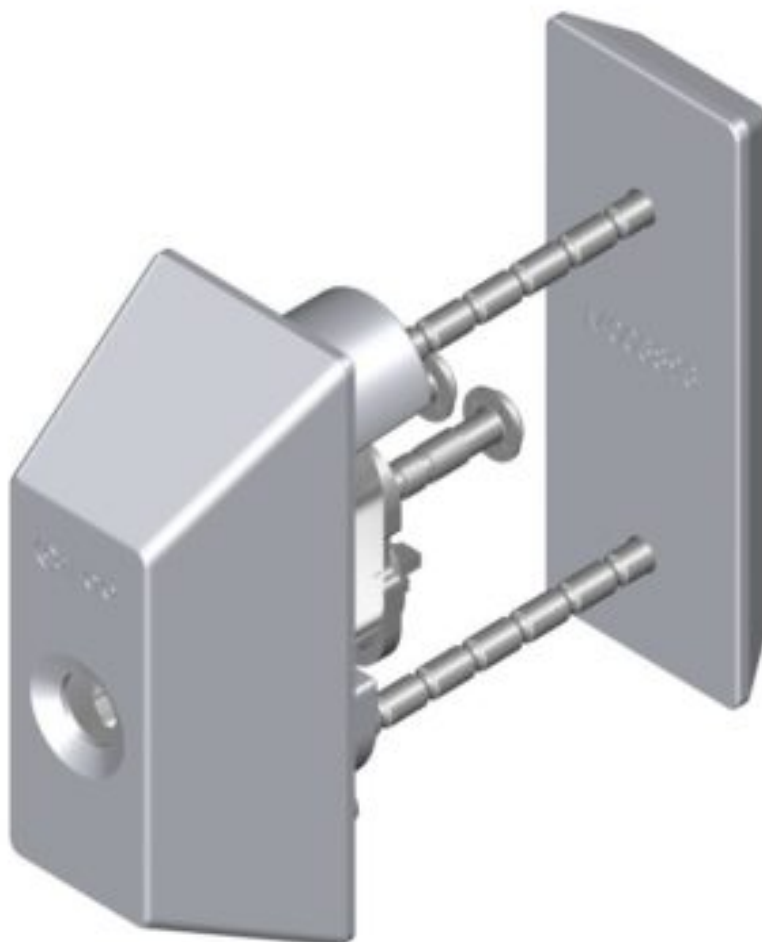


IN ACCORDANCE WITH ISO 14025 + EN 15804+A2



iLOQ



SmartEPD-2025-101-0672-01

Oval half cylinder with indoor cover plate 5C203.10.ZD

Date of Issue

Dec 03, 2025

Expiration date

Dec 03, 2030

Last updated

Dec 03, 2025

Refer to the EPD Library at www.smartepd.com for the latest EPD listing information

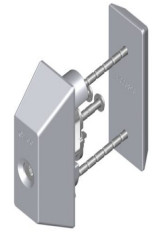
General Information

iLOQ Oy

Elektroniikkatie 10, 90590, OULU, Finland

+358 (0) 40 3170 200

info@iloq.com [iloq.com](https://www.iloq.com)



Product Name:	Oval half cylinder with indoor cover plate 5C203.10.ZD
Declared Unit:	undefined piece
Declaration Number:	SmartEPD-2025-101-0672-01
Date of Issue:	December 03, 2025
Expiration:	December 03, 2030
Last updated:	December 03, 2025
EPD Scope:	Cradle to gate with other options A1 - A3, A4, A5, C1 - C4, D
Market(s) of Applicability:	Europe

General Organization Information

iLOQ develops and distributes innovative digital locking and mobile access solutions with low lifecycle costs compared to mechanical locks and keys. Cloud-based solutions combine electromechanical elements to a SaaS access management platform.

iLOQ is a Finnish-based company, with global offices.

Further information can be found at: <https://www.iloq.com>

Limitations, Liability, and Ownership

Environmental declarations from different programs (ISO 14025) may not be comparable. Choice of the used LCA software and LCI datasets might also lead to variations in results, when comparing alternative cycles. When using EPDs to create a comparison of environmental performance of a product, the full building life cycle needs to be considered with all life cycle stages. The EPD owner has full ownership, liability and responsibility for the EPD.

Reference Standards

Standard(s):	ISO 14025 + EN 15804+A2
Core PCR:	IBU PCR for Building-Related Products and Services Part A v1.4 v.1.4 Date of issue: April 15, 2024
Sub-category PCR:	IBU PCR Part B: Requirements on the EPD for Building Hardware products v9 Date of issue: November 13, 2023 Valid until: November 13, 2028
Sub-category PCR review panel:	 Contact Smart EPD for more information.

General Program Instructions:  Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

LCA Author/Creator:	 Krista Huttu  krista.huttu@iloq.com
EPD Program Operator:	 Smart EPD  info@smartepd.com  www.smartepd.com  585 Grove St., Ste. 145, Herndon, VA 20170, USA
Verification:	Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071:  Lucas Pedro Berman  Senda - Consultoria Ambiental & Energetica  info@sendaconsultorias.com External
	Independent external verification of EPD, according to ISO 14025 and reference PCR(s):  Lucas Pedro Berman  Senda - Consultoria Ambiental & Energetica  info@sendaconsultorias.com External

Product Information

Declared Unit:	undefined piece
Mass:	0.7036 kg
Reference Service Life:	25 Years
Product Specificity:	 Product Average  Product Specific
Variation in GWP Result (Products):	0% to +2.3%
Variation in GWP Result (Facilities):	0% to 0%

Product Description

The declared product, 5C203.10.ZD, is a single-sided rectangle-shaped cylinder used with key. The product includes an interior plate and an escutcheon. Product is Powder coated to Satin chrome color. The product is installed to one door leaf and is purposed for outdoor and indoor use. The product doesn't requite an external power source or battery, as it harvests the required energy from the movement of the key, in order to read access rights. The locks are installed mainly to residential or institutional doors. Typical use environments include, but are not limited to: School buildings, Warehouses, Apartment complexes and Universities.

The product's purpose is to provide smart access management. The lock cylinder C5S.1.SB is certified according to DIN EN 15684:2013-01, SSF 3522 SBSC 2 and is CE Marked.

Further information can be found at: <https://www.iloq.com/>

Product Specifications

Product SKU(s):	5C203.10.ZD
Product Classification Codes:	UNSPSC - 46171503
Technical Specification:	EN 15684:2013-01

Technical Specification: SSF 3522 SBSC 2
Technical Specification: CE-marking

Material Composition

Material/Component Category	Origin	% Mass
Stainless Steel	Unknown	12
Steel	Unknown	56
Zinc alloy	Unknown	30
Polymers	Unknown	0.3
Electronics	Unknown	0.3
Chemicals	Unknown	1

Packaging Material	Origin	kg Mass
Cardboard	Unknown	0.011
Plastic	Unknown	0.002

Hazardous Materials
No regulated hazardous or dangerous substances are included in this product.

EPD Data Specificity

Primary Data Year: 2024
Manufacturing Specificity:

✗

 Industry Average

✗

 Manufacturer Average

✓

 Facility Specific

Averaging:
Averaging was not conducted in regards of accessory parts, such as thumb turns and escutcheons. The variance remains under 20% of minimum and maximum product weight values.

System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	✓

Note:

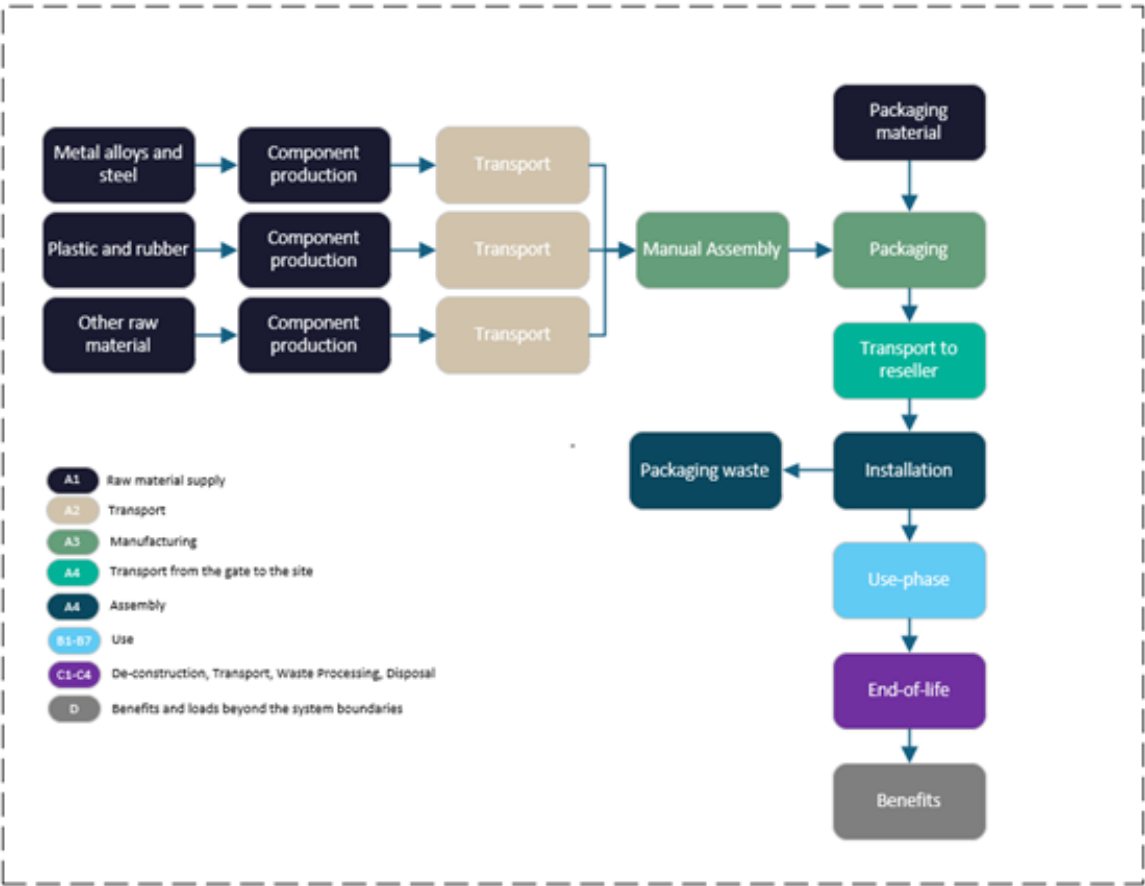
ND = Module not declared

Plants



Oulu
Graniittitie 6, Oulu, Finland

Product Flow Diagram



Software and Database

LCA Software:	Earthster v. 1.7
LCI Foreground Database(s):	Ecoinvent v. v3.11 Global Cut-Off by Classification
LCI Background Database(s):	Ecoinvent v. v3.11 Global Cut-Off by Classification

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

Due to absence of primary data, the study mainly uses secondary data. Ecoinvent 3.11 is used to describe processes. When available, primary data is from calendar year 2024. Selection of processes and products represent the geographic location. Selected Ecoinvent processes are representative for Europe, Global and country-specific, when available. Proxies were only identified and used if secondary data was not available in Ecoinvent or other databases.

Ecoinvent maintains a high level of data quality, given to its rigorous validation, review processes and systematic uncertainty management. However, full certainty cannot be ensured when using secondary data sources.

Life Cycle Module Descriptions

Module A1 raw material supply includes the whole sourcing process of components to iLOQ Distribution center. The process starts from raw material extraction and processing. Component manufacturers purchase the raw material for processing. Component manufacturing can include processes, such as injection molding, machining, polishing and surface treatment. Component manufacturing is done mainly in Finland, China and Taiwan. The components are sourced by Contract Manufacturers, who are responsible for the lock unit assembly. Transport from component manufacturer to contract manufacturer is included in A1. The contract manufacturer is located in Malaysia. The most conservative distance is used in this EPD and Module A2. The components are purchased to iLOQ Distribution center, where it is packed and if needed, manual assembly is done. This stage is represented in module A3. iLOQ mainly sells the products to resellers, who are responsible for distribution and installation of the products to end-customers premises. This model is created by this most common approach, including transport to reseller in module A4. Use-phase typically doesn't require regular maintenance. At the end of the use-phase, the product is dissembled from the building and recycled as electronic waste.

LCA Discussion

Allocation Procedure

No allocation was required in the modelling of processes.

Cut-off Procedure

Components typically are manufactures using metal alloys. These alloys are modelled using Ecoinvent flows and including all metals or chemicals exceeding 0,5% of the total mass. Capital items, test equipment and handheld tools for production and installation processes are not included. All known material flows beyond these are included and no other flows are deliberately excluded. Human labor and employee commute, as well as personnel-related impacts, such as transportation to and from work. Excluded flows include also research and development activities and long-term emissions

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:

✗ No

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Gasoline/Diesel
Liters of Fuel:	33 l/100km
Vehicle Type:	Truck
Transport Distance:	700 km
Capacity Utilization:	28 %
Gross density of products transported:	- kg/m ³
Weight of products transported:	0.7036 kg
Capacity utilization volume factor:	=1

Installation in to the building/construction site (A5)

A5 Module

Installation Scrap Rate Assumed:	0 %
Ancillary Materials:	0,0131 kg
Net Fresh Water Consumption Specified by Water Source and Fate:	0 m ³
Other Resources:	0 kg
Electricity Consumption:	0 kWh
Other Energy Carriers:	0 MJ
Product Lost per Declared/Functional Unit:	0 kg
Waste Materials at the Construction Site Before Waste Processing:	0,0131 kg
Output Materials Resulting from On-site Waste Processing:	0 kg
Mass of Packaging Waste Specified by Type:	0,0131 kg
Biogenic Carbon Contained in Packaging (kg C):	0.0065 kg
Direct Emissions to Ambient Air, Soil and Water:	0 kg
VOC Emissions:	0 ug/m ³
Transport to the recycling centre:	300 km

End of Life (C1 - C4)
C1 - C4 Modules

Collection Process

Collected Separately:	0,7036 kg
Collected with Mixed Construction Waste:	0 kg
Transport distance to recycling centre:	300 km
Avoided virgin raw materials:	0.6895 kg
Energy needed to make them usable again:	7.53 MJ

Recovery

Reuse:	0 kg
Recycling:	0.68575 kg
Landfill:	0 kg
Incineration:	0 kg
Incineration with Energy Recovery:	0.0105 kg
Energy Conversion:	0 kg
Transport distance to recycling centre:	300 km
Avoided virgin raw materials:	0.6895 kg
Energy needed to make them usable again:	7.53 MJ

Disposal

Product or Material for Final Disposal:	0 kg
Removals of Biogenic Carbon:	0 kg CO2
Transport distance to recycling centre:	300 km
Avoided virgin raw materials:	0.6895 kg
Energy needed to make them usable again:	7.53 MJ

Assumptions for scenario development:

The product can be disassembled in order to separate components and recycle. 86% of the materials are recyclable, 14% are collected as municipal waste.

Transport distance to recycling centre:	300 km
Avoided virgin raw materials:	0.6895 kg
Energy needed to make them usable again:	7.53 MJ

Results

Environmental Impact Assessment Results
EN15804+A2
per 1 piece of product.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Method	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
ADP-fossil	EN15804+A2	MJ	1.85e+2	1.12e+0	3.99e-2	0	4.80e-1	6.56e-3	3.37e-2	-6.02e-1
ADP-minerals&metals	EN15804+A2	kg Sb equivalent	1.95e-3	2.31e-7	1.55e-8	0	9.91e-8	1.07e-9	3.57e-9	-1.55e-8
AP	EN15804+A2	mol H+ equivalent	9.10e-2	2.32e-4	9.17e-6	0	9.94e-5	7.16e-6	3.92e-5	-3.87e-4

Oval half cylinder with indoor cover plate 5C203.10.ZD

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EP-freshwater	EN15804+A2	kg P equivalents	8.32e-3	5.06e-6	8.90e-7	0	2.17e-6	2.01e-7	1.76e-7	-1.40e-6
EP-marine	EN15804+A2	kg N equivalents	1.87e-2	7.87e-5	4.01e-6	0	3.37e-5	4.63e-6	3.08e-5	-1.80e-4
EP-terrestrial	EN15804+A2	mol N equivalents	1.91e-1	8.48e-4	2.37e-5	0	3.64e-4	3.65e-5	2.12e-4	-1.97e-3
ETP-fw	EN15804+A2	CTUe	2.34e+3	6.86e-1	8.07e-2	0	2.94e-1	1.05e+0	3.37e-1	-1.64e-1
GWP-biogenic	EN15804+A2	kg CO ₂ -Equivalents	2.50e-1	0	-2.38e-2	0	0	0	0	0
GWP-fossil	EN15804+A2	kg CO ₂ Equivalents	1.10e+1	7.18e-2	4.22e-3	0	3.08e-2	2.67e-2	4.64e-2	-4.33e-2
GWP-luluc	EN15804+A2	kg CO ₂ -Equivalents	1.98e-2	2.49e-5	2.86e-6	0	1.07e-5	2.82e-7	3.67e-7	-4.43e-6
GWP-total	EN15804+A2	kg CO ₂ Equivalents	1.12e+1	7.19e-2	4.30e-3	0	3.08e-2	2.67e-2	4.64e-2	-4.33e-2
HTP-c	EN15804+A2	CTUh	2.27e-7	1.96e-10	6.85e-12	0	8.41e-11	3.94e-11	2.22e-11	-8.98e-11
HTP-nc	EN15804+A2	CTUh	1.55e-6	1.00e-9	6.89e-11	0	4.30e-10	1.17e-9	2.99e-10	-2.10e-10
IRP	EN15804+A2	kBq U235 equivalents	1.09e+0	1.26e-3	5.66e-4	0	5.42e-4	2.19e-5	4.30e-5	-2.40e-4
ODP	EN15804+A2	kg CFC11 equivalents	2.03e-7	1.57e-9	4.15e-11	0	6.71e-10	8.99e-12	7.46e-11	-6.43e-10
PM	EN15804+A2	disease incidence	5.65e-7	6.25e-9	1.88e-10	0	2.68e-9	3.15e-11	1.13e-10	-1.11e-8
POCP	EN15804+A2	kg NMVOC equivalents	6.10e-2	3.58e-4	8.84e-6	0	1.54e-4	9.02e-6	5.16e-5	-5.90e-4
SQP	EN15804+A2	dimensionless (pt)	5.31e+1	7.92e-1	1.28e-2	0	3.39e-1	1.50e-3	2.80e-3	-3.74e-2
WDP	EN15804+A2	m3-world equivalents	5.17e+0	5.54e-3	5.72e-4	0	2.38e-3	7.39e-4	2.85e-3	-1.63e-3

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicators

per 1 piece of product.

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
FW	m3	1.27e-1	1.37e-4	1.52e-5	0	5.86e-5	1.74e-5	6.66e-5	-3.98e-5
PENRT	MJ	1.85e+2	1.12e+0	3.99e-2	0	4.80e-1	6.56e-3	3.37e-2	-6.02e-1
PENRE	MJ	1.81e+2	1.12e+0	-2.16e-2	0	4.80e-1	0	-1.40e-1	-6.02e-1
PENRM	MJ	2.36e-1	0	6.15e-2	0	0	0	1.74e-1	0
PERT	MJ	1.79e+1	2.00e-2	6.07e-3	0	8.57e-3	3.62e-4	7.53e-4	-4.08e-3
PERE	MJ	1.72e+1	2.00e-2	1.93e-1	0	8.57e-3	0	7.53e-4	-4.08e-3
PERM	MJ	1.87e-1	0	-1.87e-1	0	0	0	0	0
SM	kg	0	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRM or PENRM = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Waste and Output Flow Indicators

per 1 piece of product.

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	4.75e-2	2.76e-5	1.42e-5	0	1.18e-5	4.91e-4	3.88e-4	-5.28e-6
NHWD	kg	2.94e+1	7.73e-2	1.87e-3	0	3.31e-2	5.08e-4	1.31e-3	-3.47e-3
RWD	kg	2.81e-4	3.11e-7	1.45e-7	0	1.33e-7	5.42e-9	1.10e-8	-5.90e-8
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	1.10e-2	0	0	6.94e-1	0	0
MER	kg	0	0	2.00e-3	0	0	1.00e-2	0	0
EEE	MJ	0	0	0	0	0	0	0	0
EET	MJ	0	0	6.15e-2	0	0	0	1.74e-1	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Carbon Emissions and Removals

per 1 piece of product.

Indicator	Unit	A1 - A3	A4	A5	C1	C2	C3	C4	D
BCRP	kg CO2	0	0	0	0	0	0	0	0
BCEP	kg CO2	0	0	0	0	0	0	0	0
BCRK	kg CO2	-1.78e-3	0	0	0	0	0	0	0
BCEK	kg CO2	0	0	1.78e-3	0	0	0	0	0
BCEW	kg CO2	0	0	0	0	0	0	0	0
CCE	kg CO2	0	0	0	0	0	0	0	0
CCR	kg CO2	0	0	0	0	0	0	0	0
CWNR	kg CO2	0	0	0	0	0	0	0	0
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Note:

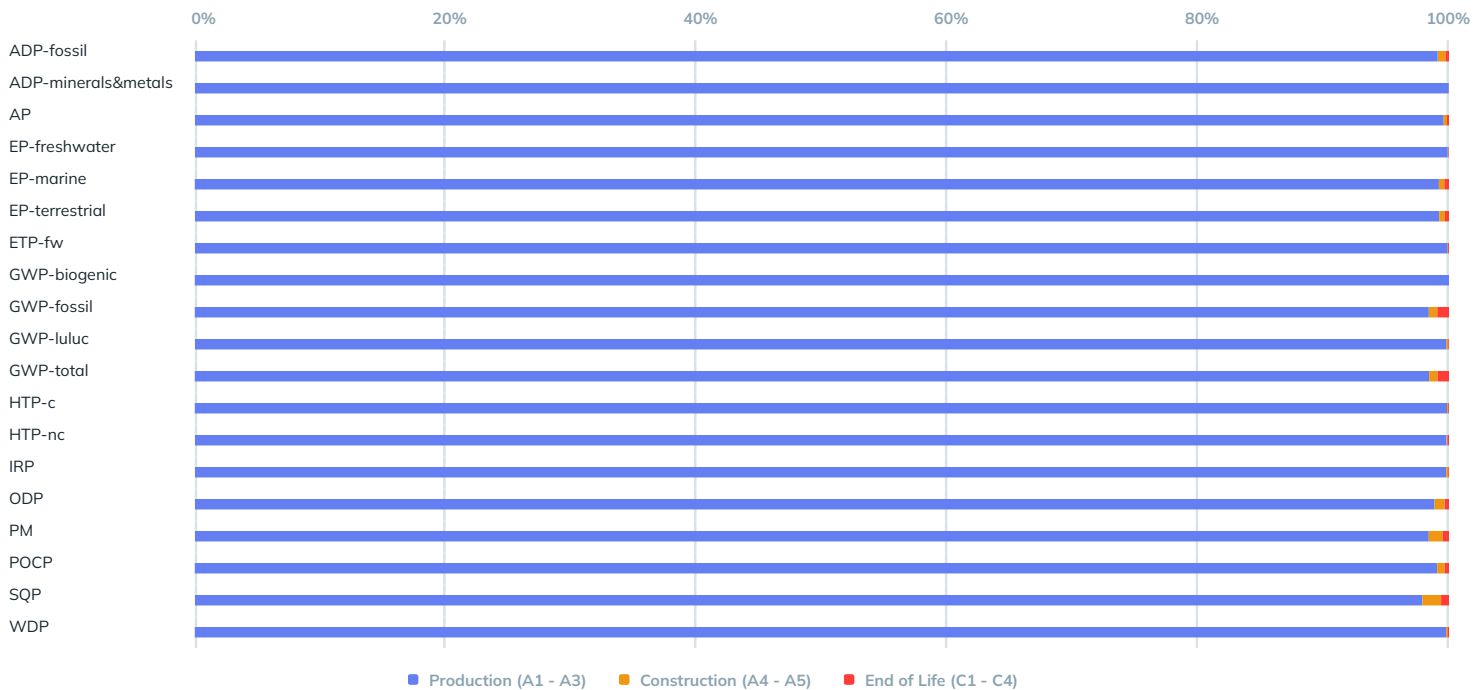
Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

Interpretation

The life cycle assessment reveals that 84% of the lock's total climate change impact originates from raw materials included in module A1. Overall, modules A1-A3 account for the majority of impacts. A4 and C1-C4 have some impacts, which aren't significant considering the whole life cycle.



Additional Environmental Information

The GWP impact of the electricity energy mix of the manufacturing site is 57.6 g CO₂e/kWh as per Finnish emission factor.

References

- Institut Bauen und Umwelt e.V.: Product Category Rules for Building-Related Products and Services, Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Reporting according to EN 15804:2014+A2:2019/AC:2021, V. 1.4
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- ISO 21930: 2017 - Sustainability in building construction -- Environmental declaration of building products
- EN 15804:2012-04: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction product
- ISO 14025:2011-10, Environmental labels and declarations - Type III environmental declarations - Principles and procedures
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