ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	ASSA ABLOY (HID Global)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-ASA-20150219-IBA1-EN
Issue date	17.08.2015
Valid to	16.08.2020

Access control systems – iCLASS SE RPK40 ASSA ABLOY / HID Global



www.bau-umwelt.com / https://epd-online.com





General Information

HID Global

Programme holder

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

Declaration number

EPD-ASA-20150219-IBA1-EN

This Declaration is based on the Product Category Rules:

Electronic Access Control Systems, 11-2013 (PCR tested and approved by the independent expert committee (SVR))

Issue date

17.08.2015

Valid to

16.08.2020

Mennanes

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

Dr.-Ing. Burkhart Lehmann

(Managing Director IBU)

2. Product

2.1 Product description

The iCLASS SE RPK40 reader, produced by HID Global, an ASSA ABLOY Group brand, is a device that communicates with a personalized credential via RF technology. The reader collects identity information from the credential and passes it along to a secured control unit via electrical cable. The control unit then grants or denies access to the credential holder. Also, integrated into the reader is a 12 digit keypad which can be used to enter a Personal Identity Number for an added level of security. The reader is capable of communications using a high or low frequency RF signal and able to communicate with several credential formats. Also factory settings can be updated to various configurations allowing the reader flexibility in its function.

Supported credential formats:

- iCLASS SE (Cards/Tags/Fobs)
- SE for DESFire EV1 (Cards)
- SE for MIFARE Classic (Cards/Tags/Fobs)
- HID Prox / AWID (Cards/Tags/Fobs)
- Indala Prox (Cards/Tags/Fobs)

Configurable functions:

- LED function
- Audible signal (Beep)

iCLASS SE RPK40

Owner of the Declaration

ASSA ABLOY (HID Global) 611 Center Ridge Drive Austin, TX 78753 USA

Declared product / Declared unit

This Declaration represents 1 card reader model iCLASS SE RPK40, with pigtail, including all custom configurations.

Scope:

The Life Cycle Assessment is based on data collected by the contract manufacturer of the RPK40 at their production facility located in Philippines.

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

internally

x externally



(Independent veriifer appointed by SVR)

- Communication format
- Optical Tamper

2.2 Application

The iCLASS SE RPK40 reader is suitable for indoor and outdoor use, where ID authentication is required. Common applications include: Commercial buildings, Industrial buildings, Government buildings, Military installations, Education establishments, Healthcare buildings.

2.3 Technical Data

The table presents the technical properties of iCLASS SE RPK40 reader:

Technical data

Parameter	Value	Unit
Mounting	Wall Switch Size	-
Power supply	5-16VDC	V
Current Requirements	105mA	A
Operating Temperature	-35 to 65	°C
Operating Humidity	5% to 95%	%
Transmit Frequency	13.56MHz and 125kHz	kHz
Power Input "Standby"	1.52	W
Power Input "Operation"	1.68	W



2.4 Placing on the market / Application rules

Compliance with US, Canada, and CB Scheme Safety:

• UL294-The Standard of Safety for Access Control System Units

- C22.2 No. 205 Signal Equipment
- CB Certificate US-21166-UL

Compliance with US and Canada Unlicensed Radios:

- US FCC Radio Certification 47 CFR Part 15, Subpart C
- Canada Radio Certification RSS-210 Issue 8: 2010

Compliance with the European Union R&TTE Directive:

The products are subject to CE marking according to the relevant harmonization legislation. Affixing the CE marking to the products means the compliance of the product with the a.m. Directive.

The following standards apply:

• EN 60950-1: 2006/ All: 2009 +A1:2010 +A12:2011 -Information technology equipment - Safety - Part1: General requirements

• EN 301 489-1 V1.9.2 - Common Technical Requirements

• EN 301 489-3 V1.6.1 - Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz

• EN 50130-4:2011 - Alarm systems – Electromagnetic Compatibility and Environmental test methods

• ETSI EN 300 330-2 V1.5.1 Electromagnetic Compatibility and Radio spectrum Matters (ERM); 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; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

Compliance with the RoHS2 Directive

The products are subject to CE marking according to the relevant harmonization legislation. Affixing the CE marking to the products means the compliance of the product with the a.m. Directive.

The following standard applies:

• EN 50581:2012 - RoHS2 Conformity

2.5 Delivery status

Each reader unit is delivered individually packaged with mounting plate, and mounting hardware. Packaged reader dimensions: 3.3" x 4.8" x 1.1" (8.5cm x 12.2cm x 2.8cm).

2.6 Base materials / Ancillary materials

The average composition of iCLASS SE RPK40 reader is as following:

Component	Percentage in mass (%)
Plastics	55.6
Stainless Steel	8.0
Glass	10.6
Electronics (signal-power)	25.8
Total	100.0

2.7 Manufacture

The iCLASS SE RPK40 is assembled at a contract manufacturer's production facility in the Philippines. The injection molded parts are purchased from an external supplier. The electronic components, including PCB, are purchased externally and assembled at the contract manufacturer's production facility. During assembly the individual parts are assembled into the reader bezel and then potted into place. The assembled reader is then packaged with the mounting plate and hardware for shipment.

2.8 Environment and health during manufacturing

The Management System of the contract manufacturer has been assessed and certified as meeting the requirements of ISO 14001:2004 standard. In addition, industrial safety is certified as compliant to OHSAS 18001standard.

2.9 Product processing/Installation

iCLASS SE RPK40 readers are installed by trained product integrators or by the product end user. Installation instructions are included with each reader unit.

2.10 Packaging

The reader is packed in a cardboard box. Also included in the packaging are paper installation instructions, and a plastic bag containing the connectors and mounting hardware. Packaging materials shall be collected separately for recycling.

Material	Value (%)
Cardboard/ Paper	93.7
Plastics	6.3
Total	100.0

2.11 Condition of use

No auxiliary or consumable materials are incurred for maintenance and usage of the reader. Repairs or replacement are not usually necessary. No cleaning efforts need to be taken into consideration.

2.12 Environment and health during use

There are no interactions between products, the environment and health.

2.13 Reference service life

The service life of the iCLASS SE RPK40 reader is estimated to be 30 years. This number is based on the most conservative Mean Time Between Failure (MTBF) data available for the reader components at elevated operation temperatures. MTBF of 270110 hours at 65°C.

2.14 Extraordinary effects

Fire

The external housing of the RPK40, consisting of the bezel and mounting plate, are constructed from polycarbonate resin thermoplastic. The housing material, and thus the reader as a whole unit, has been classified as having a UL94 HB Flame Rating. A UL94 Flame Rating of HB indicates: slow burning on a horizontal specimen; burning rate < 76 mm/min for thickness < 3 mm and burning stops before 100 mm.

Water



No substances are used on the device, which could have a negative impact on ecological water quality on contact with water.

Mechanical destruction

No danger to the environment can be anticipated during mechanical destruction.

2.15 Re-use stage

The following possibilities arise with reference to the material composition of the reader.

Re-use

During the reference service life, the reader can be disconnected and dismounted then remounted and attached elsewhere.

Material Recycling

The card reader can be recycled according to local electronics recycling options offered by municipalities, electronics recyclers or garbage haulers.

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of iCLASS SE RPK40 reader as specified in Part B requirements on the EPD for Electronic Access Control Systems /IBU PCR Part B/.

Declared unit

Name	Value	Unit
Declared unit	1	piece of iCLASS
	1	SE RPK40
Mass (without packaging)	0.26	kg
Conversion factor to 1 kg	3.78	-

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

Use stage related to the operation of the building includes:

 B6 – Operational energy use (Energy consumption for lock operation)

End-of-life stage:

- C2 Transport to waste processing,
- C3 Waste processing for recycling and
- C4 Disposal (landfill).

These information modules include provision and transport of all materials, products, as well as energy and water provisions, waste processing up to the endof-waste state or disposal of final residues.

Module D:

2.16 Disposal

Packaging components incurred during installation are directed to local paper and cardboard recyclers. The product can be mechanically dissembled to separate different materials. For this, collection rate of 5% was assumed. The rest is disposed as a construction waste for landfill.

2.17 Further information

More information on ASSA ABLOY (HID Global) and iCLASS SE readers is available by:

ASSA ABLOY (HID Global) 611 Center Ridge Drive Austin, TX 78753 USA Tel: 512-776-9000 Internet: <u>www.hidglobal.com</u>

• Declaration of all benefits or recycling potential from EoL and A5

3.3 Estimates and assumptions <u>Use stage:</u>

For the use stage, it is assumed that the iCLASS SE RPK40 is used in the United States of America, thus an US electricity grid mix is considered within this stage.

EoL:

In the End-of-Life stage of the product, a recycling scenario with a 5% collection rate was assumed. For packaging material, a 100% 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 modeling 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 AG performed a variety of tests and validations during the commission of the present study in order to ensure its quality of the present document and results. 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 2013/14 (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. Following specific life cycle inventories for the WIP are considered:

- Waste incineration of plastic
- Waste incineration of paper
- Waste incineration of electronic scrap

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

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.

4. LCA: Scenarios and additional technical information

Installation into the building (A5)

Name	Value	Unit
Output substances following waste treatment on site (Paper packaging)	0.064	kg
Output substances following waste treatment on site (Plastic packaging)	0.0043	kg

Reference service life

Name	Value	Unit
Reference service life	30	а

Operational energy use (B6)

Name	Value	Unit
Electricity consumption	382.81	kWh
Years of use	30	Years
Days per year in use	365	Days
Hours per day in on mode	1	h
Hours per day in stand-by mode	23	h
Power consumption on mode	1.52	W
Power consumption stand-by mode	1.68	W

End of life (C2-C4)

Name	Value	Unit
Collected separately plastics, stainless steel, electronics	0.0118	kg
Collected as mixed construction waste construction waste for landfilling	0.2531	kg
Reuse plastic parts	0.0074	kg
Recycling stainless steel, electronics	0.0045	kg
Landfilling - Construction waste for landfill	0.2531	kg

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

Name	Value	Unit
Collected separately waste Card reader (including packaging)	0.3330	kg
Recycling stainless steel	0.32	%
Recycling electronics	1.03	%
Thermal treatment (plastics)	2.21	%
Loss Construction waste for landfilling (no recycling potential)	75.99	%
Reuse packaging (paper)	19.16	%
Reuse packaging (plastics)	1.29	%



5. LCA: Results

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

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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 3% and 10% to the overall results for all the environmental impact assessment categories hereby considered, except for the abiotic depletion potential (ADPE), for which the contribution from the production stage accounts for app. 97% - this impact category describes the reduction of the global amount of nonrenewable raw materials, therefore, as expected, it is mainly related with the extraction of raw materials (A1).

Within the production stage, the main contribution for all the impact categories is the production of electronics mainly due to the energy consumption on these processes. Plastics account with almost 56% to the overall mass of the product; therefore, the impacts are not in line with the mass composition of the product. The environmental impacts for the transport (A2) have a negligible impact within this stage.

To reflect the use stage (module B6), the energy consumption was included and it has a major contribution for all the impact assessment categories considered - between 90% and 97%, with the exception of ADPE (3%). This is a result of 23 hours of operation in stand-by mode and 1 hour in on mode per day and per 365 days in a year.

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

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GaBi 6 2013

GaBi 6 2013: Software-System and Database for Life Cycle Engineering. Copyright, TM. Stuttgart, thinkstep AG, 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, thinkstep AG, Leinfelden-Echterdingen, 1992-2013. <u>http://documentation.gabi-</u> software.com

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ISO 14001:2009-11: 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 9001

ISO 9001:2008: Quality management systems - Requirements

EN 15804

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RoHS Conformity:

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

UL294/cUL

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UL94

Flame Rating of HB

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EN 301 489-3 V1.6.1 : Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz

EN 50130

EN50130-4:2011 : Alarm systems - Electromagnetic compatibility and Environmental test methods

ETSI EN 300

ETSI EN 300 330-2 V1.5.1 Electromagnetic compatibility and Radio spectrum Matters (ERM); 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; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

ETSI EN 302

ETSI EN 302 291-2 V1.1.1 : Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Close Range Inductive Data Communication equipment operating at 13,56 MHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive

EN 50581

EN 50581: 2012 Guiding Standard for Compliance with RoHS2 Technical Documentation Requirements FCC Certification: 47 CFR §15.225: 2011 Operation within the band 13.110-14.010 MHz

RSS-210

RSS-210 Issue 8: 2010 License-exempt Radio Apparatus (All Frequency Bands): Category I Equipment - Spectrum Management and Telecommunications Radio Standards Specification



9. Annex

Results shown below were calculated using TRACI Methodology.

DESC	RIP	ΓΙΟΝ Ο	F THE	SYST	EM B	OUND	ARY (X = II	NCLU	DED II	N LC	CA; I	MND	= MOD	JLE NO	DT DE	ECLA	RED)
		CONSTRUCTI															BENE	FITS AND
PROD	DUCT	STAGE	ON PRO	DCESS			U	SE ST/	AGE				END OF LIFE STAGE BE					OND THE
			STA	GE												S) BOU	/STEM NDARYS	
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ial	Ļ	ng	n th site			8		nt ¹⁾	ent ¹⁾	Jerç	vate	2	tion	. 1	ssin			. <u>.</u>
ater oly	por	ctur	fror he :	ldn	Θ	Jan	air	me	- Line	alei	al c	δ	truc	bor) Ce:	osal	se	very sling ntial
ldns	ans	ufac	bort to t	sser	Us	ntei	Rep	ace	bisl	ion	tion	Sn	Suc	ans	pro	ispo	Seu	ecyc oter
Rav	Ē	Jan	ate	¥		Mai	_	kepl	efui	erat	era	5	e-c	3 F	aste			
		2	Tra g					œ	Ř	ŏ	Ö)	Δ		Ŵ			
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	I	B7	C1	C2	C3	C4		D
Х	Х	Х	Х	Х	MND	MND	MND	MND	MNE	x o	Μ	IND	MNE	X	Х	Х		Х
RESU	JLTS	OF TH	E LCA	- ENV	IRON	MENT	AL IM	PAC	T: On	e piec	e of	iCL	ASS	SE RP	(40 rea	der		
Parame	eter	Pa	aramete	r		Unit	A1 -	A3	A4	A	5	В	6	C2	C3	C	24	D
GWF	P	Global w	arming p	otential	[kg C	CO ₂ -Eq.]	1.03E	+01 9	.43E-02	9.78E	-02	2.70	E+02	7.89E-04	7.52E-0	3 3.97	E-01	-2.19E+00
ODF	2	Depletio	n potentia neric ozor	al of the	[kg CF	=C11-Eq.] 3.50E	-09 4	.01E-13	4.64E	-13	9.92	E-08	4.02E-15	5.47E-1	2 1.27	E-12	-1.96E-10
AP	A	Acidification potential of land			[kg S	60 ₂ -Eq.]	6.63E	-02 2	2.08E-03	2.72E	-05	8.51	E-01 4	4.72E-06	3.36E-0	5 1.28	E-04	-2.19E-02
EP		and water Eutrophication potential			[kg	N-eq.]	5.58E	-03 7	.66E-05	i 1.51E	-06	4.18	E-02 3	3.34E-07	1.43E-0	6 4.82	E-06	-5.66E-04
Smo	g (Ground-le	vel smog l	formation	[kg	O3-eq.]	8.59E	-01 3	8.86E-02	6.00E	-04	7.25E	E+00 9	9.72E-05	3.04E-0	4 1.40	E-03	-2.58E-01
Resour	ces R	Resources	i – fossil r	esources		[MJ]	1.09E	+01 1	.74E-01	3.30E	-03	1.83	E+02	1.57E-03	6.08E-0	3 1.86	E-02	-1.14E+00
RESU	JLTS	OF TH	IE LCA	- RES	OUR	CE USI	E: On	e pie	ce of	ICLAS	S S	ER	PK40	reader				
Param	meter Parameter Ur		eter Parameter			Unit	A1	- A3	A4	4	\ 5	1	B6	C2	C3	0	C4	D
PEF	RE	Renew	able prin energy	nary ene carrier	rgy as	[MJ]	1.07	'E+01	-		-		-	-	-		-	-
PEF	RM	Rene	wable pr	imary en	ergy	[MJ]	0.00)E+00	-		-		-	-	-		-	-
PEF	RT	Total u	se of ren	ewable p	rimary	[MJ]	1.07	'E+01	2.07E-0	2.07E-02 2.59E-0		3.04E+02 4.29E-04		04 2.45E-02		5E-02	-1.00E+00	
PEN	IRE	Non rene	wable p	rimary er	nergy as	[MJ]	1.47	'E+02	-		-				-		-	-
PEN	RM	Non rene	wable p	rimary er	nergy as	5 [MJ]	0.00E+00		-						-		-	-
PEN	IRT	Total	use of n		able	[MJ]	1.47	'E+02	1.21E+	00 3.32	E-02	3.94	E+03	1.09E-02	1.34E-0	1 2.02	2E-01	-2.47E+01
SN	N	Use	of secon	dary mat	erial	[kg]	3.94	4E-02	0.00E+	00.00	E+00	0.00	E+00	0.00E+00	0.00E+0	00.00	E+00	0.00E+00
RS	ŝF	Use o	f renewa	ble seco	ndary	[MJ]	0.00)E+00	0.00E+	0.00	E+00	0.00)E+00	0.00E+00	0.00E+0	0.00	E+00	0.00E+00
NRS	SF	Use of n	on renev	vable se	condary	[MJ]	0.00)E+00	0.00E+	00.00	E+00	0.00)E+00	0.00E+00	0.00E+0	0.00	E+00	0.00E+00
FV	V	Us	e of net f	resh wat	er	[m³]	6.79	9E-02	1.80E-0	05 2.81	E-04	1.38	E+00	3.03E-07	6.04E-0	5 1.02	2E-03	-1.74E-02
RESU	JLTS	OF TH	E LCA	√ – OU	TPUT	FLOW	S AN	D WA	STE	CATE	GOR	RIES	: One	e piece	of iCL/	ASS S	SE RI	РК40
reade																	•	
-	er 											- 1			-			
Param	eter		Pa	rameter			Unit	A1	- A3	A4	A	5	B6	C2	C3		C4	
Param HW	D	Ha	Pa azardous	rameter waste d	isposed	od	Unit [kg]	A1 7.22	- A3 E-03 1.4	A4 93E-06	A: 2.29E	5 =-06	B6 3.07E-(C2 03 2.49E-0	C3 08 1.85E	-05 1.6	6E-05	-2.88E-04
Param HW NHW	eter D VD	Ha Non Ba	Pa azardous hazardo dioactive	rameter waste d us waste	isposed dispose	ed	Unit [kg] [kg]	A1 7.22 2.83	- A3 E-03 1.1 E-01 6.4	A4 93E-06 47E-05	A 2.29E 2.97E 1.87E	5 =-06 =-03	B6 3.07E-(1.26E+ 3.24E-(C2 03 2.49E-(00 1.37E-(01 1 43E-(C3 08 1.85E 06 4.32E	-05 1.6 -05 6.1	6E-05 1E-02	-2.88E-04 -2.01E-02
Param HW NHW RW	eter D VD D	Ha Non Ra	Pa azardous hazardo dioactive	rameter waste d us waste waste d ents for r	isposed disposed lisposed e-use	ed	Unit [kg] [kg] [kg]	A1 7.22 2.83 6.63	- A3 E-03 1.4 E-01 6.4 E-03 1.4 E+00 0 0	A4 93E-06 47E-05 53E-06 00E+00	A: 2.29E 2.97E 1.87E 0.00F	5 =-06 =-03 =-06 =+00	B6 3.07E-(1.26E+ 3.24E-().00F+	C2 03 2.49E-(00 1.37E-(01 1.43E-(00 0.00E+	C3 08 1.85E 06 4.32E 08 1.93E 00 0.00F	-05 1.6 -05 6.1 -05 8.6 +00 0 0	0E+00	-2.88E-04 -2.01E-02 -5.45E-04
Param HW NHW RW CRI	eter D VD D U R	Ha Non Ra	Pa azardous hazardo dioactive Compone Material:	rameter waste d us waste waste d ents for r s for recv	isposed disposed lisposed e-use rclina	ed 1	Unit [kg] [kg] [kg] [kg] [ka]	A1 7.22 2.83 6.63 0.00 0.00	- A3 E-03 1.3 E-01 6.4 E-03 1.3 E+00 0.0	A4 93E-06 47E-05 53E-06 00E+00	A: 2.29E 2.97E 1.87E 0.00E 6.35E	5 =-06 =-03 =-06 =-00 =-02	B6 3.07E-(1.26E+ 3.24E-(0.00E+ 0.00E+	C2 03 2.49E-(00 1.37E-(01 1.43E-(00 0.00E+ 00 0.00E+	C3 08 1.85E 06 4.32E 08 1.93E 00 0.00E 00 4.96E	-05 1.6 -05 6.1 -05 8.6 +00 0.0 -02 0.0	C4 66E-05 1E-02 60E-06 0E+00	-2.88E-04 -2.01E-02 -5.45E-04
Param HW NHW RW CRI MFI	leter D VD D U R R	Ha Non Ra Ma	Pa azardous hazardo dioactive Compone Materials terials fo	rameter waste d us waste waste d ents for r s for recy r energy	isposed dispos lisposec e-use rcling recover	ed d	Unit [kg] [kg] [kg] [kg] [kg]	A1 7.22 2.83 6.63 0.00 0.00	- A3 E-03 1.1 E-01 6.2 E-03 1.3 E+00 0.0 E+00 0.0 E+00 0.0	A4 93E-06 47E-05 53E-06 00E+00 00E+00 00E+00	A: 2.29E 2.97E 1.87E 0.00E 6.35E 0.00E	5 =-06 =-03 =-06 =+00 =+00 =-02 =+00 =+00	B6 3.07E-(1.26E+ 3.24E-().00E+).00E+).00E+	C2 03 2.49E-(00 1.37E-(01 1.43E-(00 0.00E+ 00 0.00E+ 00 0.00E+	C3 08 1.85E 06 4.32E 08 1.93E 00 0.00E 00 4.96E 00 0.00E	-05 1.6 -05 6.1 -05 8.6 +00 0.0 -02 0.0 +00 0.0	6E-05 1E-02 60E-06 0E+00 0E+00 0E+00	-2.88E-04 -2.01E-02 -5.45E-04
Param HW NHW CRI MFI MEI	leter D VD D U R R R E	Ha Non Ra Ma E	Pa azardous hazardo dioactive Compone Materials terials for xported e	rameter waste d us waste waste c ents for r s for recy r energy electrical	isposed disposed isposed e-use rcling recover energy	ed J y y	Unit [kg] [kg] [kg] [kg] [kg] [kg]	A1 7.22 2.83 6.63 0.00 0.00 0.00	- A3 E-03 1.1 E-01 6.1 E-03 1.1 E+00 0.0 E+00 0.0 E+00 0.0 E+00 0.0 E+00 0.0	A4 93E-06 47E-05 53E-06 00E+00 00E+00 00E+00 00E+00	A: 2.29E 2.97E 1.87E 0.00E 6.35E 0.00E 1.29E	5 =-06 : =-03 / =-06 : =+00 0 =-02 0 =+00 0 =-01 0	B6 3.07E-(1.26E+ 3.24E-(0.00E+ 0.00E+ 0.00E+ 0.00E+	C2 03 2.49E-(00 1.37E-(01 1.43E-(00 0.00E+ 00 0.00E+ 00 0.00E+ 00 0.00E+	C3 08 1.85E 06 4.32E 00 0.00E 00 4.96E 00 0.00E 00 0.00E	-05 1.6 -05 6.1 -05 8.6 +00 0.0 -02 0.0 +00 0.0 +00 7.1	66E-05 1E-02 60E-06 0E+00 0E+00 0E+00 1E-01	-2.88E-04 -2.01E-02 -5.45E-04 - - - -



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