-02	2,04E+01	1,45E-02	6,48E-02	3E-02	-6,05E+01
SM	Use of secondary material	[kg]	8,01E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	Use of renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	Use of non-renewable secondary fuels	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	Use of net fresh water	[m^3]	1,11E-01	1,23E-05	4,41E-04	1,22E-02	4,02E-07	2,93E-05	1,16E-04	-5,48E-02

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 door handle set – Aperio® H100

Parameter	Parameter	Unit	A1-3	A4	A5	B4	C2	C3	C4	D
HWD	Hazardous waste disposed	[kg]	1,38E-02	1,15E-06	3,42E-06	1,49E-03	3,31E-08	8,99E-06	2,14E-06	-5,82E-03
NHWD	Non-hazardous waste disposed	[kg]	8,07E-01	5,08E-05	3,81E-03	1,15E+00	1,82E-06	2,09E-05	2,09E-02	3,55E-03
RWD	Radioactive waste disposed	[kg]	9,68E-03	7,82E-07	2,91E-06	7,05E-04	1,90E-08	9,34E-06	1,09E-06	-5,76E-03
CRU	Components for re-use	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-
MFR	Materials for recycling	[kg]	0,00E+00	0,00E+00	9,20E-02	0,00E+00	0,00E+00	1,07E+00	0,00E+00	-
MER	Materials for energy recovery	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-
EEE	Exported electrical energy	[MJ]	0,00E+00	0,00E+00	1,92E-01	0,00E+00	0,00E+00	0,00E+00	8,49E-02	-
EET	Exported thermal energy	[MJ]	0,00E+00	0,00E+00	5,41E-01	0,00E+00	0,00E+00	0,00E+00	2,33E-01	-

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