# **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)

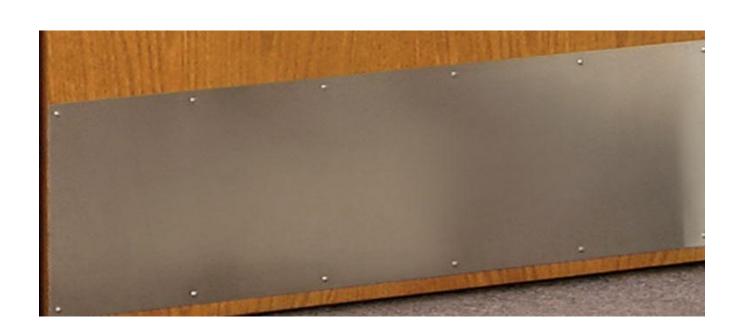
Declaration number EPD-ASA-20150134-IBA1-EN

Issue date 18.05.2015 Valid to 17.05.2020

# Rockwood K1050 Kick Plate ASSA ABLOY



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



# 1. General Information

#### **ASSA ABLOY**

#### Programme holder

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

Germany

#### **Declaration number**

EPD-ASA-20150134-IBA1-EN

# This Declaration is based on the Product Category Rules:

Locks and fittings , 07.2014 (PCR tested and approved by the independent expert committee (SVA))

Nermanes

Muanin

#### Issue date

18.05.2015

#### Valid to

17.05.2020

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

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

### **Rockwood K1050 Kick Plate**

# Owner of the Declaration

ASSA ABLOY 300 Main St.

Rockwood, PA 15557 USA

# **Declared product / Declared unit**

The declaration represents One Rockwood K1050 (8 X 34 US32D) Kick Plate - Standard Duty, consisting of the following items:

- A 34" length of 18 gauge stainless steel coil with Polyethylene protective film attached.
- A 16" X 40" X 2 mil clear polyethylene sheeting used for packaging.
- Twelve # 6 X 5/8" stainless steel undercut oval head sheet metal screws.
- One 1 Corrugated folding box. 48 1/2" X 20 7/8".
- 5 pieces of 20" long x 1/2" wide white plastic banding

#### Scope:

This declaration and its LCA study are relevant to Rockwood K1050 kick plates.

The primary manufacturing processes and packaging are completed in our factory for all Rockwood K1050 finish in Rockwood, Pennsylvania.

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 SVA)

# 2. Product

#### 2.1 Product description

Product name: Rockwood K1050 Kick Plate

Product characteristics:

Rockwood K1050 kick plates are installed on doors to protect the doors from damage and characterized by:

- Size (Typical Length 2" less than door width X specified height on push side of door)
- Finish US32D
- Options: Self Adhesive, Self Drilling TEK screws, beveled edges, countersunk holes, cut outs, Torx fasteners, UL Fire rated.

This EPD is applicable to following products: K1050, K1050F.

#### 2.2 Application

The Rockwood kick plate K1050 (8" X 34") is intended to be used for private to commercial and public sectors for both light and heavy use areas:

- For interior and or exterior doors
- Designed to prevent damage to doors as well as for decorative applications.

#### 2.3 Technical Data

The table presents the technical properties of the Rockwood K1050 Kick Plate:

#### **Technical data**

Parameter	Value
Available Finishes:	Satin Finish Stainless Steel (US32D)
Available Sizes (As	Up to 48" (1219 mm)



specified):	eight X 120" (3048 mm)
	Length
Options: (As	Self Adhesive
specified)	TEK screws (Self Drilling)
	Beveled Edges
	Countersunk holes
	Cut outs
	Torx fasteners
	UL fire rated

#### 2.4 Placing on the market / Application rules

The standards that can be applied for K1050 kick plates are:

NFPA 80 STANDARDS - 2-4.5 Protection Plates: Factory-installed protection plates shall be installed in accordance with the listing of the door.

Field-installed protection plates shall be labeled and installed in accordance with the door listing. Exception: UL Labeling is not required where the top

of the protection plate is not more than 16" (406 mm) above the bottom of the door.

#### 2.5 Delivery status

The Rockwood K1050 kick plates and fasteners are delivered ready for installation. Each plate is individually packaged with fasteners attached and master packaged up to a maximum of 10 plates per carton. Package size is dependent on longest size of plate ordered.

#### 2.6 Base materials / Ancillary materials

The average composition for K1050 is as following:

Component	Percentage in mass (%)
Stainless Steel	76.9
Paper	22.26
Plastics	1.65
Total	100.0

## 2.7 Manufacture

The Rockwood K1050 series kick plates utilize a 301 alloy stainless steel sheet or coil which are sheared to size, punched and packaged in our ISO14001-2014 facility located in Rockwood, Pennsylvania.

# 2.8 Environment and health during manufacturing

ASSA ABLOY is committed to integrating our sustainability efforts across the organization. Our priorities are to: reduce resource and energy consumption; reduce carbon emissions; improve water and waste management; improve health and safety performance in operations; improve sustainability performance within our supply chain and enhance the sustainability performance in ASSA ABLOY's supply of door opening solutions. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and environmental management program are evaluated.

Our Code of Conduct covers business ethics, workers' rights, human rights, environment and health & safety, consumer interests and community outreach. It provides the framework for ASSA ABLOY's daily operations.

• Employees within this manufacturing process are required to wear all standard PPE as well as protective leather arm leg and body protection.

#### 2.9 Product processing/Installation

Rockwood K1050 kick plates are distributed through a network of distributors and are installed by general contractors, end users and home owners.

#### 2.10 Packaging

K1050 kick plates are packed in cardboard packaging.

100% of paper documents are made from recycled material.

Material	Value (%)
Cardboard/paper	99.7
Plastics	0.03
Total	100.0

#### 2.11 Condition of use

Under normal use, the Rockwood K1050 kick plate requires no routine maintenance other than regular cleaning. Cleaning requires a soft cloth and a mild soap/warm water mixture to remove any dust or dirt that may accumulate from general use.

#### 2.12 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.

#### 2.13 Reference service life

Under normal use and with routine cleaning, the stainless steel kick plate is expected to last indefinite as there are no moving or wear parts associated with this product.

#### 2.14 Extraordinary effects

### Fire

K1050 kick plates are tested for usage in fire doors according to ANSI/UL 10B and 10C ratings.

#### Water

K1050 contains no substances that have any impact on water in case of a flood.

#### **Mechanical destruction**

K1050 has no properties which could be considered a danger to the environment and there would be no anticipated health or environmental issues arise as a result of mechanical destruction.

#### 2.15 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, by weight, of stainless steel used can be recycled.

#### Manufacturing

Off cuts and scraps during the manufacturing process are reused for other products or directed to a recycling container.

# **Packaging**

All materials incurred during installation are intended to be directed to a recycling unit by the installer.

#### End of life



All materials are intended to be directed to a recycling unit or returned to the factory for recycling as part of our end of life recycling process.

#### 2.16 Disposal

No disposal is foreseen for the Rockwood K1050 kick plates nor for the corresponding packaging.

#### 2.17 Further information

ASSA ABLOY 300 Main St. Rockwood PA 15557

Tel: 800-458-2424

Web Address: www.rockwoodmfg.com

# 3. LCA: Calculation rules

#### 3.1 Declared Unit

The declaration refers to the functional unit of 1 piece of Rockwood K1050 US32D Kick Plate as specified in Part B requirements on the EPD for PCR Locks and fittings: (mechanical & electromechanical locks & fittings)

Name	Value	Unit
Declared unit	1.693	1 piece of door bottom
Conversion factor to 1 kg	0.591	-

#### 3.2 System boundary

Type of the EPD: cradle to gate - with options The following life cycle phases were considered:

Production stage:

- A1 Raw material extraction and processing
- A2 Transport to the manufacturer and
- A3 Manufacturing

#### Construction stage:

A5 – Packaging waste processing

#### End-of-life stage:

- C2 Transport to 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 or recycling potential from EOL and A5.

# 3.3 Estimates and assumptions

In the End-of-Life phase, for all the materials which can be recycled, a recycling scenario with 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 PE INTERNATIONAL 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/.

PE INTERNATIONAL 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 2012/13 (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:

- Waste incineration of plastic
- · Waste incineration of 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

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

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).

Installation into the building (A5)

Name	Value	Unit
Output substances following waste	0.485	kg
treatment on site (Paper packaging)	0.403	ĸy

### Reference service life

Name	Value	Unit
Reference service life	20	а

End of life (C1-C4)

Name	Value	Unit
Collected separately Plastic Parts, Stainless Steel	1.693	kg
Collected as mixed construction waste	0	kg
Reuse Plastic Parts	0.036	kg
Recycling Stainless Steel	1.657	kg
Landfilling	0	kg

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

Name	Value	Unit
Collected separately waste type (including packaging)	2.178	kg
Recycling Stainless Steel	76.09	%
Reuse Plastic Parts	1.65	%
Reuse Paper packaging (from A5)	22.26	%



# 5. LCA: Results

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

DESC	CRIP	TION O	FIRE			DUU	NUF	AIK I	(X = II)	CLUD	ED II	N LCA;	MND =		DULE N	OT DI	ECL	ARED)	
																	BEN	EFITS AND	
5505	SUCT	07405		RUCTI					10F 0T 4	0.5				ın o.		0.5		LOADS	
PROL	JUCI	STAGE		OCESS AGE				·	JSE STA	GE			Er	ID OF	LIFE STA	GE		YOND THE SYSTEM	
			317	(GL													UNDARYS		
			Φ								<u>&gt;</u>	<u>_</u>			ס				
<del></del>		<u>ق</u>	th te				b		t <sub>1</sub>	1	er <u>c</u>	ate	o		Ji.				
erić	ort	=	om S Si	S)C		2	2	_	en	Je l	en	Š	o cti	J.C	ess	<del>a</del>	۱.	구 년 B	
jat Jog	ds	Manufacturing Transport from the gate to the site Assembly Use			=	Repair	eu	l li	اعا	use ional use	뚩	ds		Soc	l se	ove Clir			
w mater	Transport	jj	5 2	sse	Asse Us		Maintenance		lac	į	lior :	: (유 ) : (B	-constructi demolition	Transport	d d	Disposal	Reuse-	Recovery- Recycling- potential	
Raw material supply	F	lar	ns <sub>l</sub> ate	Ä		2	Repair Replacement <sup>1)</sup>		Refurbishment <sup>1)</sup>	era.	ers	De-construction demolition	F	Iste		_	8 8 a		
_		2	ra g						~	æ	Operational energy	Use Operational water Use	۵		Waste processing				
A1	A2	A3	A4	A5	B1	I B	2	В3	B4	B5	B6	B7	C1	C2		C4		D	
Х	Х	X	Х	X	MN			MND		MND	MNI		MND	Х	MND	Х		Х	
RESU	JLTS	OF TH	E LCA	- EN	VIRO	ONME	NT	AL II	MPACT	: One	piec	e of On	e K105	0 Ki	ck Plate				
Parame	eter	ı	Paramet				nit		A1 - A3	A4		A5	B2		C2	C4	1	D	
GWF	P	Global	warming	notentia	1	[kg CC	) <sub>o-</sub> Ea	1 6	5.57E+00	1.17E	-01	7.04E-01	-4.92E	-02	5.18E-02	7.28E	-02	-1.94E+00	
ODF			on poten			[kg Cl			1.19E-10	5.59E		3.19E-12	1.79E		2.48E-13	2.19E			
ODF			oheric oz			E	q.]		+. 19E-10	3.59E	-13	3.19E-12	1.79	-12	2.400-13	2.190	-13	-1.76E-10	
AP		Acidification	water			[kg SC			1.56E-02	5.34E		1.61E-04	1.26E		2.37E-04	1.85E		-1.53E-02	
EP		Eutrop Formation p	hication otential o			[kg (PO			2.96E-03	1.22E		2.77E-05	7.52E		5.41E-05	1.40E		-7.03E-04	
POC	Р	ozone ph	otochemi	cal oxidar	nts	[kg Eth			2.60E-03	-1.72E		1.13E-05	2.51E		-7.65E-05	9.01E		-6.16E-04	
ADPI	E /	fos	ssil resou	rces	c depletion potential for non fossil resources							4.40E	-09	1.35E-08	2.72E	1.95E-09	4.81E-09		-5.66E-04
<b>—</b>	DPF Abiotic depletion potential for fossil resources				sil [MJ] 8.54E+01 1.61E+00				1.54E+00 7.15E-01			3.08E-02							
ADP	F Al	biotic depi			fossil	[N	/J]	8	3.54E+01	1.61E-	+00	2.00E-01	1.54E	+00	7.15E-01	3.08E	-02	-2.45E+01	
	-	·	resource	S								2.00E-01	<u> </u>		7.15E-01	3.08E	-02	-2.45E+01	
	JLTS	·	resource IE LCA	S				E: O		e of O			ick Pla		7.15E-01 C2	3.08E		-2.45E+01	
RESU	JLTS neter	OF TH	Para wable prenerge	A - RES ameter imary er y carrier	SOU	IRCE as	USE	E: O	ne pied	e of O	ne K	(1050 K	ick Pla	te					
RESU	JLTS neter	Rene Ren	Para wable preserved evable preserved as not considered.	ameter imary er y carrier primary naterial	nergy	as By	USE Ur	nit	ne piec A1 - A3	se of O	ne K	(1050 K	ick Pla	te 32	C2			D	
Param PEF	JLTS neter RE	Rene Ren	Para wable preserved evable process as nuse of re	ameter imary er y carrier primary naterial	nergy energy utiliza	as By	USE Ur [M	E: O	<b>A1 - A3</b> 2.00E+0	ce of O	ne K	(1050 K	ick Pla	te 32	C2		4	D	
PEF	PULTS neter RE RM RT	Rene Rene resour Total t	Para  Wable prenerge ewable press as nuse of reenergy newable energy	ameter imary er y carrier primary en aterial en ewable resource primary y carrier	nergy energy utiliza e primes energy	IRCE as as By tition hary gy as	USE Ur [M	it JJ] JJ]	A1 - A3 2.00E+0	ce of O  3	ne K	A5 .	ick Pla	te 32 -	C2 -		4	D -	
PER PER	INCOME.	Rene Rene resour Total u Non rer	Para wable process as nuse of ree energy newable energy newable material	ameter  imary er y carrier primary inaterial innewable primary y carrier primary y carrier primary utilizati	energy energy tiliza e primes energe	as By striction party gy as gy as	USE Ur [M	E: O)  nit   J]   J]   J]	2.00E+( 2.00E+(	Se of O 3 // 011   6.34	ne K	A5 .	ick Pla	te 32 -	C2 -		4	D -	
PEF PEF PEN	ULTS neter RE RM RT RE RM	Rene Ren resour Total I	Para wable pr energy ewable pr ces as n use of re energy newable energy newable material e of non	ameter  imary er y carrier primary inaterial innewable primary y carrier primary y carrier primary utilizati	energy energy energy energy energy energy energy energy	as By striction party gy as gy as	USE Ur [M [M	it JJ] JJ] JJ] JJ]	2.00E+0 2.00E+0 2.00E+0 9.43E+0	ce of O 3	ne K	A5 .	2 3.07	te 32 -	C2 2.82E-02		<b>4</b> =-03	D -	
PER PEN PEN PEN SM	INTERIOR OF THE PROPERTY OF TH	Rene Ren resour Total u Non rer Total us Use	Para wable present energy newable energy of second	ameter rimary er y carrier primary naterial newable resource primary y carrier primary utilizati renewal resource	energy	as  By  Ittion  Bary  By  By  By  By  By  By  By  By  By	USE Ur [M		2.00E+( 0.00E+( 2.00E+( 9.43E+( 0.00E+( 9.43E+( 1.51E+(	100 0.000 0.	ne K 44	1.85E-0 - 2.33E-0 0.00E+0	2 3.07 1 1.63	te 32 - - E+00 - - E+00 E+00	2.82E-02 - - - 7.17E-01 0.00E+00	2.266 	<b>4</b> ≡-03 ≡-02 ≡+00	D	
PER PEN PEN PEN RS	IRE RM IRT M SF	Rene Ren resour Total u Non rer Total us Use Use of us	Para wable pr energy leewable energy newable energy	ameter imary er y carrier primary en anterial innewable resource primary y carrier primary u tilizati renewal resource ndary m le secon	energy	as  By Itition lary gy as gy as imary al fuels	USE Ur [M		2.00E+( 0.00E+( 2.00E+( 9.43E+( 0.00E+( 1.51E+( 0.00E+(	100 00 0.000	ne K	1050 K A5 - 1.85E-0 - 2.33E-0 0.00E+( 0.00E+(	2 3.07 1 1.63 00 0.00 00 0.00	te 32 - - E+00 - - E+00 E+00	- 2.82E-02 	2.26F	=-03 =-02 =+00 =+00	D	
PER PER PEN PEN PEN RS NRS	ULTS  DILTS  DIT	Rene Rene Ren resour Total u Non rer  Total us Use of u	Para wable pr energy lewable   ces as n use of re energy newable material e of non energy of seco renewable non rene	ameter rimary en y carrier primary en acterial innewable resource primary y carrier primary utilization renewal resource ndary mile secone wable suels	nergy energy energy primes energy	as  By Itition lary gy as gy as imary al fuels	USE Ur [M		2.00E+( 0.00E+( 2.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+(	00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	ne K A44	1.85E-0 - 1.85E-0 - 2.33E-0 0.00E+0 0.00E+0	2 3.07 1 1.63 00 0.00 00 0.00 00 0.00	E+00 E+00 E+00 E+00 E+00	C2 2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 0.00E+00	3.42t 3.00 0.00E 0.00E 0.00E	=-02 =-02 =+00 =+00	D	
PER PEN PEN PEN RS NRS	neter RRE RRM RT RRE RM IRT VV	Rene Rene Ren resour Total u Non rer Total us Use of u	Para  Wable pr energy lewable loces as n use of re energy newable energy newable energy newable energy of seco renewable non renergy of seco filese of ne	ameter  imary er y carrier primary er primary er primary er primary y carrier primary y tutilizati renewal resource ndary m le secon ewable s uels t fresh w	nergy nergy eenergy eenergy eenergy eenergy eenergy energy eenergy eenergy eenergy eenergy eenergy eenergy eenergy	as  By  Ition  By  By  By  By  By  By  By  By  By  B	USE		2.00E+( 0.00E+( 2.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 4.71E-(	100 000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0	ne K  A4	1.85E-0 - 1.85E-0 - 2.33E-0 0.00E+0 0.00E+0 0.00E+0 2.04E-0	2 3.07 1 1.63 00 0.00 00 0.00 00 0.00 3 1.67	E+00 E+00 E+00 E+00 E+00 E+00 E+00	C2	3.42t 3.00 0.00E 0.00E 0.00E 1.78t	=-02 =+00 =+00 =-04	-2.88E+002.78E+01 0.00E+00 0.00E+00 0.00E+00	
PER PEN PEN PEN RS NRS	neter RRE RRM RT RRE RM IRT VV	Rene Rene Ren resour Total u Non rer Total us Use of u	Para  Wable pr energy lewable loces as n use of re energy newable energy newable energy newable energy of seco renewable non renergy of seco filese of ne	ameter  imary er y carrier primary er primary er primary er primary y carrier primary y tutilizati renewal resource ndary m le secon ewable s uels t fresh w	nergy nergy eenergy eenergy eenergy eenergy eenergy energy eenergy eenergy eenergy eenergy eenergy eenergy eenergy	as  By  Ition  By  By  By  By  By  By  By  By  By  B	USE		2.00E+( 0.00E+( 2.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 4.71E-(	100 000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0	ne K  A4	1.85E-0 - 1.85E-0 - 2.33E-0 0.00E+0 0.00E+0 0.00E+0 2.04E-0	2 3.07 1 1.63 00 0.00 00 0.00 00 0.00 3 1.67	E+00 E+00 E+00 E+00 E+00 E+00 E+00	C2	3.42t 3.00 0.00E 0.00E 0.00E 1.78t	=-02 =+00 =+00 =-04	D	
PER PEN PEN PEN RS NRS	RE RM RT RT RE RM RT	Rene Rene Ren resour Total u Non rer Total us Use of u	Para  Wable pr energy lewable loces as n use of re energy newable energy newable energy newable energy of seco renewable non renergy of seco filese of ne	ameter imary er y carrier primary er y carrier primary y naterial i newable resource primary y carrier primary u utilizati renewal resource ndary m le secor ewable s uels t fresh w	nergy nergy eenergy eenergy eenergy eenergy eenergy energy eenergy eenergy eenergy eenergy eenergy eenergy eenergy	as  By  Ition  Bary  By  By  By  By  By  By  By  By  By	USE		2.00E+( 0.00E+( 2.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 4.71E-(	100 000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0	ne K  A4	1.85E-0 - 1.85E-0 - 2.33E-0 0.00E+0 0.00E+0 0.00E+0 2.04E-0	2 3.07 1 1.63 00 0.00 00 0.00 00 0.00 3 1.67	E+00 E+00 E+00 E+00 E+00 E+00 E+00	C2	3.42t 3.00 0.00E 0.00E 0.00E 1.78t	=-02 =-02 =+00 =+00 =-04	-2.88E+002.78E+01 0.00E+00 0.00E+00 0.00E+00	
PEF PEF PEN PEN PEN RS NRS FV	THE SET OF	Rene Ren Ren Ren Total u Non rer Total us Use of u Use of u	Para wable pr energy newable energy newable energy newable energy newable energy newable energy of seco	ameter imary er y carrier primary er y carrier primary er y carrier primary y carrier primary y carrier primary y carrier primary le secon carrier primary le secon carrier primary to trilizati renewal resource ndary m le secon carrier puels t fresh w	energy en	as  By  Ition  Bary  By  By  By  By  By  By  By  By  By	USE Ur [M ] [		2.00E+( 0.00E+( 2.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 4.71E-(	100 000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0	E+00 E+00 E+00 E+00 E+00 E+00	1.85E-0 1.85E-0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	2 3.07 1 1.63 00 0.00 00 0.00 3 1.63 3: One	E+00  E+00  E+00  E+00  E+00  E+00  E+00  E+00  E+00	C2 2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 1.99E-08 e of On	3.42t	=-02 =+00 =+00 =-04	-2.88E+002.78E+01 0.00E+00 0.00E+00 0.00E+00 -1.53E-02 ick Plate	
PER PER PEN PEN PEN RS NRS FV	PRE RM RT RE RM RT RT RE RM RT	Rene Ren Ren Ren Total u Non rer Total us Use of u Use of u	Para wable preserved as a constant of the cons	ameter imary er y carrier primary naterial i newable resource primary y carrier primary i utilizati renewal resource ndary m le secor ewable s uels t fresh w - OU eter	nergy energy ene	as  By  Ition  I	USE Ur [M [M [M [M [M [M [M [M ] [M ] [M ] [M		2.00E+( 0.00E+( 2.00E+( 9.43E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 1.51E+( 0.00E+( 4.71E-( ND WA	100 0.000 0.	E+00 E+00 E+00 E+00 E+00 E+00	1.85E-0  1.85E-0  2.33E-0  0.00E+0  0.00E+0  2.04E-0  GORIES	2 3.07  1 1.63  00 0.00  00 0.00  3 1.63  3: One	E+00 E+00 E+00 E+00 E+00 E+00	C2  - 2.82E-02  - 7.17E-01 0.00E+00 0.00E+00 0.00E+00 1.99E-05 e of On	2.26l 2.26l 3.42l 3.42l 0.00E 0.00E 0.00E 1.78l E K10s	=-03 =-02 =+00 =+00 =-04 =-04	D2.88E+002.78E+01 -0.00E+00 -0.00E+00 -1.53E-02 ick Plate D	
PER PER PEN PEN PEN RS NRS FV	THE SET OF	Rene Rene Renresour Total us Non rer Total us Use of u Use of Hazaro	Para wable preserved as a constant of the cons	ameter imary er y carrier primary er y carrier primary y naterial i newable resource primary y carrier primary y tutilizati renewal resource ndary m le secor ewable s uels t fresh w - OU eter	energy en	as  By  Ition  I	USE Under [M ] [M ] [M	District   District	2.00E+( 0.00E+( 2.00E+( 9.43E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 1.51E+( 0.00E+( 4.71E-( ND WA 1-A3	100 000 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0	E+00 E+00 E+00 E+00 E+00 E+00	1.85E-0 1.85E-0 2.33E-0 0.00E+0 0.00E+0 2.04E-0 GORIES A5	2 3.07  1 1.63  10 0.00  10 0.00  10 0.00  11 1.63  11 1.63	E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00	C2  - 2.82E-02  - 7.17E-01 0.00E+00 0.00E+00 1.99E-05 e of On C2	2.26h 3.42l 3.42l 0.0000 0.0000 0.0000 1.78B K100	=-02 =-02 =+00 =+00 =-04 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	D -2.88E+00 -2.78E+01 0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03	
PER PEN PEN PEN RS NRS FV RESU	THE SET OF	Rene Rene Renresour Total us Non rer Total us Use of u Use of Hazarc Non haza Radioa	Para wable presented by the control of the control	ameter rimary et y carrier primary et y carrier primary y carrier primary utilization example successive to the total control of the total carrier primary utilization example successive to the total carrier primary with the total carrier primary utilization example successive to the total carrier primary utilization example successive to the total carrier primary utilization example successive to the total carrier primary to the total carrier prim	nergy	as  By Intion Bary By	USE Under [M ] [M ] [M		2.00E+( 0.00E+( 2.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 1.51E+( 0.00E+( 4.71E-( ND WA 1-A3 36E-03 31E+00	3.68E-0 2.03E-0	E+00 E+00 E+00 E+00 E+00	1.85E-0 1.85E-0 2.33E-0 0.00E+0 0.00E+0 2.04E-0 GORIES A5 1.61E-05	2 3.07  1 1.63  00 0.00  00 0.00  3 1.63  3: One  B2  9.62E- 1.28E-	E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00	C2  2.82E-02  - 7.17E-01  0.00E+00  0.00E+00  1.99E-08  e of On  C2  1.63E-06  9.02E-05	3.42I 3.42I 0.00E 0.00E 0.00E 1.78I 2.39E 6.78E	=-02 =-02 =+00 =+00 =-04 1 1 1 1-06 1-03 1-06	D -2.88E+002.78E+01 -0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03 -6.80E-01	
PER PEN PEN PEN RS NRS FV Param HW NHV RW	THE REPORT OF THE PROPERTY OF	Rene Rene Renresour Total us Non rer Total us Use of Use of Use of Hazarc Non hazar Radioa Com	Para wable pr energy ewable   ces as n use of re energy newable material e of non energy of seco renewable se of ne lE LCA Param dous was ardous was ctive wa	ameter rimary et y carrier primary y carrier primary y carrier primary y tutilization renewal resource and are source and are	nergy	as  By  Ition  I	USE		2.00E+( 0.00E+( 0.00E+	3.68E-0 2.03E-0 2.11E-0	E+000 E+000 BE-05 ATE		2 3.07  1 1.63  00 0.00  00 0.00  3 1.66  3: One  B2  9.62E- 1.28E- 3.67E-	E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00	2.82E-02 - 2.82E-02 - 7.17E-01 0.00E+00	3.42t	=-02 =-00 =-00 =-00 =-01 =-06 =-03 =-06 =-06 =-06 =-06	D -2.88E+002.78E+01 -0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03 -6.80E-01	
PER PEN PEN RS NRS FV Param HW NHV RW CR	PULTS RE RM RT RE RM RT RF RM RT V V V V V V V V V V V V V V V V V V	Rene Rene Rene Rene resour Total us Non rer  Non rer  Use of Use of Use of Addioa Com Mate Material	Parawable energy newable energy nerewable energy nere	ameter rimary et y carrier primary y carrier primary y carrier primary y tarrier primary tarri	nergy	as  Jy  Ition Itio	USE	District   District	2.00E+( 0.00E+( 0.00E+	3.68E-0 2.03E-0 0.00E+C	E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00		2 3.07  1 1.63  0 0.00  0 0.00  3 1.67  3: One  B2  9.62E- 1.28E- 0.00E+	E+00 E+00 E+00 E+00 E+00 E+00 E+00 E+00	2.82E-02 - 2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00 0.00E+00	3.42t 3.000 0.00E 1.78E 1.36E 0.00E	=-02 =+00 =+00 =-04 [-06 03 06 ++00 ++00	D -2.88E+002.78E+01 -0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03 -6.80E-01	
PER PEN	INTERPORT OF THE PROPERTY OF T	Rene Rene Rene Rene resour Total us  Non rer  Total us  Use of Use of Use of  Hazarc Non haza Radioa Com Mate Material Export	Para wable pr energy lewable energy	ameter rimary er y carrier naterial unewable resource primary y carrier primary y carrier primary y carrier primary utilizati renewal resource ndary m le secon ewable s uels t fresh w - OU eter ste dispo rescyclin ergy recc rical ene	nergy	as By Stition By By Stition By By By Stition By	USE	District   District	2.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 1.51E+0 0.00E+0 1.71E-0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0 0.00E+0	3.68E-0 2.11E-0 0.00E+C 0.00E+C	E+00 E+00 E+00 C-00 C-00 C-00 C-00 C-00 C-00 C-00 C		2 3.07  1 1.63  10 0.000  10 0.000  10 0.000  10 1.67  10 1.68  10 1.69  10	E+00 E+00 E+00 E+00 E-03 Piec  000 000 000	2.82E-02 - 2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 1.99E-08 e of On C2 1.63E-06 9.02E-05 9.39E-07 0.00E+00 0.00E+00	3.42t	=-02 =+00 =+00 =-04 <b>i</b> =-06 =-03 =-06 ++00 ++00 ++00	D -2.88E+002.78E+01 -0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03 -6.80E-01	

# 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).

Production phase (module A1-A3) contributes between 73 and 100% to total impact assessment. This stage is dominated by upstream emissions associated with steel- and secondary aluminum manufacturing processes.



The environmental impacts for the transport (A2) have a negligible impact within this stage.

In module D the benefits (negative values) and loads beyond the system boundary are declared for

the recycling potential of the metals and for the credits from the incineration process (energy substitution) within A5.

# 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

#### **IBU 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

#### 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 14001

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

**UL10B:** Standard for Fire Tests of Door Assemblies

#### NFPA 80: 2013

NFPA 80: 2013: Standard for Fire Doors and Other Opening Protectives.



# 9. Annex

Results shown below were calculated using TRACI Methodology.

DESC	CRIP	TION O	F THE	SYST	EM B	OUND	ARY	(X = INC	CLUD	ED IN	I LCA; N	/ND =	MOI	DULE NO	OT DE	CL	ARED)		
PRODUCT STAGE CONSTRUCTION PROCESS STAGE						USE STAGE								END OF LIFE STAGE					
TROL										JOE OTAC						LII L STAC	, <u> </u>	S	YOND THE SYSTEM UNDARYS
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement <sup>1)</sup>	Refurbishment <sup>1)</sup>	Operational energy	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-	Recovery- Recycling- potential		
A1	A2	A3	A4	A5	B1	B2	В3	B4	B5	В6	B7	C1	C2	C3	C4		D		
Х	Χ	Х	Х	Χ	MND	MND	MND		MND	Х	MND	MND	Х	X	Х		Χ		
RESU	JLTS	OF TH	IE LCA	\ - EN\	VIRON	MENT	AL II	MPACT:	One	piece	of One	K105	0 Kid	ck Plate					
Param	eter		Param	eter		Ur	nit	A1-3		A4	A5	В	2	C2	C4	4	D		
GW	P		al warmi	• •		[kg CC		6.57E+0	1.1	7E-01	7.04E-01	-4.92	E-02	5.18E-02	7.28E	-02	-1.94E+00		
OD	Р		etion pot ospheric			[kg CF Ed		4.45E-10	5.9	4E-13	3.40E-12	1.90	E-12	2.64E-13	2.33E	E-13	-1.87E-10		
AF	,	Acidificat	tion poter wat		nd and	[kg SO	<sub>2</sub> -Eq.]	4.36E-02	6.9	8E-04	1.95E-04	1.48	E-03	3.10E-04	2.17E	-05	-1.42E-02		
EF			ophicatio			[kg N		2.46E-03	_	3E-05	1.11E-05	_		2.19E-05	6.63E	-07	-3.28E-04		
Smo	_	Ground-le\	/el smog t Resou		potential	[kg O <sub>3</sub>		4.47E-01 6.49E+0		4E-02 1E-01	4.47E-03 2.33E-02		E-03	6.38E-03	1.71E		-1.21E-01		
	1	OF TH			SOLIR						l								
	Parameter Parameter						Unit	A1-3		A4	A5		32	C2	C4	4	D		
PE	Renewable primary energy as					5					-				-				
	energy carrier  Renewable primary energy						[MJ]	2.00E+0	)1	-	-		-	-	-		-		
PE			newable	gy carrie primary	er energy		[MJ]	2.00E+0		-	-		-	-	-		-		
		resou	newable irces as use of r	gy carrie primary material enewabl	er energy utilization le primar	on			00		- 1.85E-02			- - 2.82E-02	2.26E	E-03	- -2.88E+00		
PE	RM	resou Total	newable irces as use of r energy enewable	gy carrie primary material enewably resource primary	er r energy utilization le primar ces r energy	on Ty	[MJ]	0.00E+0	00 01 6.3	-	-		-	-	-	E-03	-		
PE	RM	Total  Non re	newable urces as use of r energy enewable energenewable	gy carrie primary material enewable resource primary gy carrie	er renergy utilization de primar ces renergy er renergy	on Ty	[MJ]	0.00E+(	00 01 6.3	-	-		-	-	-	E-03	-		
PEN PEN	RM RT NRE	Total  Non re	newable irces as use of r energy enewable ener enewable materia se of nor	gy carried primary material enewable resource primary gy carried primary al utilizat	er y energy utilizatio le primar ces y energy er y energy tion able prim	as as	[MJ]	0.00E+( 2.00E+( 9.43E+(	00 6.3	-	- 1.85E-02	2 3.07	-	-	-		-		
PEN PEN S	RM RT NRE NRM NRT	Total  Non re  Non re  Total us  Us	newable urces as use of r energy enewable ener enewable materia se of nor energy en of sec	gy carried primary material enewable resource primary gy carried primary gy carried primary all utilizate reneway resource ondary r	er renergy utilization le primar ces renergy er renergy eiton lable primar ces material	as as aary	[MJ] [MJ] [MJ]	0.00E+0 2.00E+0 9.43E+0 0.00E+0 9.43E+0	000	- 34E-02 - - - 51E+00	- 1.85E-02 - - 2.33E-0	2 3.07 1 1.63 0 0.00	E+00 - E+00 E+00	- 2.82E-02 - - 7.17E-01 0.00E+00	2.26E	E-02 E+00	-2.88E+00 - - -2.78E+01 0.00E+00		
PEN PEN S	RM RT NRE NRM NRT M SF	Non re  Non re  Total us  Us  Use of	newable urces as use of r energy enewable ener- enewable materia se of nor energy se of sec	gy carried primary material enewable resource primary gy carried primary gy carried primary all utilization renewar resource ondary rebile seco	er renergy utilization tele primarces renergy er renergy er renergy eiton able primable prima	as as arry	[MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 9.43E+( 1.51E+( 0.00E+(	00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	- 34E-02 - - - 31E+00 00E+00	- 1.85E-0: - - 2.33E-0: 0.00E+0 0.00E+0	2 3.07 1 1.63 0 0.00 0 0.00	E+00 - E+00 E+00 E+00	- 2.82E-02 - - 7.17E-01 0.00E+00 0.00E+00	2.26E 3.42E 0.00E	E-02 E+00 E+00	-2.88E+00 2.78E+01  0.00E+00  0.00E+00		
PEN PEN S RS	RM RT NRE NRM NRT M SF	Non re  Non re  Total us  Use of  Use o	newable urces as use of r energy enewable ener enewable materia se of nor energy e of sec renewal f non rer	gy carried primary material enewable resource primary gy carried primary all utilization renewad resource ondary roble seconewable fuels	er renergy utilization le primar ces renergy er renergy et le nergy et le nerg	as as arry	[MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 9.43E+( 0.00E+( 0.00E+(	00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	- 34E-02 - - - 51E+00 00E+00 00E+00	- 1.85E-02 - - 2.33E-0 0.00E+0 0.00E+0	2 3.07 1 1.63 0 0.00 0 0.00	E+00 E+00 E+00 E+00 E+00	- 2.82E-02 - - 7.17E-01 0.00E+00 0.00E+00	2.26E 3.42E 0.00E 0.00E	E-02 E+00 E+00	-2.88E+002.78E+01 0.00E+00 0.00E+00		
PEN PEN S RS	RM RT NRE NRM NRT M SF SF	resou Total  Non re  Non re  Total us  Use of Use o	newable irces as use of r energy enewable energy enewable materia se of nor energy e of sec renewal f non rer	gy carried primary material enewable resource primary gy carried primary all utilization renewal resource ondary resource ondary reble seconewable fuels	er renergy utilization le primar ces renergy er renergy er renergy eiton lable prima ces material indary fu secondar water	as as ary els	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 9.43E+( 0.00E+( 0.00E+( 4.71E-(	00	- 34E-02 - - 31E+00 00E+00 00E+00 00E+00	1.85E-02 - 2.33E-0 0.00E+0 0.00E+0 2.04E-02	1 1.63 0 0.00 0 0.00 0 0.00 3 1.67	E+00 - E+00 E+00 E+00 E+00	- 2.82E-02 - - 7.17E-01 0.00E+00 0.00E+00 0.00E+00	2.26E 3.42E 0.00E 0.00E 1.78E	=-02 =+00 =+00 =+00	-2.88E+002.78E+01 0.00E+00 0.00E+00 -1.53E-02		
PEN PEN S RS	RM RT NRE NRM NRT M SF SF	resou Total  Non re  Non re  Total us  Use of Use o	newable proces as use of r energy enewable ener enewable materia se of nor energy e of sec renewal f non rer  Jse of nor	gy carried primary material enewable resource primary gy carried primary all utilization renewal resource ondary resource ondary reble seconewable fuels	er renergy utilization le primar ces renergy er renergy er renergy eiton lable prima ces material indary fu secondar water	as as as as arry	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 9.43E+( 0.00E+( 0.00E+( 4.71E-(	000 01 6.30 01 1.60 00 0.60 00 0.60 00 0.60 2 4.4	- 34E-02 - - 31E+00 00E+00 00E+00 00E+00	1.85E-02 - 2.33E-0 0.00E+0 0.00E+0 2.04E-02	1 1.63 0 0.00 0 0.00 0 0.00 3 1.67	E+00 - E+00 E+00 E+00 E+00 F-03	- 2.82E-02 - - 7.17E-01 0.00E+00 0.00E+00 0.00E+00	2.26E 3.42E 0.00E 0.00E 1.78E	=-02 =+00 =+00 =+00 =-04	-2.88E+002.78E+01 0.00E+00 0.00E+00		
PEN PEN S RS NR FF	RM RT RT NRE NRM MSF SSF W JLTS	resou Total Non re Non re Total us Use of Use of Use TH	newable proces as use of r energy enewable ener enewable materia se of nor energy e of sec renewal f non rer  Jse of nor	gy carried primary material enewable resource primary gy carried primary all utilization renewal resource primary resource primary all utilization renewal resource primary reso	er renergy utilization de primar ces renergy er renergy er renergy er renergy etion able primable prim	as as as arry	[MJ] [MJ] [MJ] [MJ] [MJ] [Kg] [MJ] [MJ] [MJ] VS AN	0.00E+( 2.00E+( 9.43E+( 0.00E+( 1.51E+( 0.00E+( 4.71E-( VD WAS	00	- 34E-02 - - 31E+00 00E+00 00E+00 00E+00	1.85E-02  1.85E-02  -  2.33E-02  0.00E+0  0.00E+0  2.04E-03	2 3.07  1 1.63 0 0.00 0 0.00 0 0.00 3 1.67	E+00 E+00 E+00 E+00 E+00 E+00 piecc 2	- 2.82E-02 - - 7.17E-01 0.00E+00 0.00E+00 1.99E-05 e of One	2.26E - 3.42E 0.00E 0.00E 1.78E K105	=-02 =+00 =+00 =+00 =-04	-2.88E+00 -2.78E+01 -0.00E+00 0.00E+00 0.00E+00 -1.53E-02 ick Plate		
PEN PEN S RS RS RS RESULTED FOR	RM RT RT NRE NRM NRT M SF SSF W V JLTS	resou Total Non re Non re Total us Use of Use o  OF TH	newable irces as use of r energy enewable materia se of nor energy ie of sec renewal f non rer  Para	gy carried primary material enewable resource primary gy carried primary resource ondary resource ondary resource ondary resource primary gy carried primary resource ondary resource on the resource of the resou	er renergy utilization de primar ces renergy er renergy er renergy er renergy etion able primable secondary fursecondary fursec	as as ary els ary U	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 1.51E+( 0.00E+( 0.00E+( 4.71E-( 4.71E-( VD WAS	00 011 6.3 00 011 1.6 00 0.0 00 0.0 00 0.0 11 1.6 12 00 0.0 10 0.	- 34E-02 - - 31E+00 00E+00 00E+00 00E+00 48E-05 ATEC	- 1.85E-02 - 2.33E-02 0.00E+0 0.00E+0 0.00E+0 2.04E-02 EORIES	2 3.07  1 1.63 0 0.00 0 0.00 0 0.00 3 1.67 : One	E+00  E+00  E+00  E+00  E+00  E+00  E-03  Piecc  2	- 2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 1.99E-05 e of One	2.26E - 3.42E 0.00E 0.00E 1.78E K105	=-02 =+00 =+00 =-04 =-04 (-06	-2.88E+00 -2.78E+01 -0.00E+00 0.00E+00 0.00E+00 -1.53E-02 ick Plate D		
PEN PEN NR FINANCE PARAMETER HW	RM RT RT RT RNRE NRT M SSF RSF RV V ULTS	resou Total Non re Non re Total us Use of Use o Use TH	newable irces as use of r energy enewable materia se of nor energy ie of sec renewal f non rer  Para	gy carried primary material enewable resource primary gy carried primary al utilization renewal resource ondary roble second primary fuels et fresh waste dis swaste of the primary resource or the primary fuels and primary resource or the primary fuels are the primary resource or the primary fuels are the pr	er renergy utilization de primar des renergy en er renergy en er renergy en en er gy en er en	as as as as ary ELOV	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 1.51E+( 0.00E+( 4.71E-( VD WAS A1-3 6.36E-03	00	- 34E-02 - - 31E+00 00E+00 00E+00 00E+00 48E-05 ATEC	1.85E-02 1.85E-02 1.85E-02 2.33E-01 0.00E+0 0.00E+0 0.00E+0 2.04E-02 A5 1.61E-05	2 3.07  1 1.63 0 0.00 0 0.00 0 0.00 3 1.67  COne B: 9.62E	E+00 E+00 E+00 E+00 E+00 E-03 Piecce-05 E-02	- 2.82E-02 7.17E-01 0.00E+00 0.00E+00 1.99E-05 e of One C2 1.63E-06	2.26E - 3.42E 0.00E 0.00E 1.78E K105 C4 2.39E	E-02 E+00 E+00 E-04 E-04 F-06 F-03	-2.88E+00 -2.78E+01 -0.00E+00 0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03		
PEN PEN PEN S RS NR FI RESU Param HW NHV	RM RT RT RNRE NRT M SF SSF W JILTS //D VVD	resour Total  Non re  Non re  Total us  Use of  Use of  Use of  Hazz	newable lices as use of r energy enewable ener enewable materia se of nor energy frenewal f non rer  Para ardous w azardous	gy carried primary material enewable resource primary gy carried primary gy carried primary all utilization renewable secondary resource primary all utilization renewable secondary resource primary and primary resource primary resource primary and resource primary resource prin	er renergy utilization renergy utilization researches renergy er renergy er renergy er renergy eition able primes material undary fur secondary fur secondar	as as as arry els life [i	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 1.51E+( 0.00E+( 4.71E-	00 00 01 1.6.3 01 1 1.6.3 01 1 1 1.6.3 01 1 1 1.6.3 01 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- 34E-02 31E+00 00E+00 00E+00 00E+00 00E+00 00E+00 00E+00	1.85E-02  1.85E-02  1.85E-02  1.85E-02	2 3.07  1 1.63 0 0.00 0 0.00 0 0.00 3 1.67 3 One 9.628 1.288	E+00 E+00 E+00 E+00 E+00 E+00 E-03 Piecc E-05 E-02 E-05	- 2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 1.99E-05 e of One C2 1.63E-06 9.02E-05	2.26E - 3.42E 0.00E 0.00E 1.78E K105 C4 2.39E 6.78E	E-02 E+00 E+00 E+00 E-04 G-06 G-03 G-06	-2.88E+00 -2.78E+01 -0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03 -6.80E-01		
PEN PEN S RS RS NR PEN	RM RT RT RT RM NRT M SF SF W JLTS LT VD VD VD VD U	resou Total Non re Non re Total us Use of Use o  OF TH  Haza Non ha Radii	newable irces as use of r energy enewable materia se of nor energy e of sec renewal f non rer  Jse of nor energy ardous w azardous oactive v	gy carried primary material enewable resource primary gy carried primary resource ondary resource on the resource of the resour	er renergy utilization renergy utilization le primarios renergy er renergy er renergy er renergy er renergy en la	as as as ary els ary U	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 1.51E+( 0.00E+( 4.71E-( VD WAS A1-3 6.36E-03 1.61E+00 3.55E-03	00 011 6.3 00 011 1.6 00 0.0 00 0.0 00 0.0 2 4.4 TE C A 3.68 2.03 2.11	- 34E-02 31E+00 00E+00 00E+00 00E+00 00E+00 00E+00 00E+00	1.85E-02  1.85E-02  2.33E-0  0.00E+0  0.00E+0  2.04E-02  A5  1.61E-05  1.88E-02  1.35E-05	2 3.07  1 1.63 0 0.00 0 0.00 0 0.00 3 1.67  3 9.62 1.28 3.67	E+00 E+00 E+00 E+00 E+00 E-03 Piecc 6-05 E-05 E-05	- 2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 1.99E-05 e of One C2 1.63E-06 9.02E-05 9.39E-07	2.26E - 3.42E 0.00E 0.00E 1.78E K105 C4 2.39E 6.78E 1.36E	=-02 =+00 =+00 =-04 =-06 03 06 ++00	-2.88E+00 -2.78E+01 -0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03 -6.80E-01		
PEN PEN S RS NR FINANCE PARAMETER HW NHV RW CR	RM RT RT RT RNRE NRT M SSF SSF W UILTS C/D UU R	resour Total  Non re  Non re  Total us  Use of  Use of  Use of  Annual Communication of the c	newable irces as use of r energy enewable ener enewable materia se of nor energy ie of sec renewal f non rer  Para ardous w azardous oactive v	gy carried primary material enewable resource primary gy carried primary gy carried primary all utilization renewal resource ondary roble secondary robles et freshowaste disaste disaste for recycles.	er renergy utilization renergy utilization researches renergy energy er renergy er renergy et energy et en	as as as as ary U	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 9.43E+( 0.00E+( 0.00E+( 0.00E+( 0.00E+( 4.71E-( 0.00E+( 4.71E-( 0.00E+( 0.00E+	00	- 34E-02 51E+00 00E+00 00E+00 00E+00 00E+00 48E-05 ATEC 4 E-06 E-04 E-06 E+00	1.85E-02 1.85E-02 1.85E-02 1.85E-02 1.85E-02 1.85E-02 1.85E-02 1.35E-05 0.00E+00	2 3.07  1 1.63 0 0.00 0 0.00 0 0.00 3 1.67 2 9.62 1.28 3.67 0.00 0	E+00 E+00 E+00 E+00 E+00 E-03 Piecc-05 E-02 E-05 E+00 E+00	- 2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 1.99E-05 e of One C2 1.63E-06 9.02E-05 9.39E-07 0.00E+00	2.26E - 3.42E 0.00E 0.00E 1.78E K105 C4 2.39E 6.78E 1.36E 0.00E	E-02 E+00 E+00 E+00 E-04 F-06 F-03 F-06 F-06 F-00 F-00 F-00 F-00 F-00 F-00	-2.88E+00 -2.78E+01 -0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03 -6.80E-01 -1.32E-03		
PEN PEN PEN S RS NR FI RESU Param HW NHV RW CR MF	RM RT NRE NRM NRT M SF SF W VD VD VD R R R	resour Total  Non ref  Non ref  Use of Use of Use of Coff TH  Hazz  Non ha  Radii  Coff MMater	newable lices as use of r energy enewable ener enewable materia se of nor energy from rer  Jse of nor rer  Para  ardous w azardous oactive v omponer laterials	gy carried primary material enewable resource primary gy carried primary gy carried primary gy carried primary all utilization renewable secondary reble seconewable fuels et fresh waste discussion waste discussion for recyclenergy resource primary and primary resource for recyclenergy resource primary resource for recyclenergy resource primary resource for recyclenergy resource primary materials.	er renergy utilization renergy utilization researches renergy en renergy er renergy er renergy either renergy e	els li [i	[MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ] [MJ]	0.00E+( 2.00E+( 9.43E+( 0.00E+( 9.43E+( 0.00E+( 0.00E+( 4.71E-( 4.71E-( 4.71E-0 3.55E-03 0.00E+00 0.00E+00	00 00 00 00 00 00 00 00 00 00 00 00 00	- 34E-02 51E+00 00E+00 00E+00 00E+00 00E+00 48E-05 ATEC 4 E-06 E-04 E-06 E+00	1.85E-02 1.85E-02 2.33E-0 0.00E+0 0.00E+0 2.04E-02 1.61E-05 1.88E-02 1.35E-05 0.00E+00 4.85E-01	2 3.07  1 1.63 0 0.00 0 0.00 0 0.00 3 1.67 1.28E 3.67E 0.00E	E+00 E+00 E+00 E+00 E+00 E-03 Piecc 6-05 E-02 E-05 E-00 E+00 E+00 E+00	2.82E-02 - 7.17E-01 0.00E+00 0.00E+00 1.99E-05 c of One C2 1.63E-06 9.02E-05 9.39E-07 0.00E+00 0.00E+00	2.26E - 3.42E 0.00E 0.00E 1.78E  K105  C4 2.39E 6.78E 1.36E 0.00E- 0.00E-	E-02 E+00 E+00 E-04 F-06 F-06 F-06 F-06 F-06 F-06 F-06 F-06	-2.88E+00 -2.78E+01 -0.00E+00 0.00E+00 -1.53E-02 ick Plate D -2.38E-03 -6.80E-01 -1.32E-03		



#### **Publisher**

Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin

10178 Berlin Mail Germany Web

Tel +49 (0)30 3087748- 0 Fax +49 (0)30 3087748- 29 Mail info@bau-umwelt.com Web www.bau-umwelt.com



#### Programme holder

Institut Bauen und Umwelt e.V. Panoramastr 1 10178 Berlin Germany Tel +49 (0)30 - 3087748- 0 Fax +49 (0)30 - 3087748 - 29 Mail info@bau-umwelt.com Web www.bau-umwelt.com



# Author of the Life Cycle Assessment

PE INTERNATIONAL AG
Hauptstraße 111-113
70771 Leinfelden-Echterdingen
Germany
W

Tel +49 (0)711 341817-0 Fax +49 (0)711 341817-25 Mail info@pe-international.com Web www.pe-international.com



#### Owner of the Declaration ASSA ABLOY 300 Main St.

Rockwood PA 15557

Tel +1 800-458-2424 Web www.rockwoodmfg.com