

ENVIRONMENTAL PRODUCT DECLARATION

NP Ultra mechanism

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

Products included in the EPD:

items 0395201, 0395501, 0395801, 03959, 06237000AM, 03954,
03951, 0395001, 0395601, 03957000M1

An EPD may be updated or depublished if conditions change. To find the latest version
of the EPD and to confirm its validity, see www.environdec.com

EPD of multiple products based on a representative product

EPD Owner
GIESSE S.p.A.

Programme
International EPD System
www.environdec.com

Programme operator
EPD International AB

Registration number
EPD-IES-0028744:001

Approval date
2026-04-14

Validity date
2031-04-14



GENERAL INFORMATION

Programme information

Programme	International EPD System
Address	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website	www.environdec.com
E-mail	support@environdec.com

Product category rules

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)	
Product Category Rules (PCR)	2019:14 Construction products (EN 15804+A2) (version 2.0.1) 2.0.1
PCR review was conducted by	The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/support .
Complementary Product Category Rules (c-PCR)	PCR 2019:14-c-PCR-020 Building hardware (EN 17610) (c-PCR to PCR 2019:14) (1.0.0)
c-PCR review was conducted by	The Technical Committee of the International EPD System

Verification

LCA accountability	Valerio Venturi, valerio.venturi@schlegelgiesse.com, GIESSE S.p.A.
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via	<input checked="" type="checkbox"/> EPD verification through an individual EPD verification <input type="checkbox"/> EPD verification through EPD Process Certification* <input type="checkbox"/> EPD verification through a fully pre-verified tool
Third-party verifier	Michela Gallo (University of Genoa)
Approved by	International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<p>*EPD Process Certification involves an accredited certification body certifying and periodically auditing the EPD process and conducting external and independent verification of EPDs that are regularly published. More information can be found in the General Programme Instructions on www.environdec.com.</p>	

Ownership and limitations on use of EPD

Limitations

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

Ownership

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

INFORMATION ABOUT EPD OWNER

EPD Owner	GIESSE S.p.A.
Contact person name	Valerio Venturi
Contact person e-mail	valerio.venturi@quanex.com
Organisation address	Italy Budrio (BO) 40054 Via Tubertini 1

Description of the organisation of the EPD Owner

GIESSE S.p.A. founded in 1965, in the province of Bologna, is specialized in the production of manual accessories for aluminum windows and doors. In 2016 it was acquired by Schlegel, a leading British company in the sealing systems sector. Both companies were part of the international division of Tyman PLC, a group listed on the London Stock Exchange, with a commercial network capable of reaching customers in over 100 countries and offering them the highest degree of satisfaction, a wide range of standard components and boasts over 150 patents filed.

In 2024, the entire Tyman group and its brands, including Giesse, were acquired by the American multinational Quanex, forming a new major group in the sector, with a turnover of over 2 billion.

Quanex Building Products Corporation, listed on the NY Stock Exchange, is a manufacturing group that offers building product solutions that include hardware solutions (door/window hardware, screens), extruded solutions (spacers, vinyl profiles for doors and windows, gaskets and sealing systems) and custom solutions (solutions for the wood, mixed and building access industries).



PRODUCT INFORMATION

Product name	items 0395201, 0395501, 0395801, 03959, 06237000AM, 03954, 03951, 0395001, 0395601, 03957000M1
Product identification	<p>items code # 0395201, 0395501, 0395801, 03959, 06237000AM, 03954, 03951, 0395001, 0395601, 03957000M1</p> <p>Disclaimer: items code # 03959, 03954, 03951, 0395601, 03957000M1 are recently on the market – in this EPD variations of products referred to GWP-GHG results for A1-A3 shall be used with care.</p>
Product description	<p>Tilt and turn closing mechanism NP Ultra Tilt and turn closing mechanism standard or in Logica version with NP ULTRA movement. Kit necessary for the creation of a Tilt and Turn window or Logical, in case you use the NP ULTRA handle. It must be completed with Giesse Arms and Hinges. Customizable mechanism and packaging with customer logo Finishes: raw</p> <p>Tilt and turn mechanism or one-way mechanism NP Ultra One-way mechanism, which can be operated by means of an NP ULTRA handle, for the movement of the tilt-and-turn closing mechanisms or a bidirectional mechanism, which can be operated by means of an NP ULTRA handle, for the movement of the leaf closing mechanisms. It can be used in combination with the NP ULTRA Tilt & Turn Handle (5 mm hexagon). It locks to the profile by means of 2 self-drilling screws supplied. No milling operations are required on the tubularity of the sash, but a simple processing on the flap (3 holes Ø6.2 mm) is sufficient. The movement is ambidextrous and is equipped with a false manoeuvring device, which prevents the rotation of the handle when the door is open. Handling and packaging customizable with customer logo Finishes: raw</p>
Technical purpose of product	Tilt and turn closing mechanism or one-way mechanism operated by NP Ultra handle
Manufacturing or service provision description	<ul style="list-style-type: none"> • Reception and storage of the components in zinc alloy, steel and plastic • Pad printing of the pulling drive mechanism • Assembly of the mechanism with other components • Packaging on pallets and shipping to finished products warehouse
Material properties	<p>Volumetric mass density: 7159 kg/m³ Mass per piece: 0.428 kg/piece</p>
Manufacturing site	<p>Budrio Italy Budrio (BO) 40054 Via Tubertini 1</p>
UN CPC code	42992. Padlocks and locks, of base metal; clasps and frames with clasps, incorporating locks, of base metal; keys and parts thereof, of base metal; base metal fittings for furniture, doors, saddlery and the like
Geographical scope(s)	Global

Actual or technical lifespan	30 year(s)
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PRODUCT IMAGES



CONTENT DECLARATION

Content declaration of multiple products	content declaration refers to the representative product
Hazardous and toxic substances	The product does not contain any substances from the SVHC candidate list in concentrations exceeding 0.1% of its weight.

PRODUCT CONTENT

Content name	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material ¹ , kg C/declared unit
Zinc alloys	0.389	0	0	0
Steel	0.036	0	0	0
Polymers	0.003	0	0	0
Total	0.428	0	0	0
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂			

PACKAGING MATERIALS

Material name	Mass, kg	Mass-% (versus the product)	Biogenic material ¹ , kg C/declared unit
Cardboard	0.053	12.5	0.0242
Wood	0.017	4	0.0003
Plastic	0.00004	0.01	0
Total	0.07004	16.51	0.0245
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂		

BEST-CASE PRODUCT

Product name	product with lowest GWP-GHW result
Hazardous and toxic substances	The product does not contain any substances from the SVHC candidate list in concentrations exceeding 0.1% of its weight.

PRODUCT CONTENT				
Content name	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material ¹ , kg C/declared unit
Zinc alloys	0.491	0	0	0
Steel	0.05	0	0	0
Polymers	0.003	0	0	0
Total	0.544	0	0	0
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂			

PACKAGING MATERIALS			
Material name	Mass, kg	Mass-% (versus the product)	Biogenic material ¹ , kg C/declared unit
Cardboard	0.053	9.8	0.0242
Wood	0.017	3.1	0.0003
Plastic	0.003	0.6	0
Total	0.073	13.5	0.0245
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂		

WORST-CASE PRODUCT

Product name	product with highest GWP-GHW result
Hazardous and toxic substances	The product does not contain any substances from the SVHC candidate list in concentrations exceeding 0.1% of its weight.

PRODUCT CONTENT

Content name	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material ¹ , kg C/declared unit
Zinc alloys	0.141	0	0	0
Steel	0.019	0	0	0
Total	0.16	0	0	0
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂			

PACKAGING MATERIALS

Material name	Mass, kg	Mass-% (versus the product)	Biogenic material ¹ , kg C/declared unit
Cardboard	0.011	7.1	0.0052
Wood	0.033	20.4	0.0007
Plastic	0.003	1.7	0
Total	0.047	29.2	0.0059
Note 1	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂		

LCA INFORMATION

EPD based on declared or functional unit	Declared unit
Declared unit and reference flow	Mechanism Mass: 1 kg
Conversion factor to mass	1
Are infrastructure or capital goods included in any upstream, core or downstream processes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Data sources used for this EPD	ecoinvent database (general) ecoinvent 3.11 database
LCA Software	SimaPro 10.2
Additional information about the underlying LCA-based information	No cut-off criteria has been applied for all the modules except in module A3 for the quantity of spare parts used in maintenance because it was assumed that they have no potential to cause significant emissions into air and water or soil related to the environmental indicators of this EN 15804.
Version of the EN 15804 reference package	EF Reference Package 3.1
Characterisation methods	Core environmental impact indicators: EN 15804 + A2 Method 1.03 Additional mandatory environmental indicators: IPCC 2021 GWP100 version 1.03 Additional voluntary environmental indicators: EN 15804 + A2 Method 1.03 Indicators describing resource use: according to Environmental informations describing waste categories: EDIP 2003 version 1.07 Environmental information describing output flows: according to LCI and guidance of Simapro help center
Technology description including background system	The product considered consists mainly of zinc alloys. Manufacturing process consists of manual and semiautomated operations
Scrap (recycled material) inputs contribution level	Less than 10% of the GWP-GHG results in modules A1-A3 come from scrap inputs

Data quality assessment

Description of data quality assessment and reference years	<p>Primary data are collected from production site in Budrio, in the reference year 2024 and represents standard production over 12 months.</p> <p>Data quality assessment according to EN 15804:2012+A2:2019, Annex E.</p> <p>The quality of the data level is mostly good.</p>
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DATA QUALITY ASSESSMENT					
Process name	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Manufacturing of the product including electricity and thermal energy	collected data, dataset	EPD owner, Ecoinvent 3.11	2024	primary data	12%
Transport of raw materials	collected data, dataset	EPD owner, Econinve 3.11	2024	primary data	1%
Total share of primary data, of GWP-GHG results for A1-A3					13%
Note	The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.				

ELECTRICITY USED IN THE MANUFACTURING PROCESS IN A3 (A5 FOR SERVICES)		
Type of electricity mix	Specific electricity mix as generated, or purchased from an electricity supplier, demonstrated by a contractual instrument	
Energy sources	Hydro	0%
	Wind	0%
	Solar	100%
	Biomass	0%
	Geothermal	0%
	Waste	0%
	Nuclear	0%
	Natural gas	0%
	Coal	0%
	Oil	0%
	Peat	0%
	Other	0%

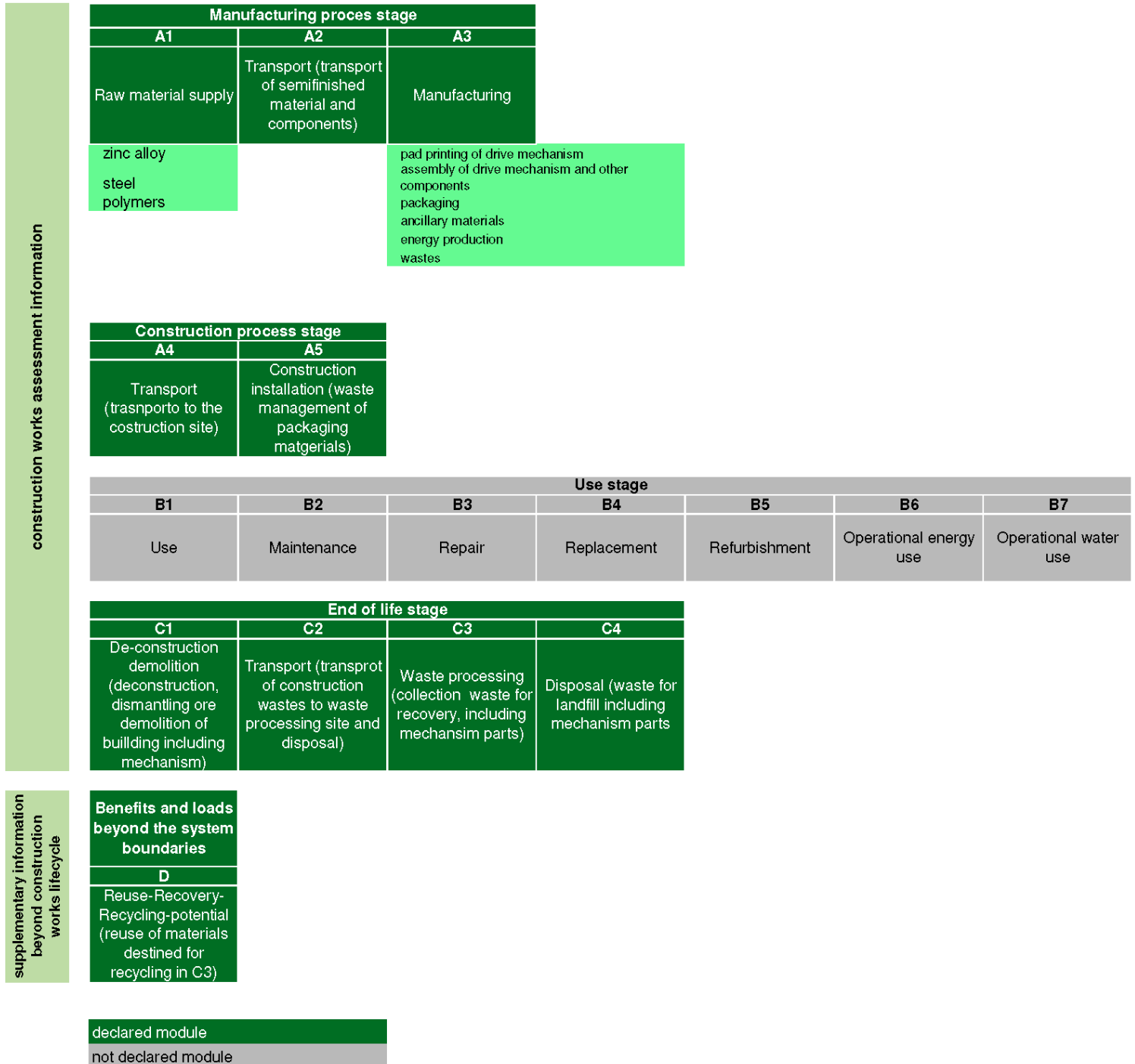
Climate impact (GWP-GHG):	0.16 kg CO ₂ eq./kWh
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SYSTEM BOUNDARY

Description of the System boundary	b) Cradle to gate with options, modules C1-C4, module D and with optional modules (A1-A3 + C + D and additional modules).
Excluded modules	Yes, there is an excluded module, or there are excluded modules
Justification for omission of modules	Modules of use stage excluded according to standard

	Product stage			Construction process stage		Use stage							End of life stage				Beyond product life cycle
	Raw material supply	Transport	Manufacturing	Transport to site	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction 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	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	Global	Europe	Europe	Global	Global	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Global	Global	Global	Global	Global
Share of specific data	13%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - products	22%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation - sites				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Disclaimer	The share of specific/primary data and both variations (products and sites) refer to GWP-GHG results only.																

Process flow diagram(s) related images



supplementary information beyond construction works lifecycle

DEFAULT SCENARIO

Name of the default scenario	Standard
Description of the default scenario	Scenario considers the transport of the handle to the building site and the installation in the window. Transport according to provisions of c-PCR. Installation considers manual with use of energy negligible. End of life stage considers waste processing according to calculated recycling rates.

Module A4: Transport to the building site

Explanatory name of the default scenario in module A4	Standard
Description of the default scenario in module A4	Given the global market of the product and consequently at the construction site in various country, it was decided to adopt the provisions of EN 17610.

Module A4 information	Value	Unit
Distance	3500	km
Capacity utilization (including empty returns)	50	%
Vehicle type	lorry 16-32 metric ton, EURO5	Dimensionless

Module A5: Installation in the building

Explanatory name of the default scenario in module A5	Standard
Description of the default scenario in module A5	Since this is a manual process, no energy or fuels is needed for installation, then module analyses the recovery of packaging incurred as waste during product installation. For these packaging the disposal scenarios were considered with recycling rates according to European statistics amended to consider the global market scenarios.

Module A5 information	Value	Unit
Cardboard waste	0.053	kg
Wood waste	0.017	kg
waste to landfill rate	57	%
waste to recycling rate	43	%

Reference service life

Description of the default scenario in reference service life	According to EN 17610:2022
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Reference service life information	Value	Unit
Reference service life	30	year(s)

Module C: End-of-life

Explanatory name of the default scenario in module C	End of life stage
Description of the default scenario in module C	<p>The demolition phase of the building site includes all deconstruction operations, including the initial dismantling and sorting on site of the handle.</p> <p>A recycle ratio of 64% of metal parts and 48% of plastic parts are assumed to consider the global market of the product.</p> <p>Remaining 36% of metal is landfilled and 52% of plastic is landfilled with no recovery with energy production.</p> <p>Distance to the disposal area and type of vehicle were assumed in C2 and electricity for mechanical sorting in C3 were assumed according to relevant PCR.</p>

Module C information	Value	Unit
Recycle rate, metal	64	%
Recycle rate, plastic	48	%
Disposal rate, metal	36	%
Disposal rate, plastic	52	%
Transportation distance to the closest disposal area	80	km
Vehicle type	16-32 tonne lorry (EURO 5), 50% load factor	N/A
Electricity for mechanical sorting	2.2 kWh/tonne	N/A

Module D: Beyond product life cycle

Explanatory name of the default scenario in module D	Benefit
Description of the default scenario in module D	This stage, according to the EN 15804:2012 + A2:2019 standard for the analysis "from cradle to gate, with modules C1-C4 and module D" , considers the benefit due to the reuse/recovery of materials. In this stage, the reuse of materials for recycling in stage C3 was considered.

Module D information	Value	Unit
Recycle, metal	64	%
Recycle, plastic	48	%

ADDITIONAL SCENARIO 1

Name of the additional scenario	100% recycling
Description of the additional scenario	Scenario considers 100% of recycling at the end of life. Best-case for EoL scenario.

Module A4: Transport to the building site

Description of the additional scenario in module A4	Transport to building stage considers same assumption of standard scenario.
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Module A5: Installation in the building

Description of the additional scenario in module A5	Installation of mechanism in the window considers packaging incurred as waste during product installation that is fully recycled
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Module A5 information	Value	Unit
Cardboard waste	0.053	kg
Wood waste	0.017	kg
Waste recycling rate	100	%

Reference service life

Description of the additional scenario in reference service life	According to EN 17610:2022
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Reference service life information	Value	Unit
Reference service life	30	year(s)

Module C: End-of-life

Description of the additional scenario in module C	The demolition phase of the building site considers the same assumptions of the standard scenario except the wastes of metal and plastic that are fully recycled.
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Module C information	Value	Unit
Recycle rate, metal	100	%
Recycle rate, plastic	100	%

Module D: Beyond product life cycle

Description of the additional scenario in module D	This stage, according to the EN 15804:2012 + A2:2019 standard for the analysis "from cradle to gate, with modules C1-C4 and module D" , considers the benefit due to the reuse/recovery of materials. In this stage, the reuse of materials for recycling in stage C3 was considered with a rate of 100%.
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Module D information	Value	Unit
Recycle rate, metal	100	%
Recycle rate, plastic	100	%

ADDITIONAL SCENARIO 2

Name of the additional scenario	100 % landfill
Description of the additional scenario	Scenario considers 100% of landfill at the end of life. Worst-case for EoL scenario.

Module A4: Transport to the building site

Description of the additional scenario in module A4	Transport to building stage considers same assumption of standard scenario.
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Module A5: Installation in the building

Description of the additional scenario in module A5	Installation of mechanism in the window considers packaging incurred as waste during product installation that is fully disposed.
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Module A5 information	Value	Unit
Cardboard waste	0.053	kg
Wood waste	0.017	kg
Waste to landfill rate	100	%

Reference service life

Description of the additional scenario in reference service life	According to EN 17610:2022
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Reference service life information	Value	Unit
Reference service life	30	year(s)

Module C: End-of-life

Description of the additional scenario in module C	The demolition phase of the building site considers the same assumptions of the standard scenario except the wastes of metal and plastic that are fully disposed.
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Module C information	Value	Unit
Waste to landfill rate, metal	100	%
Waste to landfill rate, plastic	100	%
Transportation distance to the closest disposal area	130	km
Vehicle type	16-32 lorry (EURO 5), 50% load factor	N/A
Demolition/deconstruction of steel, wood, and other materials	Diesel	N/A

Module D: Beyond product life cycle

Description of the additional scenario in module D	This stage, according to the EN 15804:2012 + A2:2019 standard for the analysis "from cradle to gate, with modules C1-C4 and module D" , considers the benefit due to the reuse/recovery of materials. This scenario does not consider any benefit deriving from C3 stage.
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ENVIRONMENTAL PERFORMANCE

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.

Mandatory environmental performance indicators according to EN 15804

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - total	GWP-total	kg CO ₂ eq.	6.45E+0	7.75E-1	7.19E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	9.54E-4	6.40E-3	-4.63E+0
Climate change - fossil	GWP-fossil	kg CO ₂ eq.	6.38E+0	7.75E-1	1.10E-3	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	9.51E-4	6.38E-3	-4.50E+0
Climate change - biogenic	GWP-biogenic	kg CO ₂ eq.	5.53E-2	1.48E-4	7.08E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.73E-6	1.53E-6	1.17E-5	-1.90E-2
Climate change - land use and land-use change	GWP-luluc	kg CO ₂ eq.	2.27E-2	2.57E-4	9.23E-7	ND	ND	ND	ND	ND	ND	ND	0.00E+0	8.21E-6	2.01E-6	6.57E-6	-1.06E-1
Ozone depletion	ODP	kg CFC-11 eq.	3.80E-7	1.69E-8	2.32E-11	ND	ND	ND	ND	ND	ND	ND	0.00E+0	5.41E-10	6.13E-12	1.25E-10	-7.85E-8
Acidification	AP	mol H ⁺ eq.	7.80E-2	2.49E-3	1.30E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	7.96E-5	4.74E-6	3.74E-5	-2.87E-2
Eutrophication aquatic freshwater	EP-freshwater	kg P eq.	5.53E-4	5.67E-6	1.91E-8	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.82E-7	5.04E-8	9.23E-8	-2.49E-4
Eutrophication aquatic marine	EP-marine	kg N eq.	1.03E-2	8.28E-4	2.85E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.65E-5	8.65E-7	1.54E-5	-3.29E-3
Eutrophication terrestrial	EP-terrestrial	mol N eq.	1.16E-1	9.11E-3	3.13E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.91E-4	9.61E-6	1.49E-4	-3.67E-2
Photochemical ozone formation	POCP	kg NMVOC eq.	3.51E-2	3.77E-3	3.64E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.21E-4	2.84E-6	4.94E-5	-1.58E-2
Depletion of abiotic resources - minerals and metals	ADP-minerals&metals ¹	kg Sb eq.	2.03E-3	2.61E-6	1.91E-9	ND	ND	ND	ND	ND	ND	ND	0.00E+0	8.36E-8	9.27E-10	1.31E-8	-7.76E-6
Depletion of abiotic resources - fossil fuels	ADP-fossil ¹	MJ, net calorific value	9.39E+1	1.10E+1	2.14E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.52E-1	1.28E-2	1.15E-1	-7.02E+1
Water use	WDP ¹	m ³ world eq. deprived	4.25E+0	4.26E-2	-1.24E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.36E-3	1.30E-4	-5.87E-2	-2.60E-1
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																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
Disclaimer 1	The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator																

Additional mandatory environmental performance indicators

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Climate change - GWP-GHG	GWP-GHG ¹	kg CO ₂ eq.	6.45E+0	7.75E-1	7.19E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	9.54E-4	6.40E-3	-4.63E+0
Acronyms	GWP-GHG = Global warming potential greenhouse gas.																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
Disclaimer 1	The GWP-GHG indicator is termed GWP-IOBC/GHG in the ILCD+EPD+ data format. The indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO ₂ is set to zero.																

Additional voluntary environmental performance indicators according to EN 15804

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter emissions	PM	Disease incidence	4.03E-7	6.17E-8	1.55E-10	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.97E-9	4.33E-11	7.63E-10	-3.38E-7
Ionizing radiation - human health	IRP ¹	kBq U235 eq.	4.10E-1	4.74E-3	1.34E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.52E-4	5.06E-5	6.46E-5	-3.97E-1
Eco-toxicity - freshwater	ETP-fw ²	CTUe	4.94E+2	1.46E+0	2.24E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.66E-2	2.09E-3	4.59E+1	-9.21E+0
Human toxicity - cancer effects	HTP-c ²	CTUh	1.94E-8	1.31E-10	1.01E-12	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.21E-12	9.91E-14	3.31E-12	-9.13E-9
Human toxicity - non-cancer effects	HTP-nc ²	CTUh	6.93E-7	6.85E-9	2.29E-10	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.19E-10	5.31E-12	6.19E-10	-5.38E-8
Land-use related impacts/soil quality	SQP ²	Dimensionless	8.10E+1	6.49E+0	4.51E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.08E-1	1.79E-3	2.21E-1	-4.61E+0
Acronyms	PM = Potential incidence of disease due to particulate matter emissions; IRP = Potential human exposure efficiency relative to U235; ETP-fw = Potential comparative toxic unit for ecosystems; HTP-c = Potential comparative toxic unit for humans; HTP-nc = Potential comparative toxic unit for humans; SQP = Potential soil quality index.																
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																
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 of these results are high or as there is limited experience with the indicator.																

Resource use indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ, net calorific value	2.33E+1	1.73E-1	4.99E-4	ND	ND	ND	ND	ND	ND	ND	0.00E+0	5.55E-3	1.67E-3	2.50E-3	-2.78E+1
PERM	MJ, net calorific value	2.48E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ, net calorific value	2.58E+1	1.73E-1	4.99E-4	ND	ND	ND	ND	ND	ND	ND	0.00E+0	5.55E-3	1.67E-3	2.50E-3	-2.78E+1
PENRE	MJ, net calorific value	9.21E+1	1.10E+1	2.14E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.52E-1	1.28E-2	1.15E-1	-7.02E+1
PENRM	MJ, net calorific value	1.82E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PENRT	MJ, net calorific value	9.39E+1	1.10E+1	2.14E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.52E-1	1.28E-2	1.15E-1	-7.02E+1
SM	kg	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	m ³	1.35E-1	1.37E-3	-2.88E-4	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.39E-5	5.68E-6	-1.36E-3	-1.91E-1
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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

Waste indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
HWD	kg	8.27E-2	2.77E-4	1.12E-6	ND	ND	ND	ND	ND	ND	ND	0.00E+0	8.88E-6	4.78E-7	7.05E-4	-1.87E-3
NHWD	kg	7.50E-1	5.27E-1	7.73E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.69E-2	2.26E-5	3.65E-1	-2.93E-1
RWD	kg	2.73E-4	3.23E-6	8.61E-9	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.03E-7	3.26E-8	4.15E-8	-3.19E-4
Acronyms	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

Output flow indicators according to EN 15804

Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
CRU	kg	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	kg	9.50E-2	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	kg	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	ND	ND	ND	ND	ND	ND	ND	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Acronyms	CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy.															
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).															

Results for additional scenarios for modules A4-C4

Additional scenario	100% recycling
Description of the scenario/method	Best-case for EoL scenario. In this scenario, it has been assumed that the whole amount of recovered mechanism will be recycled without any losses or landfilling.

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming potential - total	GWP-total	kg CO2 eq.	6.45E+0	7.75E-1	7.19E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	1.50E-3	0.00E+0	-6.30E+0
Global warming potential - fossil fuels	GWP-fossil	kg CO2 eq.	6.38E+0	7.75E-1	1.10E-3	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	1.49E-3	0.00E+0	-6.11E+0
Global warming potential - biogenic	GWP-biogenic	kg CO2 eq.	5.53E-2	1.48E-4	7.08E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.73E-6	2.41E-6	0.00E+0	-2.42E-2
Global warming potential - land use and land use change	GWP-luluc	kg CO2 eq.	2.27E-2	2.57E-4	9.23E-7	ND	ND	ND	ND	ND	ND	ND	0.00E+0	8.21E-6	3.15E-6	0.00E+0	-1.64E-1
Depletion potential of the stratospheric ozone layer	ODP	kg CFC-11 eq.	3.80E-7	1.69E-8	2.32E-11	ND	ND	ND	ND	ND	ND	ND	0.00E+0	5.41E-10	9.61E-12	0.00E+0	-1.09E-7
Acidification potential, accumulated exceedance	AP	mol H+ eq.	7.80E-2	2.49E-3	1.30E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	7.96E-5	7.43E-6	0.00E+0	-4.03E-2
Eutrophication potential - freshwater	EP-freshwater	kg P eq.	5.53E-4	5.67E-6	1.91E-8	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.82E-7	7.90E-8	0.00E+0	-3.58E-4
Eutrophication potential - marine	EP-marine	kg N eq.	1.03E-2	8.28E-4	2.85E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.65E-5	1.36E-6	0.00E+0	-4.29E-3
Eutrophication potential - terrestrial	EP-terrestrial	mol N eq.	1.16E-1	9.11E-3	3.13E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.91E-4	1.51E-5	0.00E+0	-4.76E-2
Photochemical ozone creation potential	POCP	kg NMVOC eq.	3.51E-2	3.77E-3	3.64E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.21E-4	4.45E-6	0.00E+0	-2.17E-2
Abiotic depletion potential - non-fossil resources	ADPE	kg Sb eq.	2.03E-3	2.61E-6	1.91E-9	ND	ND	ND	ND	ND	ND	ND	0.00E+0	8.36E-8	1.45E-9	0.00E+0	9.76E-5
Abiotic depletion potential - fossil resources	ADPF	MJ, net calorific value	9.39E+1	1.10E+1	2.14E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.52E-1	2.00E-2	0.00E+0	-9.97E+1
Water (user) deprivation potential	WDP	m3 world eq. deprived	4.25E+0	4.26E-2	-1.24E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.36E-3	2.04E-4	0.00E+0	5.93E-1
Global warming potential	GWP-GHG	kg CO2 eq.	6.45E+0	7.75E-1	7.19E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	1.50E-3	0.00E+0	-6.30E+0
Acronyms	ND - Not declared																
Disclaimers																	
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																

Results for additional scenarios for modules A4-C4

Additional scenario	100 % landfill
Description of the scenario/method	This is the Worst-case EoL scenario. In this scenario, it has been assumed that the whole amount of recovered mechanism will be landfilling without recycling.

Impact category	Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming potential - total	GWP-total	kg CO2 eq.	6.45E+0	7.75E-1	7.19E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	0.00E+0	1.72E-2	0.00E+0
Global warming potential - fossil fuels	GWP-fossil	kg CO2 eq.	6.38E+0	7.75E-1	1.10E-3	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	0.00E+0	1.72E-2	0.00E+0
Global warming potential - biogenic	GWP-biogenic	kg CO2 eq.	5.53E-2	1.48E-4	7.08E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	4.73E-6	0.00E+0	3.23E-5	0.00E+0
Global warming potential - land use and land use change	GWP-luluc	kg CO2 eq.	2.27E-2	2.57E-4	9.23E-7	ND	ND	ND	ND	ND	ND	ND	0.00E+0	8.21E-6	0.00E+0	1.82E-5	0.00E+0
Depletion potential of the stratospheric ozone layer	ODP	kg CFC-11 eq.	3.80E-7	1.69E-8	2.32E-11	ND	ND	ND	ND	ND	ND	ND	0.00E+0	5.41E-10	0.00E+0	3.46E-10	0.00E+0
Acidification potential, accumulated exceedance	AP	mol H+ eq.	7.80E-2	2.49E-3	1.30E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	7.96E-5	0.00E+0	1.03E-4	0.00E+0
Eutrophication potential - freshwater	EP-freshwater	kg P eq.	5.53E-4	5.67E-6	1.91E-8	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.82E-7	0.00E+0	2.56E-7	0.00E+0
Eutrophication potential - marine	EP-marine	kg N eq.	1.03E-2	8.28E-4	2.85E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.65E-5	0.00E+0	4.24E-5	0.00E+0
Eutrophication potential - terrestrial	EP-terrestrial	mol N eq.	1.16E-1	9.11E-3	3.13E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.91E-4	0.00E+0	4.12E-4	0.00E+0
Photochemical ozone creation potential	POCP	kg NMVOC eq.	3.51E-2	3.77E-3	3.64E-5	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.21E-4	0.00E+0	1.37E-4	0.00E+0
Abiotic depletion potential - non-fossil resources	ADPE	kg Sb eq.	2.03E-3	2.61E-6	1.91E-9	ND	ND	ND	ND	ND	ND	ND	0.00E+0	8.36E-8	0.00E+0	3.64E-8	0.00E+0
Abiotic depletion potential - fossil resources	ADPF	MJ, net calorific value	9.39E+1	1.10E+1	2.14E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	3.52E-1	0.00E+0	3.18E-1	0.00E+0
Water (user) deprivation potential	WDP	m3 world eq. deprived	4.25E+0	4.26E-2	-1.24E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	1.36E-3	0.00E+0	-1.62E-1	0.00E+0
Global warming potential	GWP-GHG	kg CO2 eq.	6.45E+0	7.75E-1	7.19E-2	ND	ND	ND	ND	ND	ND	ND	0.00E+0	2.48E-2	0.00E+0	1.72E-2	0.00E+0
Acronyms	ND - Not declared																
Disclaimers																	
General disclaimer	The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3/A1-A5 for services).																

ADDITIONAL ENVIRONMENTAL INFORMATION

Main materials used to build the accessories are recyclable.

- It is recommended that accessories, packaging, etc. are disposed of accordingly, with local disposal regulations and sent to a recycling unit for recovery and recycling
- Before sent to disposal it's recommended to separate the materials as below:

Steel / Stainless Steel: Ferrous metals

Aluminium alloy / Zinc alloy: Non-ferrous metals

Plastic components (PA, PP, PE, POM, etc): Plastic wastes

The following section shows the variation of each impact indicator compared to the representative product for which the variation is above 10%, results aggregated over all included modules (from A to C)

impact Indicator abbreviation MAX MIN

GWP- total 22%

GWP - fossil 22%

ODP 62%

AP 12%

POCP 14%

ADPF 26%

WDP 12%

GWP-GHG 22%

INFORMATION RELATED TO EPDS OF MULTIPLE PRODUCTS

Justification for why this is representative	product with higher volume production
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ABBREVIATIONS

Global warming potential - total (GWP-total)

Global warming potential - fossil fuels (GWP-fossil)

Depletion potential of the stratospheric ozone layer (ODP)

Acidification potential, accumulated exceedance (AP)

Photochemical ozone creation potential (POCP)

Abiotic depletion potential - fossil resources (ADPF)

Water (user) deprivation potential (WDP)

Global warming potential (GWP-GHG)

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VERSION HISTORY

Version 001, 2026-04-15

- Original version of the EPD

