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 10.01.201 Valid to 09.01.202

Aperio® H100 Door handle set ASSA ABLOY





Institut Bauen und Umwelt e.V.



1. General Information

ASSA ABLOY

Programme holder

IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany

Declaration number

EPD-ASA-20180017-IBA1-EN

This Declaration is based on the Product Category Rules - PCR:

Building Hardware products, 02.2016 (PCR tested and approved by the SVR)

Issue date

10.01.2018

Valid to

09.01.2023

Wermanes

Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)

Dr.-Ing. Burkhart Lehmann (Managing Director IBU)

Aperio H100 - Door handle set

Owner of the Declaration

ASSA AB

Kungsgatan 71, 632 21 Eskilstuna, Sweden

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

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.

Verification

The CEN Standard EN 15804 serves as the core PCR
Independent verification of the declaration
according to ISO 14025

| internally

externally



Dr. Wolfram Trinius (Independent verifier appointed by SVR)

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

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

exception of Switzerland) the following legal provisions apply:

For the placing on the market in the EU/EFTA (with the

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:

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

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

<u>Transportation:</u> 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.

<u>EoL</u>: 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	%



5. LCA: Results

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

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ODP	,		n potential of eric ozone la		[kg CF0		1,68E-09	1,99E-13	6,93E-13	6,26E-1	1 5,02	E-15	2,49E-12	1,46E-	13 -	8,67E-10
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POCE	Р		spheric ozone emical oxidar		Eq.											
ADPE	Ε	Abiotic dep	letion potent	tial for	[kg Sb	Eq.]	5,65E-03	1,53E-09	2,74E-09	1,24E-0	3,95	E-11	5,04E-10	4,03E-	09 -	4,89E-03
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PERE PENR PENR PENR SM RSF FW RESU	E M T T RE M M M M M M M M M M M M M M M M M M	Renewab e Renewa resources Total use en Non-renew ma Total us primary Use of Use of rene Use of S OF TH	Parameter ble primary energy carrie able primary as material of renewab ergy resour able primary and p	energy er / energy lutilizate le prima ces y energer y energer y energetion newable sources material endary f second	as [y y y y ion [y y y ary [y y as [y y y as [y y y y y y y y y y y y y y y y y y y	MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 8,01E-02 0,00E+00 0,00E+00 1,11E-01	A4 - 1,60E-02 - 6,10E-01 0,00E+00 0,00E+00 1,23E-05 WASTE	A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 0,00E+00 4,41E-04 CATEG	B4 1,50E+(2,04E+(0,00E+(0,00E+(1,22E-(DRIES: B4	00 5,7 01 1,4 00 0,0 00 0,0 00 0,0 02 4,0	C2	- 1,19E-02 - - 6,48E-02 0,00E+00 0,00E+00 0,00E+00 2,93E-05	- 1,97E - 2,70E 0 0,00E 0 0,00E 1,16E t - Ap	-02 +00 +00 -04	-1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,00E+01 -1,00E+00 -1,00E+00 -1,48E-02
PERM PERM PENR PENR PENR SM RSF NRSF FW RESU	eter E M T RE M RT F JLT Teter	Renewab e Renewa resources Total use en Non-renew ma Total us primary Use of Use of non Use of S OF TH	Parameter ble primary energy carrie able primary as material of renewab ergy resour able primary able primary terial utilizate of non-rely energy res secondary re ewable second renewable fuels of net fresh Parameter	energy er / energy utilizat le prima ces / y energy er / y energy er / y energy	as [y y ion [] y y y y y y y y y y y y y y y y y y	Jnit MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3	A4 1,60E-02 - 6,10E-01 0,00E+00 0,00E+00 1,23E-05 WASTE A4	A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 4,41E-04 CATEG A5	B4 1,50E+(2,04E+(0,00E+(0,00E+(1,22E-(DRIES: B4 1,49E-(00 5,7 01 1,4 00 0,0 00 0,0 00 0,0 00 0,0 1 do	C2	1,19E-02	- 1,97E	-02 +00 +00 +00 -04 -04	-1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,00E+00 0,00E+00 0,00E+00 0,00E+00 -5,48E-02 0 0 0
Parame PERE PERE PENR PENR PENR SM RSF NRSF FW RESU Parame HWD	eter E M T RE RT F D D	Renewab e Renewa resources Total use en Non-renew ma Total us primary Use of Use of rene Use of non Use of Hazardo	Parameter ble primary energy carrie able primary as material of renewab ergy resour able primary able primary able primary able primary terial utilizate of non-rer y energy res exactly resecondary re exactly resecondary re exactly respectively able beccuparenessed in the first secondary for the first secondary re exactly respectively able to the first secondary able to the fi	energy er venergy lutilization venergy er venerger er venerger er venerger er venergetion ewable sources material endary for second water evenerger er venerger er	as [y y y y iion [y y y ary [y y as [y y as [the life of the	Jnit MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02	A4 - 1,60E-02 - 6,10E-01 0,00E+00 0,00E+00 1,23E-05 WASTE A4 1,15E-06 5,08E-05	A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 4,41E-04 CATEG A5 3,42E-06	B4	00 5,7 01 1,4 00 0,0 00 0,0 00 0,0 00 0,0 1 do	C2 0E-04 5E-02 0E+00 0E+00 0E+00 0E+00 1E-08	- 1,19E-02 6,48E-02 0,00E+00 0,00E+00 2,93E-05 ndle se C3 8,99E-06	- 1,97E	E-02 +00 +00 -04 E-04 E-06 E-02	-1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,00E+00 -1,48E-02 -1,48E-02 -1,48E-02 -1,48E-02 -1,48E-02
Parame PERM PERM PENR PENR PENR SM RSF NRSF FW RESU Parame HWE	eter E M T RE M RT RT D D	Renewab e Renewab resources Total use en Non-renew ma Total us primary Use of Use of non Use of Hazardo Non-haza Radioac	Parameter ple primary energy carrie able primary as material of renewab ergy resour able primary able primary terial utilizate of non-rel evenergy res secondary re ewable second renewable fuels of net fresh parameter ous waste derdous waste	energy er / energy utilizat le prima ces y y energy er y energy er y energy tion newable sources material andary for second water - OUT	as [y y ion [] y y y y y y y y y y y y y y y y y y	Jnit MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02 8,07E-01 9,68E-03	A4 - 1,60E-02 - 6,10E-01 0,00E+00 0,00E+00 1,23E-05 WASTE A4 1,15E-06 5,08E-05	A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 4,41E-04 CATEG A5 3,42E-06 3,81E-03 2,91E-06	B4 - 1,50E+(- 1,50E+(- 2,04E+(0,00E+(0,00E+(1,22E-(0,00E+(1,49E-(1,15E+(1,15E+(1,7,05E-(1,15E+(1,05E+(1,0	00 5,7 01 1,4 00 0,0 00 0,0 00 0,0 00 0,0 01 do 03 3,3 00 1,8 04 1,9 00 0,0	C2	1,19E-02	- 1,97E	-03 -02 +00 +00 -04 -04 06 02 02 06 002	-1,47E+01 -1,47E+01 -1,47E+01 -1,000E+00 0,00E+00 0,00E+00 -5,48E-02 -5,48E-02 -5,82E-03 3,55E-03 -5,76E-03 0,00E+00
Parame PERE PERE PENR PENR PENR SM RSF FW RESU Parame HWD NHWI RWD	eter E M T RE M RT F D D J	Renewab e Renewa resources Total use en Non-renew ma Total us primary Use of Use of rene Use of non Use of Hazardo Non-haza Radioac Comp	Parameter ble primary energy carrie able primary as material of renewab ergy resour able primary able primary able primary terial utilizate of non-rer y energy res excondary r exable seccu- renewable fuels of net fresh Parameter bus waste d rdous waste d	energy energy lutilization venergy energy en	as [y y y y iion [y y y as [y y y as [y y y y as [y y y y y y y y y y y y y y y y y y y	Jnit MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02 8,07E-01 9,68E-03	A4 - 1,60E-02 - 6,10E-01 0,00E+00 0,00E+00 1,23E-05 WASTE A4 1,15E-06 5,08E-05 7,82E-07 0,00E+00	A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 4,41E-04 CATEG A5 3,42E-06 3,81E-03 2,91E-06	B4 - 1,50E+(- 1,50E+(- 2,04E+(0,00E+(0,00E+(1,22E-(0,00E+(1,49E-(1,15E+(1,15E+(1,7,05E-(1,15E+(1,05E+(1,0	00 5,7 01 1,4 00 0,0 00 0,0 00 0,0 01 1,8 01 1,9 00 0,0 00 0,0 00 0,0 00 0,0	C2 0E-04 5E-02 0E+00 0E+00 0E+00 0E+00 0E+00 0E+00 0E+00 0E+00	- 1,19E-02 6,48E-02 0,00E+00 0,00E+00 2,93E-05 ndle se c3 8,99E-06 2,09E-05	1,97E 2,70E 0,00E 0,00E 1,16E 2,14E 2,09E 1,09E 1,09E	-03 -02 +00 +00 -04 -04 06 02 02 06 002	
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Parame PERE PERE PENR PENR PENR SM RSF NRSF FW RESU Parame HWD CRU MFR	eter E M T RE M RT F D D D J R R R R R R R R R R R R R R R R	Renewab e Renewab resources Total use en Non-renew ma Total us primary Use of Use of rene Use of non CS OF TH Hazardo Non-haza Radioac Comp Mate Materials	Parameter ple primary energy carrie able primary as material of renewable gry resource able primary as material of renewable primary terial utilizate of non-rei y energy res secondary re swable secondary re present the s	energy energy er / energy lutilization venergy er / energy er / energy yenerger yenergetion ewable sources material endary for second water endisposed endisposed energy e	as [y ion [larger] y as [larger]	Jnit MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02 8,07E-01 9,68E-03 0,00E+00 0,00E+00 0,00E+00 0,00E+00	A4 1,60E-02 - 6,10E-01 0,00E+00 0,00E+00 1,23E-05 WASTE A4 1,15E-06 5,08E-05 7,82E-07 0,00E+00 0,00E+00	A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 4,41E-04 CATEG A5 3,42E-06 3,81E-03 2,91E-06 0,00E+00 9,20E-02 0,00E+00 1,92E-01	B4 1,50E+(2,04E+(0,00E+(0,00E+(1,22E-(0,00E+(1,49E-(1,15E+(0,00E+(0,0	00 5,7 01 1,4 00 0,0 00 0,0 00 0,0 02 4,0 03 3,3 00 1,8 04 1,9 00 0,0 00 0,0 00 0,0 00 0,0 00 0,0 00 0,0	C2 0E-04 5E-02 0E+00 0E+00 0E+00 0E+00 0E+00 0E+00 0E+00 0E+00	- 1,19E-02 6,48E-02 - 0,00E+00 - 0,00E+00 - 2,93E-05 - 1,07E+00 - 1,07E+00	1,97E 2,70E 0,00E 0,00E 1,16E 1,09E 1,09E 1,09E 0,00E 0,00E 0,00E 0,00E	-03 -03 +00 +00 -04 -06 -02 -06 -00 +00 -02	



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.

DESC	CRIP	TION O	F THE	SYS	TEM BO	DUNE	ARY (X	= IN	CLUI	DED IN	LCA; I	MND =	: MOD	ULE	ТОИ	DECL	ARED)
PRODUCT STAG		STAGE	CONSTRUCTI			USE STAGE						END OF LIFE STAGE				BE'	EFITS AND LOADS YOND THE SYSTEM UNDARYS
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	А3	A4	A5	B1	B2	В3	B4	B5	В6	В7	C1	C2	C3	C	24	D
X	Χ	Х	Χ	Х	MND	MND	MND	Χ	MNE		MND	MND	Х	Х		X	Х
RESU				1 - EN						oor han							
			rameter		Unit		41-3 9E+01			A5 1,52E-01		B4			C3	C4	D
GW	/P		Global warming potential		g CO ₂ -Eq.]	CO ₂ -Eq.] 1,1		4,601	E-02	1,52E-01	1,59E+00		1,05E	05E-03 3,64E		4,70=-0	3,85E+00
OD	Depletion ODP the stratos		potential of spheric ozone [kg		g CFC11- Eq.]	1,79E-09		2,11E-13		7,37E-13	6,66	6,66E-11 5,34		E-15 2,65E-12		1,55E-1	3 -9,28E-10
AF	,	Acidification	on potenti and water	al of [ko	g SO ₂ -Eq.]	6,6	31E-02	7,24	E-04	4,19E-05	6,68	BE-03	6,27E	-06 1,6	3E-05	1,68E-0	5 -1,91E-02
EF	EP Eutrophication			- 110.101		6,39E-03		3,03E-05		2,41E-06	1,23	1,23E-02 4,4		43E-07 6,92E-		7,01E-0	7 -6,69E-04
Smoo		-level smog [kg		g O₃-eq.]	1,0	1,04E+00		E-02	9,77E-04	8,50	8,56E-02 1,29		E-04 1,47E-04 1		1,98E-0	4 -1,80E-01	
		Resources	ormation potential ources – resources fossil		[MJ]	8,39E+00		8,751	8,75E-02 4,98E-03		1,69	1,69E+00 2,08E		-03 2,9	5E-03	3 2,54E-0	3 - 3,90E+00
RESU	II TS			A - RF	SOUR	CF US	SE: 1 do	or ha	andle	set – A	nerio	ิก H10	0				3,90E+00
	<u>, </u>	OI III	,														
Paran	neter		Parar			Unit	A1-3		4	A5	B4		C2	C3		C4	D
Paran		Renew	Parar able prir	neter nary er	nergy as			A						C3		C4 -	D -
	RE	Rene	Parar vable prir energy wable pr	neter nary er carrier rimary	nergy as energy	Unit	A1-3	A						C3 -		C4 -	- -
PEI	RE RM	Rene resource Total us	Parar vable prir energy ewable prices as ma	meter mary er carrier rimary er aterial u	nergy as energy utilization e primary	Unit [MJ]	A1-3 2,85E+01	<i>A</i>	-	A5 -	B4		C2 -	-	02	- - 1,97E-03	-1,47E+01
PE	RE RM RT	Rene resource Total use Non-rei	Parar vable prir energy ewable prir es as ma se of ren energy re	mary er carrier rimary aterial u ewable esource primar	energy as energy utilization e primary es y energy	Unit [MJ] [MJ]	A1-3 2,85E+01 0,00E+00	1,60	-	A5 - -	B4 -		C2 -	-	02	-	-
PEI PEI	RE RM RT	Rene resource Total use Non-rei	Parar vable prir energy ewable prices as ma se of ren energy ren enewable as energ	mary er carrier carrier imary e aterial u ewable esource primar py carrie	energy as energy utilization e primary es y energy er y energy	Unit [MJ] [MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01	1,60	-	A5 - -	B4 -		- - 70E-04	-	02	- 1,97E-03	-
PEI PEI PEN	RE RM RT IRE	Rene resource Total us Non-res Non-res as Total	Parar vable pring energy ewable pringers as masses of renenergy renewable as energy newable as material use of n	mary er carrier cimary e aterial u ewable esource primar ly carrie primar I utiliza on-rene	energy as energy utilization e primary es y energy er y energy tion ewable	[MJ] [MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02	1,60	-	A5 - -	1,50E-	+00 5,7	- - '0E-04	-		- 1,97E-03	-
PEI PEN PEN	RE RM RT IRE IRM	Rene resource Total us Non-res Non-res as Total prim	Parar vable prir energy ewable prir es as ma se of ren energy ren enewable as energy newable s materia	mary er carrier daterial u ewable esource primar ly carrie primar l utiliza on-rene gy reso	energy as energy utilization primary es y energy er y energy tition ewable surces	[MJ] [MJ] [MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00	1,60	- DE-02 - DE-01	- 3,96E-03 -	1,50E-	+00 5,7 +01 1,4	- - - - - - - - -	- 1,19E- -	02	- 1,97E-03 -	-1,47E+01 - - -6,05E+01
PEF PEN PEN	RE RM RT IRE IRM IRT	Rene resource Total us Non-rei Non-rei as Total prim Use	Parar vable prir energy wable prives as masse of ren energy renewable as energy newable materia use of n ary energy	mary er carrier rimary e aterial u ewable esource primar ly carrie primar I utiliza on-rene gy reso dary m	energy as energy utilization e primary es y energy er y energy er ewable burces aterial	MJI [MJ] [MJ] [MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00	1,60	- DE-02 - DE-01 E+00	A5 - 3,96E-03 - 4,98E-02	1,50E- - 2,04E- 0,00E-	+00 5,7 +01 1,4 +00 0,0	C2 - - - - - - - - - - - - - - - - - - -	- 1,19E- - - - 6,48E-	02	- 1,97E-03 - - 3E-02	-1,47E+01 - - -6,05E+01
PEI PEN PEN SI	RE RM RT IRE IRM IRT M	Rene resource Total use Non-rei ass Total prim Use Use o	Parar vable prir energy wable pi es as ma se of ren energy ren newable as energy newable materia use of n ary ener of secon f renewa	mary er carrier rimary e aterial u ewable esource primar ly carrie primar I utiliza oon-rene gy reso dary m ble sec els	energy as energy utilization e primary es y energy er y energy er ewable burces aterial	MJI [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 8,01E-02	1,600 2 6,100 2 0,000 0 0,000	- DE-02 - DE-01 E+00 E+00	A5 3,96E-03 4,98E-02 0,00E+00	1,50E- - 2,04E- 0,00E- 0,00E-	+00 5,7 +01 1,4 +00 0,0 +00 0,0	C2	- 1,19E- - - 6,48E- 0,00E+	-00 (C	- 1,97E-03 - - 3E-02 0,00E+00	-1,47E+01 - -6,05E+01 0,00E+00
PEI PEI PEN PEN PEN RS	RE RRM RT IRE RRM W	Rene resource Total use Non-rei as Total prim Use Use of n	Parar vable prir energy wable pies as ma se of ren energy ren newable as energy newable materia use of n ary ener of secon f renewa	meter mary er carrier imary er aterial u ewable esource primar y carrier primar I utiliza on-ren gy reso dary m ble sec els wable s els	energy as energy utilization primary es y energy er y energy etiton ewable burces aterial condary	MJI [MJ] [MJ] [MJ] [MJ] [kg]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 8,01E-02 0,00E+00	2 6,10 0 0,00 0 0,00	- DE-02 - DE-01 E+00 E+00	A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00	1,50E	+00 5,7 +01 1,4 +00 0,0 +00 0,0	C2 - - - - - - - - - - - - - - - - - - -	1,19E	02 -00 (0 -00 (0	- 1,97E-03 - - 3E-02 0,00E+00	-1,47E+01 -1,47E+01 -1,00E+01 -1,00E+00 -1,00E+00 -1,00E+00
PEI PEI PEN PEN SI RS	RE RRM RT IRE RRM IRT WM SF SF W	Rene resource Total use Non-rei as Total prim Use o Use of n	Parar vable prir energy ewable pi es as ma se of ren energy re newable as energ newable amateria use of n ary ener of secon f renewa fue energy re	meter mary et carrier carrier ewable ewable essource primar y carrier l utiliza on-ren dary m ble sec els sels fresh w	energy as energy utilization e primary es y energy er y energy tion ewable purces aterial condary execondary	Work Marcon Mar	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01	1,60 1,60 2 2 2 6,10 0,00 0,00 1,23		A5 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 4,41E-04	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E-	+01 1,4 +00 0,0 +00 0,0 +00 0,0	C2	- 1,19E- - - 6,48E- 0,00E+ 0,00E+ 2,93E-	02 -00 (-00 (- 1,97E-03 - 3E-02 0,00E+00 0,00E+00 1,16E-04	-1,47E+01 -1,47E+01 -1,00E+01 -1,00E+00 -1,00E+00 -1,00E+00
PEI PEI PEN PEN SI RS	RRE RRM RT IRE RM IRT VV SF SF VV	Rene resource Total use Non-rei as Total prim Use o Use of n	Parar vable prir energy ewable pi es as ma se of ren energy re newable as energ newable amateria use of n ary ener of secon f renewa fue energy re	meter mary er carrier carrier re carrier re carrier re carrier re carrier re re carrier re r	energy as energy utilization e primary es y energy er y energy tion ewable purces aterial condary execondary	Work Marcon Mar	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3	1,600 1,600 1,600 1,600 1,600 1,000 1,230 WA:		A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 0,00E+00 4,41E-04 CATEGO A5	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E- DRIES B4	+00 5,7 +01 1,4 +00 0,0 +00 0,0 +00 0,0 -02 4,0	C2	- 1,19E- - - 6,48E- 0,00E+ 0,00E+ 2,93E-	-00 (C-00 (C-00) (C-00 (C-0) (C-00 (C-00 (C-0) (C-00 (C-0) (C-00 (C-0) (- - - - - 3E-02 0,00E+00 0,00E+00 1,16E-04 Aperic C4	-1,47E+01 -1,47E+01 -1,00E+01 -1,00E+00 -1,00E+00 -5,48E-02
PEI PEI PEN PEN PEN RS NR F\	RRE RT RT RE RM IRT WM SF SF W UILTS	Rene resource Total use Non-rel as Total prim Use o Use of n Us OF TH	Parar vable prir energy ewable prir energy re newable as energy newable as energy newable as energy newable are for ary energy for secon for enewa fue e of net	meter mary er carrierr mary er carrierr mary er carrierr mary er carrierr mary material u ewable esource primar primar u utiliza don-ren els wable se els fresh w	energy as energy utilization primary es y energy er y energy er y energy er utilization primary es aterial condary secondary execondary	MJ [MJ] [MJ] [MJ] [MJ] [Kg] [MJ] [MJ] [FLOV	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02	1,600 1,600 1,600 1,600 1,600 1,230 1,230 1,150		A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 4,41E-04 CATEG	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E- ORIES	+00 5,7 +01 1,4 +00 0,0 +00 0,0 +00 0,0 -02 4,0	C2	1,19E	-00 (C-00 (C-00) (C-00 (C-0) (C-00 (C-00 (C-0) (C-00 (C-0) (C-00 (C-0) (- - - - 3E-02 0,00E+00 0,00E+00 1,16E-04 Aperic	-1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,00E+00 -1,00E+00 -1,48E-02 -1,48E-02 -1,48E-02 -1,48E-02 -1,47E+01 -1,47E
PEI PEI PEN PEN SI RS NR F\ RESU Param	RE RRM RRT IRE RRM IRT WAS SELECTION OF THE R	Rene resource Total use Non-rei ass Total prim Use Use of n Us OF TH	Parar vable prir energy ewable prir energy re newable as energy ne	meter mary er carrier carrier rimary er carrier rimary re carrier re r	energy as energy utilization primary es y energy er y energy er y energy er utilization primary es aterial condary secondary execondary	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3	1,600 1,600 1,600 1,600 1,600 1,230 1,230 1,150		A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 0,00E+00 4,41E-04 CATEGO A5	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E- DRIES B4	+00 5,7 +01 1,4 +00 0,0 +00 0,0 +00 0,0 -02 4,0 : 1 do	C2	1,19E	-00 (C-00 C-00 C-00 C-00 C-00 C-00 C-00	- - - - - 3E-02 0,00E+00 0,00E+00 1,16E-04 Aperic C4	-1,47E+01 -1,47E+01 -1,47E+01 -1,00E+01 -1,00E+00 -1,00E+00 -1,48E-02 -1,48E-02 -1,48E-02 -1,48E-02 -1,48E-02 -1,48E-02
PEI PEN PEN PEN SI RS NR F\ RESU Param	RRE RRM RT IRE IRE IRT W SF SF W ULTS D UVD	Rene resource Total us Non-rei as Total prim Use of n Us OF TH	Parar vable prir energy ewable prir energy re newable as energy ne	meter mary er carrierr mary er carrierr mary er carrierr mary er carrierr mary er mary mary mary mary mary mary mary mar	energy as energy utilization primary es y energy er y energy et utilization primary es y energy er y energy et utilization primary es y energy er y energy et utilit ewable eurces aterial condary secondary et utilit posed	MJ [MJ] [MJ] [MJ] [MJ] [Kg] [MJ] [MJ] [Kg] [MJ] [Kg]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 8,01E-02 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02 8,07E-01 9,68E-03	1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,230 1,150 1,150 1,150 1,782		A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 0,00E+00 4,41E-04 CATEG A5 3,42E-06 3,81E-03 2,91E-06	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E- DRIES B4 1,49E- 1,15E- 7,05E-	+00 5,7 +01 1,4 +00 0,0 +00 0,0 +00 0,0 -02 4,0 -03 3,3 +00 1,8 -04 1,8	C2	1,19E	-00 (C-00 (C-0) (C-00 (C-00 (C-0) (C-00 (C-00 (C-0) (C-00 (C-00 (C-0) (C-00 (C-0) (C-0) (C-0) (C-00 (C-0) (C	1,97E-03 - 3E-02 0,00E+00 0,00E+00 1,16E-04 Aperic C4 2,14E-06 2,09E-02 1,09E-06	-1,47E+01 -1,47E+01 -1,47E+01 -1,00E+00 -6,05E+01 -1,00E+00 -5,48E-02 -5,48E-02 -5,82E-03 3,55E-03 -5,76E-03
PEI PEN PEN PEN SI RS NR FV RIESU PATAM	RRE RRM RT RT RRM RRM RRM RRM RRM RRM RRM R	Rene resource Total use Non-rei as Total prim Use of n Use of n Hazar Non-haz	Parar vable prir energy energy es as ma se of ren energy re newable as energ newable materia use of n ary ener of secon f renewa fue e of net Paran rdous wa	meter mary et carriert mary et carriert mary et carriert mary et carriert ewable ewable essource primar primar utiliza on-ren gy resc dary m ble sec els wable s els fresh w - 0 meter	energy as energy utilization primary es y energy er y energy er y energy er ewable purces aterial condary eccondary	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 0,00E+00 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02 8,07E-01	1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,230 1,150 1,150 1,150 1,782		A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 0,00E+00 4,41E-04 CATEG A5 3,42E-06 3,81E-03 2,91E-06	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E- 0RIES B4 1,49E- 1,15E- 7,05E- 0,00E-	+00 5,7 +01 1,4 +00 0,0 +00 0,0 -02 4,0 -03 3,3 -00 1,8 -04 1,9 +00 0,0	C2	1,19E	-00 (C-00 (C-0) (C-00 (C-00 (C-0) (C-00 (C-00 (C-0) (C-00 (C-00 (C-0) (C-00 (C-0) (C-0) (C-0) (C-00 (C-0) (C	- - - - - - - - - - - - - - - - - - -	-1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,47E+01 -1,00E+00 -6,05E+01 -6,05E+01 -6,05E+01 -6,05E+01 -5,48E-02 -5,48E-02 -5,48E-02 -5,82E-03 3,55E-03 -5,76E-03
PEI PEI PEN PEN SI RS NR FV RESU Param HW NHV RW	RE RRM RT IRE RRM IRT IRE SF W VILTS POPUL ID IV U	Rene resource Total use Non-rei ass Total prim Use Use of n Us OF TH Hazar Non-haz Radioc Con	Parar vable prir energy ewable pi es as ma se of ren energy re newable as energ newable s materia use of n ary ener fue con-renev fue e of net Paran rdous wa zardous wa	meter mary er carrierr mary er carrierr mary er carrierr mary ex carrierr mary ex ewable esource primar primar u utiliza dary m ble sec els wable s els fresh w a	energy as energy titilization primary es y energy er y energy er y energy er y energy en ewable eurces aterial condary secondary rater UTPUT posed disposed eposed eurce	MJ [MJ] [M	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 8,01E-02 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02 8,07E-01 9,68E-03	1,60 1,60 2 2 6,10 0,00 0,00 1,23 1,15 5,08 7,82 0,00 0,00		A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 0,00E+00 4,41E-04 CATEG A5 3,42E-06 3,81E-03 2,91E-06	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E- DRIES B4 1,49E- 1,15E- 7,05E-	+00 5,7 +01 1,4 +00 0,0 +00 0,0 -02 4,0 -03 3,3 -00 1,8 -04 1,9 +00 0,0	C2	1,19E	-00 (C-00) (C-00	1,97E-03 - 3E-02 0,00E+00 0,00E+00 1,16E-04 Aperic C4 2,14E-06 2,09E-02 1,09E-06	-1,47E+01 -1,47E+01 -1,00E+01 -1,00E+00 -5,48E-02 -5,48E-02 -5,82E-03 -5,76E-03 -5,76E-03
PEI PEI PEN PEN PEN SI RS NR F\ RESU Param HW NHV RW CR	RE RRM RT RT RRM RT	Rene resource Total use Non-rei as Total prim Use of n Use of n Hazar Non-haz Radioo	Parar vable prir energy ewable prises as masse of ren energy re newable as energy newable as energy newable as energy newable as materia use of n ary ener of secon f renewa fue eon-renew re of net Paran rdous wa mponents	meter mary en carrierr mary en carrierr mary en carrierr mary en carrierr mary material u ewable esource primar primar u utiliza don-ren gy resc dary m ble sec els fresh w a - 0 meter ste dis s for re asse dis s for re	energy as energy utilization e primary es y energy er y energy er y energy er utilization e primary es y energy er y energy er ewable eurces aterial condary eccondary	MJ [MJ] [Kg] [kg] [kg]	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 8,01E-02 0,00E+00 1,11E-01 VS AND A1-3 1,38E-02 8,07E-01 9,68E-03 0,00E+00 0,00E+00 0,00E+00	1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,600 1,230 1,115 1,115 1,115 1,782 1,782 1,782 1,000		A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 0,00E+00 4,41E-04 CATEG(A5 3,42E-06 3,81E-03 2,91E-06 0,00E+00 9,20E-02 0,00E+00	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E- 0,00E- 1,49E- 1,15E- 7,05E- 0,00E- 0,00E- 0,00E- 0,00E-	+00 5,7 +01 1,4 +00 0,0 +00 0,0 -02 4,0 : 1 do -03 3,3 +00 1,8 -04 1,9 +00 0,0 +00 0,0 +00 0,0 -00 0,0	C2	1,19E	002	1,97E-03 - 3E-02 0,00E+00 0,00E+00 1,16E-04 Aperic C4 2,14E-06 2,09E-02 1,09E-06 0,00E+00 0,00E+00	-1,47E+01 -1,47E+01 -1,47E+01 -1,00E+00 -6,05E+01 -1,00E+00 -5,48E-02 -5,48E-02 -5,82E-03 -5,76E-03 -5,76E-03
PEI PEI PEN PEN SI RS NR F\ RESU Param HW NHV RW CR MF	RE RRM RT IRE RRM IRT WW IRT WW IRT	Rene resource Total use Non-rei Non-rei Use of n Use of n Hazar Non-haz Radios Con Ma Materia	Parar vable prir energy ewable py eses as ma se of ren energy re newable as energ newable a materia use of n ary ener fue con-rener fue e of net IE LCA Paran rdous wa zardous wa active wa mponents	meter mary er carrierr mary er carrierr mary er carrierr mary er carrierr mary er ewable esource primar primar utiliza don-ren dutiliza dary m ble sec els wable s er els fresh w - 0 meter sste dis s for re- caste dis s for re- cuergy re- cuergy re- caste dis s for re- cuergy re- cuergy re- caste dis-	energy as energy energy titilization primary es y energy er y energy er y energy en ewable energy aterial condary recondary recondary recondary disposed disposed enurce enurces enurces aterial condary energy ener	Marie Mari	A1-3 2,85E+01 0,00E+00 2,85E+01 1,58E+02 0,00E+00 1,58E+02 8,01E-02 0,00E+00 0,00E+00 A1-3 1,38E-02 8,07E-01 9,68E-03 0,00E+00	1,600 1,600 1,600 1,600 1,230		A5 - 3,96E-03 - 4,98E-02 0,00E+00 0,00E+00 0,00E+00 4,41E-04 A5 3,42E-06 3,81E-03 2,91E-06 0,00E+00 9,20E-02	1,50E- 1,50E- 2,04E- 0,00E- 0,00E- 1,22E- RIES B4 1,49E- 1,15E- 7,05E- 0,00E- 0,00E- 0,00E- 0,00E- 0,00E-	+00 5,7 +01 1,4 +00 0,0 +00 0,0 -02 4,0 : 1 do -03 3,3 +00 1,8 -04 1,9 +00 0,0 +00 0,0 +00 0,0 -00 0,0	C2	1,19E	-00 (C-00 (C-00)))))))))))))))))))))))))))))	1,97E-03 - 3E-02 0,00E+00 0,00E+00 0,00E+00 0,00E+00 1,16E-04 Aperic C4 2,14E-06 2,09E-02 1,09E-06 0,00E+00 0,00E+00	-1,47E+01 -1,47E+01 -1,47E+01 -1,00E+00 -6,05E+01 -1,00E+00 -5,48E-02 -5,48E-02 -5,82E-03 -5,76E-03 -5,76E-03

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