# **ZERO THRESHOLDS**





Allegion is pioneering safety by protecting people where they live and work – and protecting our environment at the same time. We promote the health and safety of our employees, customers and local community members worldwide through our commitment to conducting business in a safe and environmentally responsible manner.

Additionally, Allegion recognizes the value of the Leadership in Energy and Environmental Design (LEED) rating system to building environmentally safe and sustainable structures. By using Life Cycle Assessment and Environmental Product Declarations, we aim to provide our customers with the information they need to make decisions regarding their own sustainable building concepts and green solutions.

At Allegion, we value the importance of a cleaner world and are committed to being a responsible member of our global communities.







**Zero Thresholds** 

According to ISO 14025, EN 15804, and ISO 21930:2007

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. <u>Exclusions</u>: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address



the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

PROGRAM OPERATOR	UL Environment								
DECLARATION HOLDER	Schlage Lock Co-Allegion								
DECLARATION NUMBER	4787103471.127.1								
DECLARED PRODUCT	Zero Thresholds								
REFERENCE PCR	Product Category Rule (PCR) for prepari for Product Group Builders Hardware (Ul	ng an Environmental Product Declaration (EPD) _ 9004). Version: April 3rd, 2014							
REFERENCE PCR STANDARD	<ul><li>☑ EN 15804 (2012)</li><li>☑ ISO 21930 (2007)</li><li>☐ ISO 21930 (2017)</li></ul>								
DATE OF ISSUE	July 1, 2020								
PERIOD OF VALIDITY	5 Years								
CONTENTS OF THE DECLARATION	Product definition and information ab Information about basic material and Description of the product's manufact Indication of product processing Information about the in-use condition Life cycle assessment results Testing results and verifications	the material's origin							
The PCR review was conducte	ed by:	epd@ulenvironment.com							
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories  ☐ INTERNAL  ☐ EXTERNAL		Grant R. Martin, UL Environment							
This life cycle assessment wa accordance with ISO 14044 a		Thomas P. Gloria, Industrial Ecology Consultants							
		,							





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### 1. Product Definition and Information

#### 1.1. Description of Company/Organization

Allegion is a global pioneer in safety and security, with leading brands like LCN®, Schlage®, Steelcraft® and Von Duprin®. Focusing on security around the door and adjacent areas, Allegion produces a range of solutions for homes, businesses, schools and other institutions. Allegion is a \$2 billion company, with products sold in almost 130 countries.

As a subsidiary of Allegion plc, Zero International brand is recognized as the standard for quality in door sealing hardware. Their perimeter seals and thresholds are engineered for durability and reliable performance even under the most challenging installation and operating conditions. They also support green building applications by promoting heating and cooling efficiency.

#### 1.2. Product Description

#### **Product Identification**

Zero thresholds are designed primarily to close the gap between the floor and the bottom of a door. This helps keep external elements like air, water, snow, and pests from entering the indoors. The threshold works in conjunction with other products such as weatherstripping and door bottoms to help protect the indoors. Zero thresholds feature top-quality materials and construction, designed to stand up to the demands of heavy traffic applications as well as those with extreme temperature differentials.

**Table 1: Product specification** 

THRESHOLD CHARACTERISTICS											
Threshold Model Length (mm) Height (mm)											
65A Rabbeted thresholds-standard	127.0	12.7									
545A Saddle thresholds	127.0	6.4									
656A Saddle thresholds	152.4	12.7									
625A Thermal break thresholds	127.0	12.7									

For a complete list of products, see  $\underline{\sf Zero's\ Door\ Sealing\ Systems}$  product catalog.







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#### 1.3. Application

Zero thresholds are designed to be used in commercial applications such as health care, education, hospitality, and retail. The product can also be used residentially if desired.

**Table 2: BHMA standards** 

THRESHOLD MODEL	ANSI/ BHMA					
65A Rabbeted thresholds-standard	J36100, J36130					
545A Saddle thresholds	J32100, J32130					
656A Saddle thresholds	J32100, J32130					
625A Thermal break thresholds	-					
For a complete list of products, see Zero's Door Sealing Systems product catalog.						

<sup>\*</sup> All Zero thresholds are designed for heavy-duty applications and far exceed BHMA A156.22 cycle test and force test requirements for Grade 1.

#### 1.4. Declaration of Methodological Framework

This particular LCA is a cradle-to-gate with options LCA. A summary of the life cycle stages can be found in Table 11.

The cut-off criteria are described in Section 0 and allocation procedures are described in Section 2.8. No known flows are deliberately excluded from this EPD.

### 1.5. Technical Data

Table 3: Zero threshold classification standards

PARAMETER	STANDARD	VALUE / TESTING RESULT					
FIRE RATED-UL10C	ANSI/UL 10C	Pass					
ADA ACCESSIBLE	ICC/ANSI A117.1	Pass					
For a complete list of products, see Zero's Door Sealing Systems product catalog.							

This chart illustrates the most common types of threshold clasifications.

#### 1.6. Properties of Declared Product as Delivered

For shipping, all thresholds are packaged individually in cardboard boxes. Along with the threshold, an instruction manual, labels and screw bag are also included.







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#### 1.7. Material Composition

The materials that make up the thresholds are indicated in Table 4.

**Table 4: Material Composition** 

COMPONENT	MATERIAL	Mass %
	Neoprene	88.8 – 98.8%
Product	Silicone	0.0 – 3.8%
	PVC	0 .0- 8.3%
Fasteners	Steel	1.2 – 2.9%

#### 1.8. Manufacturing

Zero threshold products are manufactured at Allegion's Indianapolis plant, located at 2720 Tobey Dr, Indianapolis, IN 46219. Allegion receives metal sub-components from their suppliers in the US and China. These components are then assembled, finished and packaged in the facility in Indianapolis. Along with the threshold, an instruction manual, labels and a screw bag are also included in cardboard boxes.

Product is shipped to customers via UPS or LTL carriers.

Natural resources used in the manufacturing process include electricity, natural gas and water. Steel waste is also generated as parts of the product are formed, sheared and assembled. All steel waste is collected and recycled offsite.

#### 1.9. Packaging

Packaging utilized in the shipment of the product is described in Table 5.

Table 5: Packaging

PACKAGING TYPE	Material	AMOUNT (KG)	DISPOSAL PATHWAY
Screw pack bag	Polypropylene	0.001	Landfilled (68%), Incinerated (17%), Recycled (15%)
Plastic sleeve	Polypropylene	0.010	Landfilled (68%), Incinerated (17%), Recycled (15%)
Instruction sheet	Paper	0.040	Landfilled (20%), Incinerated (5%), Recycled (75%)

### 1.10. Transportation

It is assumed that all raw materials are distributed by truck, based on global region. An average distance using this information was calculated and used in the model.

An average shipping distance from the manufacturing location to the customer was utilized and was calculated from sales records. The transportation distance for all waste flows is assumed to be 161 km based on best available data.







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#### 1.11. Product Installation

Detailed installation instructions can be found online. While installation equipment is required to install the product, it is not included in the study as these are multi-use tools and the impacts per declared unit is considered negligible. All waste generated during installation, including packaging waste, is disposed of according to the tables found in Section 2.8.5 of *Part A: Life Cycle Assessment Calculation Rules and Report Requirements* from UL Environment.

### 1.12. Reuse, Recycling, and Energy Recovery

Zero threshold produts may be recycled or resued at the end of life. The LCA that this EPD is created from takes the conservative approach by assuming that all products are disposed of within the system boundary.

#### 1.13. Disposal

Disposal pathways in the EPD are modeled in accordance with disposal routes and waste classification referenced in Sections 2.8.5 and 2.8.6 of *Part A: Life Cycle Assessment Calculation Rules and Report Requirements* from UL Environment. This indicates an end-of-life split amongst landfill, recycling, and incineration pathways.

### 2. Life Cycle Assessment Background Information

#### 2.1. Declared Unit

The declared unit is one threshold per standard doorleaf, as indicated in Table 6.

**Table 6: Declared Unit** 

NAME	VALUE	Unit
Declared Unit	1 threshold p	er standard door leaf
Mass per Declare Unit, excluding fasteners	1.170	kg
Fasteners	0.010	kg







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### 2.2. System Boundary

The type of EPD is cradle-to-gate with options. All LCA modules are included and are summarized in Table 7.

**Table 7: System Boundary** 

Module Name	Description	Analysis Period	SUMMARY OF INCLUDED ELEMENTS
A1	Product Stage: Raw Material Supply	2018	Raw Material sourcing and processing as defined by secondary data.
A2	Product Stage: Transport	2018	Shipping from supplier to manufacturing site. Fuel use requirements estimated based on product weights and estimated distance.
А3	Product Stage: Manufacturing	2018	Energy, water and material inputs required for manufacturing products from raw materials. Packaging materials and manufacturing waste are included as well.
A4	Construction Process Stage: Transport	2018	Shipping from manufacturing site to project site. Fuel use requirements estimated based on product weights and mapped distance.
A5	Construction Process Stage: Installation	2018	Installation materials, installation waste and packaging material waste.
B1	Use Stage: Use	MND	Module not declared
B2	Use Stage: Maintenance	MND	Module not declared
В3	Use Stage: Repair	MND	Module not declared
B4	Use Stage: Replacement	MND	Module not declared
B5	Use Stage: Refurbishment	MND	Module not declared
B6	Operational Energy Use	MND	Module not declared
B7	Operational Water Use	MND	Module not declared
C1	EOL: Deconstruction	2018	No inputs required for deconstruction.
C2	EOL: Transport	2018	Shipping from project site to landfill. Distance assumed to be 100 miles from installation site to landfill.
C3	EOL: Waste Processing	2018	Waste processing not required. All waste can be processed as is.
C4	EOL: Disposal	2018	Assumes all products are sent to landfill. Landfill impacts modeled based on secondary data.
D	Benefits beyond system	MND	Module not declared

#### 2.3. Estimates and Assumptions

All estimates and assumptions are within the requirements of ISO 14040/44. The majority of the estimations are within the primary data. The primary data was collected as annual totals including all utility usage and production information. For the LCA, the usage information was divided by the production to create an energy and water use per declared unit, i.e., one threshold. Another assumption is that the installation tools are used enough times that the per threshold impacts are negligible.

#### 2.4. Cut-off Criteria

All inputs in which data was available were included. Material inputs greater than 1% (based on total mass of the final product) were included within the scope of analysis. Material inputs less than 1% were included if sufficient data was available to warrant inclusion and/or the material input was thought to have significant environmental impact. Cumulative excluded material inputs and environmental impacts are less than 5% based on total weight of the functional unit. The









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list of excluded materials and energy inputs include:

- Some raw materials were excluded. This was due to lack of adequate representative secondary data within GaBi. However, the excluded materials were significantly below the cut-off criteria and include minor additives. The excluded materials include:
  - o Finishes (0 2% of the threshold)

#### 2.5. Data Sources

Primary data were collected by facility personnel and from utility bills and was used for all manufacturing processes. Whenever available, supplier data was used for raw materials used in the production process. When primary data did not exist, secondary data for raw material production was utilized from GaBi Database Version 9.2.0.58, Service pack 39.

#### 2.6. Data Quality

#### Geographical Coverage

The geographical scope of the manufacturing portion of the life cycle is Indianapolis, Indiana. This LCA uses country specific energy datasets that take into account US eGrid specific energy and transportation mixes. Overall, the geographic coverage of primary data is considered good.

#### Time Coverage

Primary data were provided by Allegion associates and represent calendar year 2018. Using 2018 data meets the PCR requirement that manufacturer specific data be within the last 5 years. Time coverage of this data is considered good. Data necessary to model cradle-to-gate unit processes was sourced from thinkstep LCI datasets. Time coverage of the GaBi datasets varies from approximately 2010 to present. All datasets rely on at least one 1-year average data. Overall time coverage of the datasets is considered good and meets the requirement of the PCR that all data be updated within a 10-year period. The specific time coverage of secondary datasets can be referenced in the dataset references table in each supplemental LCA report.

#### **Technological Coverage**

Primary data provided by Allegion are specific to the technology that the company uses in manufacturing their product. It is site specific and considered of good quality. It is worth noting that the energy and water used in manufacturing the product includes overhead energy such as lighting, heating and sanitary use of water. Sub-metering was not available to extract process only energy and water use from the total energy use. Sub-metering would improve the technological coverage of data quality. Data necessary to model cradle-to-gate unit processes was sourced from thinkstep LCI datasets. Technological coverage of the datasets is considered good relative to the actual supply chain of Allegion. While improved life cycle data from suppliers would improve technological coverage, the use of lower quality generic datasets does meet the goal of this EPD.

#### 2.7. Period under Review

The period under review is calendary year 2018.

#### 2.8. Allocation

General principles of allocation were based on ISO 14040/44. Where possible, allocation was avoided. When allocation was necessary it was done on a physical mass basis. Allocation was most prevalent in the secondary GaBi datasets used to represent upstream processes. As a default, GaBi datasets use a physical mass basis for allocation.









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## 3. Life Cycle Assessment Scenarios

Table 8: Transport to the building site (A4)

Name	VALUE	Unit
Fuel type	Diesel	
Liters of fuel	39.0625	l/100km
Vehicle type	Truck	
Transport distance	621.30	km
Capacity utilization	0.65	%
Gross density of products transported	221.71	kg/m³
Capacity utilization volume factor	1	-

Table 9: Installation into the building (A5)

Name	VALUE	Unit
Fasteners	0.01	kg
Product loss per functional unit	0	kg
Waste materials at the construction site before waste processing, generated by product installation	0	kg
Direct emissions to ambient air, soil and water	0	kg
VOC emissions	N/A	μg/m³

Table 10: End of life (C1-C4)

NAME		VALUE	Unit
	Collected separately	0	kg
Collection process	Collected with mixed construction waste	1.191	kg
	Reuse	0	kg
Recovery	Recycling	1.012	kg
Recovery	Landfill	0.178	kg
	Incineration	0	kg
Disposal	Product or material for final deposition	0.178	kg







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## 4. Life Cycle Assessment Results

Table 11: Description of the system boundary modules

	PRODUCT STAGE			CONS T IC PROO STA	- <u>.</u> ON CESS	USE STAGE					END	OF L	IFE STA	GE	BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY		
	A1	A2	А3	A4	<b>A5</b>	B1	B2	В3	В4	B5	В6	В7	C1	C2	СЗ	C4	D
	Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use	Building Operational Water Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
Cradle to Gate with Options		Х		Х	Х	MND	MND	MND	MND	MND	MND	MND	Х	Х	Х	X	MND

## 4.1. Life Cycle Impact Assessment Results

**Table 12: CML Results** 

CML v4.2	A1-A3	A4	A5	В1	В2	ВЗ	В4	В5	В6	В7	C1	C2	C3	C4	D
ADP-elements [kg Sb eq]	-8.50E-06	1.81E-08	-3.00E-10	MND	0.00E+00	2.77E-09	0.00E+00	3.09E-09	0.00E+00						
ADP-fossil fuel [MJ]	1.95E+02	1.34E+00	-1.58E-02	MND	0.00E+00	2.05E-01	0.00E+00	1.16E-01	0.00E+00						
AP [kg SO <sub>2</sub> eq]	5.11E-02	3.22E-04	1.51E-05	MND	0.00E+00	2.98E-05	0.00E+00	3.17E-05	0.00E+00						
EP [kg Phosphate eq]	3.74E-03	9.07E-05	8.95E-06	MND	0.00E+00	8.59E-06	0.00E+00	7.24E-06	0.00E+00						
GWP [kg CO <sub>2</sub> eq]	1.56E+01	9.65E-02	1.41E-02	MND	0.00E+00	1.46E-02	0.00E+00	7.50E-03	0.00E+00						
ODP [kg CFC 11 eq]	2.27E-08	9.00E-18	-5.63E-18	MND	0.00E+00	1.38E-18	0.00E+00	2.72E-17	0.00E+00						
POCP [kg Ethene eq]	3.00E-03	-4.59E-05	5.37E-06	MND	0.00E+00	-4.47E-06	0.00E+00	2.81E-06	0.00E+00						







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#### **Table 13: TRACI Results**

TRACI v2.1	A1-A3	A4	A5	В1	В2	ВЗ	В4	В5	В6	В7	C1	C2	C3	C4	D
AP [kg SO <sub>2</sub> eq]	4.96E-02	4.37E-04	2.65E-05	MND	0.00E+00	3.94E-05	0.00E+00	4.16E-05	0.00E+00						
EP [kg N eq]	2.46E-03	3.65E-05	7.16E-06	MND	0.00E+00	3.83E-06	0.00E+00	4.67E-06	0.00E+00						
GWP [kg CO <sub>2</sub> eq]	1.55E+01	9.65E-02	1.35E-02	MND	0.00E+00	1.46E-02	0.00E+00	7.46E-03	0.00E+00						
ODP [kg CFC 11 eq]	2.47E-08	-5.11E-16	1.51E-16	MND	0.00E+00	-7.82E-17	0.00E+00	-3.92E-16	0.00E+00						
Resources [MJ]	2.02E+01	1.79E-01	-4.82E-04	MND	0.00E+00	2.74E-02	0.00E+00	1.49E-02	0.00E+00						
SFP [kg O₃ eq]	5.41E-01	1.02E-02	1.54E-04	MND	0.00E+00	8.84E-04	0.00E+00	6.87E-04	0.00E+00						

## 4.2. Life Cycle Inventory Results

#### **Table 14: Resource Use**

IMPACT CATEGORY	A1-A3	A4	A5	B1	B2	В3	В4	В5	В6	В7	C1	C2	C3	C4	D
PERE [MJ]	4.39E+01	4.17E-02	-4.53E-03	MND	0.00E+00	6.39E-03	0.00E+00	9.09E-03	MND						
PERM [MJ]	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						
PENRE [MJ]	2.19E+02	1.35E+00	-2.48E-02	MND	0.00E+00	2.06E-01	0.00E+00	1.19E-01	MND						
PENRM [MJ]	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						
SM [kg]	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						
RSF [MJ]	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						
NRSF [MJ]	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						
RE [MJ]	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						
FW [m³]	1.89E-01	1.62E-04	4.49E-06	MND	0.00E+00	2.48E-05	0.00E+00	1.42E-05	MND						

**Table 15: Output Flows and Waste Categories** 

IMPACT CATEGORY	A1-A3	A4	A5	B1	В2	ВЗ	В4	В5	В6	В7	C1	C2	C3	C4	D
HWD [kg]	1.30E-02	1.09E-08	1.10E-10	MND	0.00E+00	1.67E-09	0.00E+00	4.18E-10	MND						
NHWD [kg]	2.22E+00	5.08E-05	1.63E-02	MND	0.00E+00	7.77E-06	0.00E+00	1.70E-01	MND						
HLRW [kg]	1.13E-05	3.60E-09	-4.21E-09	MND	0.00E+00	5.52E-10	0.00E+00	1.45E-09	MND						
ILLRW [kg]	9.23E-03	2.98E-06	-3.52E-06	MND	0.00E+00	4.56E-07	0.00E+00	1.15E-06	MND						
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						
R [kg]	0.00E+00	0.00E+00	3.59E-02	MND	0.00E+00	0.00E+00	9.64E-01	0.00E+00	MND						
MER [kg]	0.00E+00	0.00E+00	4.43E-03	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						
EE [MJ]	0.00E+00	0.00E+00	1.08E-02	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND						









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### 5. LCA Interpretation

The dominance analysis shows that the Production Stage (A1-A3) of the life cycle is responsible for the vast majority of impacts across all impact categories. Specifically, phases A1-A3 contributes the most to ADP-fossil through electricity and thermal energy used during manufacturing. The resources used to extract, and process (electricity and thermal energy) steel and aluminum mainly contribute to the impacts in the A1-A3 module. Transportation to customer (A4) and installation (A5) stages have second and third highest ADP-fossil impacts respectively. This is mainly due to fuels used for transportation to customer and steel fasteners used to install the product.

#### 6. Additional Environmental Information

#### 6.1. Environment and Health During Manufacturing

Allegion meets all federal and state standards related to the Environment and Health during manufacturing. Additionally, Allegion employs a strict waste minimization and recycling program that reduces and recycles waste produced in the manufacturing process.

Beyond what is regulated, there are no additional environment and health considerations during the production of goods.

#### 6.2. Environment and Health During Use

There are no environmental or health considerations during the use of the product.







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## 7. Supporting Documentation

The full text of the acronyms found in Section 4 are found in Table 16.

Table 16. Acronym Key

ACRONYM	Техт	ACRONYM	Техт
	LCA In	dicators	
ADP- elements	Abiotic depletion potential for non-fossil resources	GWP	Global warming potential
ADP-fossil	Abiotic depletion potential for fossil resources	OPD	Depletion of stratospheric ozone layer
AP	Acidification potential of soil and water	POCP	Photochemical ozone creation potential
EP	Eutrophication potential	Resources	Depletion of non-renewable fossil fuels
	LCI Inc	dicators	
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PENRT	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)
PERM	Use of renewable primary energy resources used as raw materials	SM	Use of secondary materials
PERT	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	RSF	Use of renewable secondary fuels
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	NRSF	Use of non-renewable secondary fuels
PENRM	Use of non-renewable primary energy resources used as raw materials	FW	Net use of fresh water
HWD	Disposed-of-hazardous waste	MFR	Materials for recycling
NHWD	Disposed-of non-hazardous waste	MET	Materials for energy recovery
RWD	Disposed-of Radioactive waste	EEE	Exported electrical energy
CRU	Components for reuse	EET	Exported thermal energy







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According to ISO 14025, EN 15804 and ISO 21930:2007

#### 8. References

- 1. Life Cycle Assessment, Allegion, LCA report for Zero Gasketing and Thresholds. WAP Sustainability Consulting. April 2020.
- 2. Product Category Rule (PCR) for preparing an Environmental Product Declaration (EPD) for Product Group Builders Hardware (UL 9004). Version: April 3rd, 2014
- 3. ISO 14044: 2006 Environmental Management Life cycle assessment Requirements and Guidelines.
- 4. ISO 14025: 2006 Environmental labels and declarations Type III environmental declarations Principles and Procedures.
- 5. ISO 21930: 2007 Sustainability in building construction -- Environmental declaration of building products
- 6. EN 15804: 2012-04 Sustainability of construction works Environmental Product Declarations Core rules for the product category of construction product.

