

# Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

## TESA GD15EM Guide Rail with Electro-Mechanical Hold-Open Device

from

# ASSA ABLOY

Programme:	The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0024031
EPD Type:	Product Specific
Publication date:	2025-06-05
Revision Date	N/A
Valid until:	2030-06-05

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com)



## General information

### Programme information

<b>Programme:</b>	The International EPD <sup>®</sup> System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	www.environdec.com
<b>E-mail:</b>	info@environdec.com

### Accountabilities for PCR, LCA and Independent, Third-Party Verification

#### Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): PCR 2019:14 Construction products, version 1.3.3

c-PCR to PCR 2019:14 Building hardware (EN 17610:2022) Version: 2022-11-04

PCR review was conducted by: The Technical Committee of the International EPD System. See [www.environdec.com](http://www.environdec.com) for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat [www.environdec.com/contact](http://www.environdec.com/contact).

#### Life Cycle Assessment (LCA)

LCA accountability: Marquis Miller - Sustainable Solutions Corporation

**Main Database: Sphera**

**LCA Software: LCA for Experts (Previously know as GaBi) v10.6**

**LCA/EPD Tool: ASSA ABLOY EMEIA EPD Generator**

#### Third-Party Verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by individual verifier

Third-party verifier: Jane Anderson, Ph.D. *Jane Anderson*

Approved by: The International EPD<sup>®</sup> System

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes  No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## Company Information

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<u>Owner of the EPD:</u>	Abloy Oy Wahlforssinkatu 20 80100 Joensuu, FINLAND
<u>Contact:</u>	Olympia Dolla olympia.dolla@assaabloy.com
<u>Description of the organisation:</u>	ASSA ABLOY remains committed to the principles of the UN Global Compact in the areas of human rights, labor, the environment, and anti-corruption.
<u>Product-related or management system-related certifications:</u>	ASSA ABLOY works hard to minimize the environmental impacts of its business activities through various corporate-wide sustainability initiatives. To learn more, please visit: <a href="https://www.assaabloy.com/sv/com/sustainability/sustainability-report/">https://www.assaabloy.com/sv/com/sustainability/sustainability-report/</a>
<u>Name and location of production site:</u>	Joensuu, Finland

## Product Information

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<u>Product name:</u>	TESA GD15EM Guide Rail with Electro-Mechanical Hold-Open Device
<u>Product identification:</u>	Electronically powered hold-open device for swing doors certified according to EN1155
<u>Product description:</u>	Product name: GD15EM Product characteristic: Electronically powered hold-open device GDE15EM has the electro-mechanical hold-open device is integrated into the guide rail. <ul style="list-style-type: none"><li>· Certified in compliance with EN 1155, size 3-6</li><li>· Suitable for fire and smoke protection doors</li><li>· For single leaf doors up to 1400 mm width</li></ul> Features <ul style="list-style-type: none"><li>· Suitable for hinge side and non-hinge side mounting</li><li>· Height-adjustable, grooved spindle (14 mm) compensates installation mistakes</li></ul>
<u>UN CPC code:</u>	47211
<u>Geographical scope:</u>	Europe, Middle East, America, Asia and Africa

## LCA Information

Functional unit / declared unit: The declaration refers to the declared unit of 1 kilogram of electromechanical accessories, as specified in the Builders Hardware PCR. For any product group EPDs, an impact assessment was completed for each product and the highest impacts were reported as conservative representations of the product group. Product grouping was considered appropriate if the individual product impacts differed by no more than  $\pm 10\%$  in any impact category.

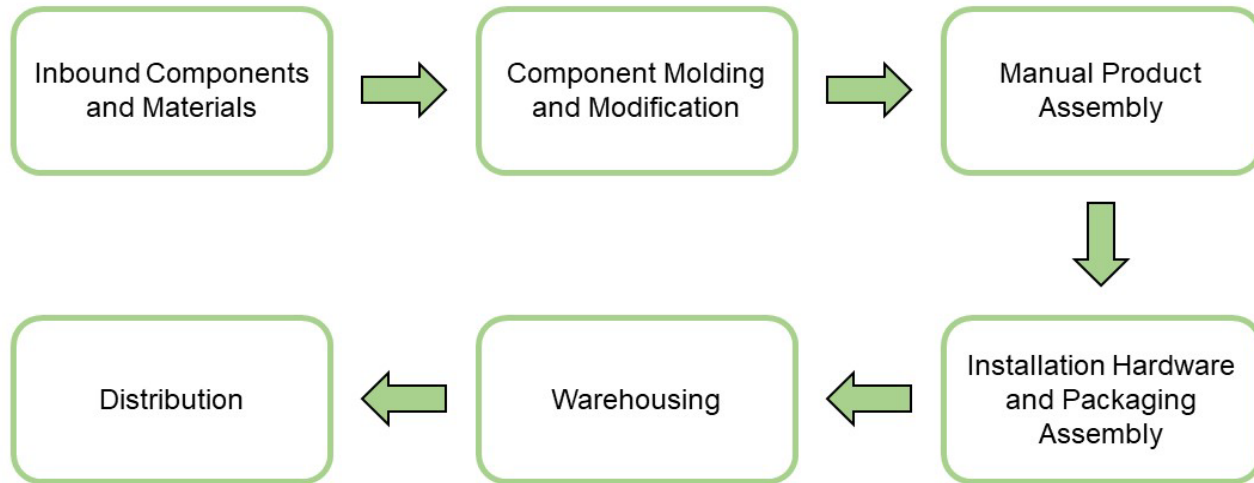
Name	Value	Unit
Declared Unit	1	kg
Mass Per Product	3.9	kg
Products Required to Achieve Declared Unit	0.2581	-

Reference service life: The reference service life of the TESA GD15EM Guide Rail with Electro-Mechanical Hold-Open Device is estimated to be 10 years. The 10 years is based on the support & service life of the TESA GD15EM Guide Rail with Electro-Mechanical Hold-Open Device and neither factual nor estimated life time.

Time representativeness: The period under review is the full calendar year of 2022.

Database(s) and LCA software used: LCA for Experts developed by Sphera was the LCA software used for the study. Primary data were collected for every process in the product system under the control of ASSA ABLOY Corporate. Secondary data from the LCA for Experts Sphera database were utilized. These data were evaluated and have temporal, geographic, and technical coverage appropriate to the scope of the Builder's Hardware product category.

Description of system boundaries: Cradle to grave and module D (A + B + C + D)



Cut-off Criteria:

Processes whose total contribution to the final result, with respect to their mass and in relation to all considered impact categories, is less than 1% can be neglected. The sum of the neglected processes may not exceed 5% by mass and by 5% of the considered impact categories for each module. For that a documented assumption is admissible. The below activities were cut off as they met the above criteria.

- Human Activity
- Capital Equipment

	Product Stage			Construction Process Stage		Use Stage							End-of-Life Stage†				Benefits and Loads Beyond the System Boundaries	
	Raw material supply	Transport	Manufacturing	Transport from gate to the site	Construction/ installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction /demolition	Transport	Waste processing	Disposal	Reuse-Recovery- Recycling potential	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules declared	X	X	X	X	X	X	X*	X*	X*	X*	X	X*	X*	X	X	X	X	X
Geography	Europe	Europe	Europe	Europe	Europe	EMEIA	EMEIA	EMEIA	EMEIA	EMEIA	EMEIA	EMEIA	EMEIA	EMEIA	EMEIA	EMEIA	EMEIA	
Specific data used	1%																	
Variation - Products	Not Relevant																	
Variation - sites	Not Relevant																	

(X = Included; MND = Module Not Declared)

\* These phases are zero and may be removed from tables for formatting.

† 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.

## Content Information

The LCI method principle for the processes used in this study was attributional and no impact has been assigned to pre- or post-consumer recycled materials entering or leaving the system.

Product Components	Weight, kg	Post-consumer material, weight-%	Pre-consumer material, weight-%	Total secondary material, weight-%	Biogenic material, kg C/kg
Brass	4.09E-03	74.0%	16.0%	90.0%	-
Stainless Steel	4.15E-03	42.0%	20.0%	62.0%	-
Steel	3.75E-01	3.0%	10.0%	13.0%	-
Aluminum	5.07E-01	-	56.0%	56.0%	-
Copper	0.00E+00	-	2.0%	2.0%	-
Glass	0.00E+00	-	25.0%	25.0%	-
Electronics/Mechanics	2.32E-10	-	-	-	-
Plastics	4.87E-02	-	-	-	-
Other	6.19E-02	-	-	-	-
<b>Total</b>	<b>1.00E+00</b>	-	-	-	-
Packaging Materials	Weight, kg	Post-consumer material, weight-%	Pre-consumer material, weight-%	Total secondary material, weight-%	Biogenic material, kg C/kg
Cardboard	2.04E-02	Not Specified	Not Specified	27.3%	6.86E-03
Paper	1.68E-02	-	-	-	5.64E-03
Plastics	5.16E-04	-	-	-	-
<b>Total</b>	<b>3.77E-02</b>	-	-	-	<b>1.25E-02</b>

The product has been tested for substances which exceed the limits for registration with the European Chemicals Agency regarding the “Candidate List of Substances of Very High Concern for Authorisation”. For more information, please visit: <https://echa.europa.eu/scip-database>

## Additional Environmental Information

### Transportation

ASSA ABLOY EMEIA products are sold globally. The assumptions used are based off of major product markets and the PCR. End users may need to adapt impacts based on their location.

Transport to Building Site (A4)		
Name	Value	Unit
Liters of fuel	0.16	l/100km per kg
Transport distance (Truck)	400	km
Capacity utilization (including empty runs)	36	%
Gross density of products transported	-	kg/m <sup>3</sup>
Capacity utilization volume factor	1.00	-

### Product Installation

TESA GD15EM Guide Rail with Electro-Mechanical Hold-Open Device products are distributed through and installed by trained installation technicians, such as locksmiths, carpenters etc. adhering to local/national standards and requirements.

Installation into the building (A5)		
Name	Value	Unit
Auxiliary materials	-	kg
Water consumption	-	m <sup>3</sup>
Other resources	-	kg
Electricity consumption	0.00	kWh
Other energy carriers	-	MJ
Waste materials at construction site	0.04	kg
Output substance (recycle)	0.02	kg
Output substance (landfill)	0.01	kg
Output substance (incineration)	0.01	kg
Direct emissions to ambient air*, soil, and water	0.05	kg CO <sub>2</sub>

Reference Service Life		
Name	Value	Unit
Reference Service Life	10	years

\*CO<sub>2</sub> emissions to air from disposal of packaging

### Product Use

The product is possible to reuse during the reference service life and can be moved from one similar door opening to another. No auxiliary or consumable materials are incurred for maintenance and usage of the product. Repairs or replacement are not usually necessary. No cleaning efforts need to be taken into consideration. The use phase covers the 10 year service life of the product using a European electricity grid mix. This product was in on mode 24 hours out of the day for 365 days out of the year and uses 1.44 W per mode.

Operational Energy Use (B6)		
Name	Value	Unit
Water consumption (from tap, to sewer)	-	m <sup>3</sup>
Electricity consumption	126.1	kWh
Other energy carriers	-	MJ
Equipment output	-	kW
Direct emissions to ambient air, soil, and water	-	kg

## Disposal

The product can be mechanically disassembled to separate the different materials. For applicable products, 95% of the metal materials used are recyclable, 42.5% of the electronics are recyclable, and 30% of the glass is recyclable. The remainder of components are disposed by sending to landfill.

Disclaimer: The results of Module A should not be used without considering the results of Module C.

End of life (C1-C4)		
Name	Value	Unit
Collected separately	0.87	kg
Collected as mixed construction waste	0.13	kg
Reuse	0.00	kg
Recycling	0.87	kg
Energy recovery	0.00	kg
Landfilling	0.13	kg

## Re-use Phase

The majority, by weight, of door components is metal, which can be recycled. Module D is modelled to reflect the offset of virgin material production in the next product life by calculating the net benefit of the primary material process and the point of substitution recycling process.

Module D Flows		
Input	Value	Unit
Recycling potential aluminium sheet	1.91E-01	kg/kg
Recycling potential copper sheet	0.00E+00	kg/kg
Glass cullet	0.00E+00	kg/kg
EAF Steel billet / slab / bloom	2.80E-01	kg/kg
Zinc scrap elZinc - Asturiana de Laminados (D out A5)	2.23E-02	kg/kg
Plastic granulate secondary (low metal contamination)	1.16E-04	kg/kg
Corrugated Board 2018; 84,5% recycled fiber; cut-off EoL	8.90E-03	kg/kg
Outputs	Value	Unit
Aluminium ingot mix	-1.91E-01	kg/kg
Brass component (EN15804 A1-A3)	-3.50E-04	kg/kg
Copper sheet mix (Europe 2015)	0.00E+00	kg/kg
Float flat glass (open sec. material)	0.00E+00	kg/kg
Ferro nickel (29%)	0.00E+00	kg/kg
BF Steel billet / slab / bloom	-2.80E-01	kg/kg
Zinc redistilled mix	-2.23E-02	kg/kg
Electronics scrap [Waste for recovery]	-8.51E-04	kg/kg
High impact polystyrene (HIPS)	0.00E+00	kg/kg
Polyethylene low density granulate (LDPE/PE-LD)	-1.16E-04	kg/kg
Corrugated board excl. paper production 2015, open paper input, average composition	-8.90E-03	kg/kg

## Results of the Environmental Performance Indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Results shown below were calculated using EN 15804+A2 (EF 3.1) Methodology.

EN 15804+A2 Impact Assessment										
Parameter	Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP-total	Climate change - total	kg CO2-Eq.	7.41E+00	3.73E-02	2.11E-02	3.80E+01	4.50E-03	1.34E-02	1.20E-01	-5.38E-01
GWP-fossil	Climate change, fossil	kg CO2-Eq.	7.44E+00	3.66E-02	1.85E-03	3.77E+01	4.41E-03	1.33E-02	1.48E-02	-5.37E-01
GWP-biogenic	Climate change, biogenic	kg CO2-Eq.	-4.58E-02	0.00E+00	4.58E-02	3.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-lulc	Climate change, land use and land use change	kg CO2-Eq.	3.53E-03	6.21E-04	4.11E-06	5.72E-03	7.48E-05	4.28E-06	1.26E-05	-3.22E-04
ODP	Ozone depletion	kg CFC-11 Eq.	1.68E-11	5.44E-15	5.74E-15	8.53E-10	6.56E-16	1.78E-13	1.33E-14	5.04E-09
AP	Acidification	Mole of H+ eq.	7.63E-02	2.35E-04	8.95E-06	7.28E-02	2.83E-05	6.68E-05	3.52E-05	-3.42E-03
EP-freshwater	Eutrophication, freshwater	kg P eq.	1.40E-05	1.58E-07	6.57E-08	1.56E-04	1.90E-08	6.05E-08	2.72E-06	1.19E-06
EP-marine	Eutrophication, marine	kg N eq.	7.23E-03	1.15E-04	4.05E-06	1.82E-02	1.38E-05	3.03E-05	3.08E-05	-4.65E-04
EP-terrestrial	Eutrophication, terrestrial	Mole of N eq.	7.45E-02	1.27E-03	3.99E-05	1.90E-01	1.53E-04	3.30E-04	1.30E-04	-5.18E-03
POCP	Photochemical ozone formation, human health	kg NMVOC eq.	2.29E-02	2.27E-04	1.19E-05	4.80E-02	2.74E-05	8.20E-05	7.38E-05	-1.64E-03
ADP-minerals&metals	Resource use, mineral and metals	kg Sb eq.	9.28E-04	3.22E-09	1.42E-10	7.05E-06	3.88E-10	2.19E-09	2.91E-10	-5.80E-05
ADP-fossil	Resource use, fossils	MJ	9.25E+01	4.87E-01	1.99E-02	7.90E+02	5.86E-02	2.37E-01	1.03E-01	-4.11E+00
WDP	Water use	m³ world equiv.	2.98E+00	5.72E-04	1.45E-03	1.04E+01	6.89E-05	2.49E-03	4.90E-04	-1.04E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									

*\*All use phase stages have been considered and only those with non-zero values have been reported*

The following table contains disclaimers from EN 15804+A2 for the impact categories used above.

ILCD classification	Indicator	Disclaimer
ILCD Type 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD Type 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD Type 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2
	Potential Soil quality index (SQP)	2
Disclaimer 1 - This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.		
Disclaimer 2 - The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.		

Results shown below were calculated using EN 15804+A2 (EF 3.1) Methodology.

Additional Mandatory Impact Assessment										
Parameter	Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
GWP-GHG	Climate change - GHG	kg CO2-Eq.	7.45E+00	3.72E-02	1.85E-03	3.77E+01	4.48E-03	1.33E-02	1.48E-02	-5.37E-01
PM	Particulate matter	Disease incidences	8.96E-07	1.03E-09	6.46E-11	6.08E-07	1.24E-10	5.57E-10	3.56E-10	-5.64E-08
IR-human health	Ionising radiation, human health	kBq U235 eq.	4.53E-01	1.29E-04	1.40E-04	2.08E+01	1.55E-05	4.33E-03	1.86E-04	2.11E-02
Ecotox	Ecotoxicity, freshwater	CTUe	3.19E+01	3.61E-01	1.16E-02	2.29E+02	4.35E-02	1.05E-01	1.25E-01	-4.91E-01
HT-cancer	Human toxicity, cancer	CTUh	9.84E-09	7.30E-12	4.31E-13	1.29E-08	8.80E-13	3.79E-12	2.84E-12	-1.77E-09
HT-non cancer	Human toxicity, non-cancer	CTUh	2.76E-07	3.28E-10	1.98E-11	1.97E-07	3.95E-11	6.34E-11	1.91E-10	-2.93E-08
LU	Land use	Pt	1.92E+01	2.39E-01	5.16E-03	3.33E+02	2.88E-02	8.32E-02	1.07E-02	1.47E+00

\*All use phase stages have been considered and only those with non-zero values have been reported

Results shown below were calculated using EN 15804+A2 (EF 3.1) Methodology.

Additional Mandatory Impact Assessment			
Manufacturing Country	Electricity Source	GWP-GHG	Unit
Finland	FI: Residual grid mix Sphera	2.91E-01	kg CO2-Eq./kWh

Results below contain the resource use throughout the life cycle of the product.

Resource Use										
Parameter	Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
PERE	Renewable primary energy as energy carrier	MJ	3.97E+01	4.19E-02	7.90E-02	5.71E+02	5.05E-03	1.22E-01	1.05E-02	1.77E-01
PERM	Renewable primary energy resources as material utilization	MJ	6.17E-01	0.00E+00	-6.17E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	Total renewable primary energy resources	MJ	4.04E+01	4.19E-02	-5.38E-01	5.71E+02	5.05E-03	1.22E-01	1.05E-02	1.77E-01
PENRE	Nonrenewable primary energy as energy carrier	MJ	9.25E+01	4.87E-01	2.51E-02	7.90E+02	5.86E-02	2.37E-01	1.03E-01	-4.11E+00
PENRM	Nonrenewable primary energy as material utilization	MJ	1.53E+00	0.00E+00	-2.25E-02	0.00E+00	0.00E+00	0.00E+00	-1.51E+00	0.00E+00
PENRT	Total non-renewable primary energy	MJ	9.41E+01	4.87E-01	2.66E-03	7.90E+02	5.86E-02	2.37E-01	-1.41E+00	-4.11E+00
SM	Use of secondary material	kg	3.44E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	Use of renewable secondary fuels	MJ	3.84E-37	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	Use of nonrenewable secondary fuels	MJ	4.51E-36	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	Use of net fresh water	m <sup>3</sup>	9.82E-02	4.67E-05	3.58E-05	4.37E-01	5.63E-06	1.01E-04	1.49E-05	-9.79E-03
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

\*All use phase stages have been considered and only those with non-zero values have been reported

Results below contain the output flows and wastes throughout the life cycle of the product.

Output Flows and Waste Categories										
Parameter	Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
HWD	Hazardous waste disposed	kg	3.51E-06	1.86E-11	1.56E-11	1.14E-06	2.24E-12	2.46E-10	1.78E-11	1.00E-08
NHWD	Non-hazardous waste disposed	kg	2.57E+00	7.95E-05	5.96E-03	6.51E-01	9.57E-06	1.42E-04	1.05E-01	-1.18E-01
HLRW	High-level radioactive waste	kg or m <sup>3</sup>	4.17E-03	8.87E-07	9.19E-07	1.26E-01	1.07E-07	2.64E-05	1.25E-06	2.33E-04
ILLRW	Intermediate- and low-level radioactive waste	kg or m <sup>3</sup>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU	Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR	Materials for recycling	kg	0.00E+00	0.00E+00	2.24E-02	0.00E+00	0.00E+00	8.71E-01	0.00E+00	0.00E+00
MER	Materials for energy recovery	kg	0.00E+00	0.00E+00	7.63E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE	Recovered energy exported from system	MJ	0.00E+00	0.00E+00	7.93E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

\*All use phase stages have been considered and only those with non-zero values have been reported

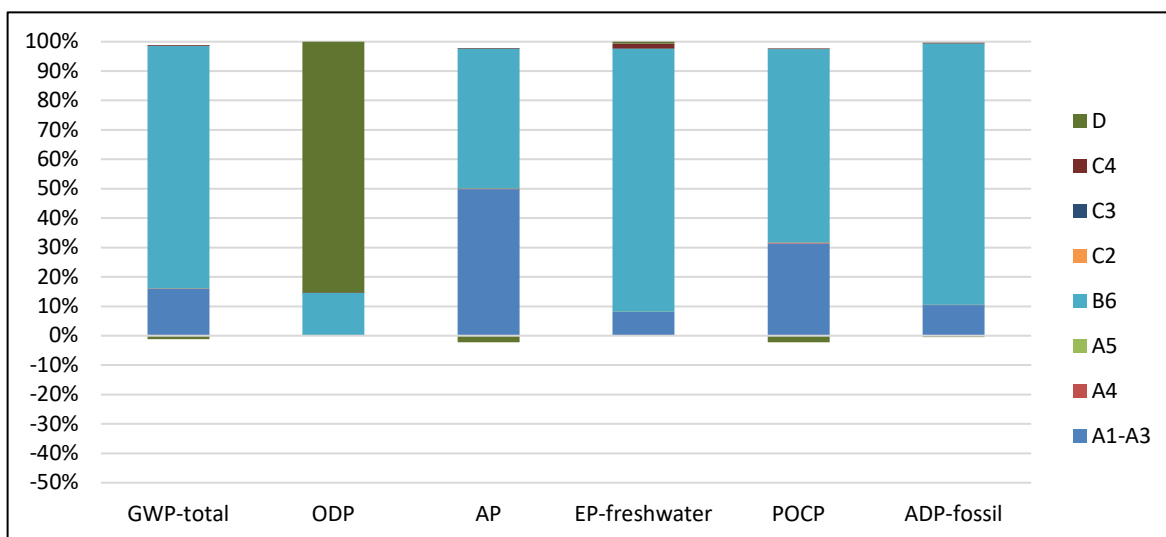
Results below contain direct greenhouse gas emissions and removals throughout the life cycle of the product.

Resource Use										
Parameter	Parameter	Unit	A1-A3	A4	A5	B6	C2	C3	C4	D
BCRP	Biogenic Carbon Removal from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	Biogenic Carbon Emissions from Product	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	Biogenic Carbon Removal from Packaging	kg CO <sub>2</sub>	4.58E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	Biogenic Carbon Emissions from Packaging	kg CO <sub>2</sub>	0.00E+00	0.00E+00	4.58E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	Biogenic Carbon Emissions from Combustion of Waste from Renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	Calcination Carbon Emissions	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	Carbonation Carbon Removal	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	Carbon Emissions from Combustion of Waste from Non-renewable Sources Used in Production Process	kg CO <sub>2</sub>	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

\*All use phase stages have been considered and only those with non-zero values have been reported

## LCA Interpretation

The use phase was an impactful stage due to operational energy use throughout the product's lifetime. The raw materials, raw material transportation, and production (A1-A3) phases also were impactful stages in the cradle-to-grave impacts. These results were influenced by the energy and resources needed to create the raw materials (primarily metals), electricity during manufacturing, and fuel processing from natural gas, diesel, and gasoline. Benefits were achieved in Module D from the recycling of metals and electronic components.



## Additional Environmental Information

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

- Environmental operations, GHG, energy, water, waste, VOC, surface treatment, and H&S are being routinely monitored. Inspections, audits, and reviews are conducted periodically to ensure that applicable standards are met and environment management program effectiveness is evaluated.
- Code of Conduct covers human rights, labor practices and decent work. Management of ASSA ABLOY is aware of their environmental roles and responsibilities, providing appropriate training, supporting accountability, and recognizing outstanding performance.
- Any waste metals during machining are separated and recycled. Where applicable, the waste from the water-based painting process is delivered to waste treatment plant.

Environmental and Health During Installation: 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.

Environmental Activities and Certifications: ASSA ABLOY works hard to minimize the environmental impacts of its business activities through various corporate-wide sustainability initiatives. To learn more, please visit: <https://www.assaabloy.com/sv/com/sustainability/sustainability-report/>

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## Contact Information

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### Study Commissioner



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