



Environmental Product Declaration

Schindler 5500

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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.



Schindler

Program-related information and verification

Reference year for data:	2019
Geographical scope:	Europe
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PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/about-us/the-international-epd-system-about-the-system for a list of members. Review chair: Gorka Benito Alonso. The review panel may be contacted via the Secretariat www.environdec.com/contact-us .
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Verification:

CEN standard EN15804 serves as the core PCR
Independent verification of the declaration and data, according to EN ISO 14025:2010 <input type="checkbox"/> Internal <input checked="" type="checkbox"/> external
Third party verifier: Angela Schindler, Umweltberatung und Ingenieurdienstleistungen Approved by The International EPD(R) system

Revision History:	Revision 2022-11-25: EPD completely revised based on PCR 2019:14 V1.1 and c-PCR-008 for construction products, and validity date has been extended for 5 years
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Comparability between EPDs based on this c-PCR-008 (to PCR 2019:14) and EPDs based on PCR 2015:05 is not conceivable and shall be avoided. Any comparability of this kind shall be considered as false and misleading the EPD user. EPDs of construction products may not be comparable if they do not comply with EN 15804+A2:2019. EPDs within the same product category but from different programmes may not be comparable.

About Schindler

Founded in Switzerland in 1874, the Schindler Group is a leading global provider of elevators, escalators, and related services. Schindler mobility solutions move more than one billion people every day all over the world.

Behind the company's success are over 69,000 employees in more than 1,000 branches in over 100 countries throughout Europe, North & South America, Asia-Pacific, and Africa with manufacturing plants strategically located in Europe, Brazil, USA, China, and India.

Schindler manufactures, installs, services, and modernizes elevators, escalators, and moving walks for almost every type of buildings worldwide. Schindler's offerings range from cost-effective solutions for low-rise residential buildings to sophisticated access and transport management concepts for skyscrapers.

Schindler moves people and materials, and connects vertical and horizontal transport systems through intelligent mobility solutions driven by green and user-friendly technologies. Schindler products can be found in many well-known buildings across the globe, including residential and office buildings, airports, shopping centers / retail establishments, and buildings with special requirements.



A network of more than 1,000 branches in over 100 countries.

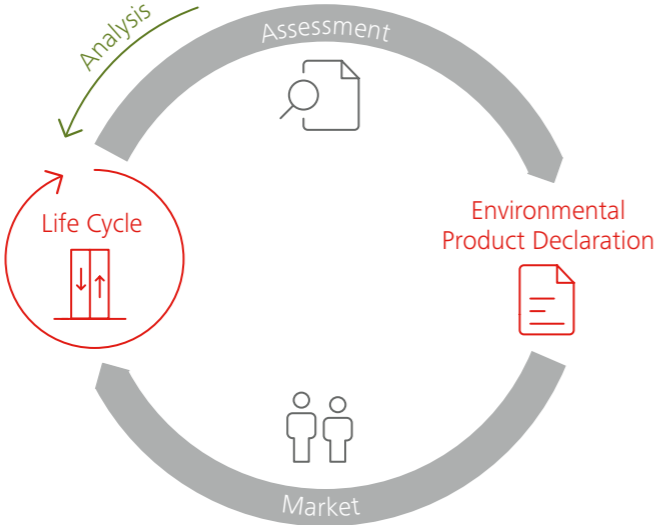
We Elevate... Sustainability

Schindler's commitment to sustainability is enshrined in our Corporate Sustainability Policy, which defines our approach to sustainability based on four pillars – People, Product, Planet, and Performance – and the journey we have embarked on regarding key sustainability challenges.

Sustainability is a dual commitment for Schindler: we want to fulfill our vision of leadership in urban mobility solutions and strive to optimize our environmental impact while investing in people and society. Schindler has demonstrated this commitment by achieving the ISO 9001/14001 certification in 2020.

Mobility is essential in the world we live and work. Every day, more than one billion people all over the world place their trust in Schindler. That is why we are committed to continuously improve the environmental impact of our products and services along the whole life cycle.

With over 145 years of history, Schindler has grown around the world and is recognized as a responsible corporate citizen. We firmly intend to continue evolving along this path with a global perspective on sustainability and a focus on the most relevant key performance indicators.



From design to recycling

From the first sketches in design, right through to disposal and recycling, environmental assessment considerations are an integral part of the Schindler product development process. The assessment rigidly follows the ISO 14040 standard and is embedded in the ISO 14001 Environmental Management System, which is applied at Corporate Research & Development and provides transparency in all phases.

Life Cycle Assessment (LCA)

Schindler conducts Life Cycle Assessments of its products. The objective is to continuously improve the environmental performance of the product assessed. A holistic approach is applied all the way from initial product development through to the continuous product improvement initiatives.

Environmental Product Declaration (EPD)

The EPD provides verified information on the environmental impact of a product. The declaration is based on a comprehensive LCA and follows the ISO 14025 guideline. A complex issue made understandable.

Product Category Rules (PCR)

Product Category Rules define the rules and requirements for EPDs of a certain product category. They are a key part of ISO 14025 as they enable transparency and comparability between EPDs.





Perfectly fitting your environment

Key figures Schindler 5500

Schindler 5500 application range	
Capacity	630 to 2,600 kg
Travel height	Up to 150 m
Door width	800 to 1,800 mm
Door height	2,100 to 3,000 mm
Drive	STM Technology Synchronous machine with regenerative drive
Speed	1.0 to 3.0 m/s MMR and MRL
Number of floors	50 floors (60 landings)
Car groups	Up to 8 cars expandable with PORT Technology
Interior	4 deco lines from functional to sophisticated, glas panel option bare car
Fixtures	Mechanical or touch-sensitive buttons dot matrix display or TFT LCD
Door types	T2L, T2R, C2, C4 glass door optional

Representative unit

based on a typical mid-rise residential/commercial building in Europe

Reference service life	25 years
Rated Load	1000 kg
Speed	1.6 m/s
Travel height	21 m
Number of floors / entrances	8/1
Car W/D/H (mm)	1100 / 2100 / 2200
Door W/H (mm)	900 / 2100
Operation days per year	365
Usage Category	3 & 4

In case of major deviations to the given configuration, please contact Schindler to anticipate the impact.

Gearless machine (including brake system*)

- Machine with synchronous motor technology has an efficiency at nominal operation up to 92 %
- Compact design, optimized footprint and reduced weight (about 30 % less weight than the preceding model)
- Major parts are made of steel and cast iron that contain high recycled content and ensure high recyclability
- No machine room required

Frequency converter

Regenerative converter

- Minimum heat dissipation due to energy recuperation
- Return of regenerated energy to power line during overhauling mode
- Minimal reactive power by use of PF1 converter (Total power factor 1: $\cos \Phi \geq 0.99$)

Controller

- Reduced stand-by power
- Halogen free cabling and wiring optionally available

Traction Transmission –

Suspension Traction Media (STM):

Saving resources due to:

- Reduced weight (less steel): not only traction media itself but also less compensation chain
- Much smaller traction sheave diameter with STM technology: smaller machine compared to steel rope installations
- More than 3 times longer life time compared to steel ropes
- Oil free traction media: compared to steel ropes the STM is oil free and does not require regular re-lubrication.
- STM is halogen-free

Door system

- High efficiency, low mass Permanent Magnet Synchronous Motor
- Low mass door system and low friction mechanics
- Halogen free cabling and wiring optionally available

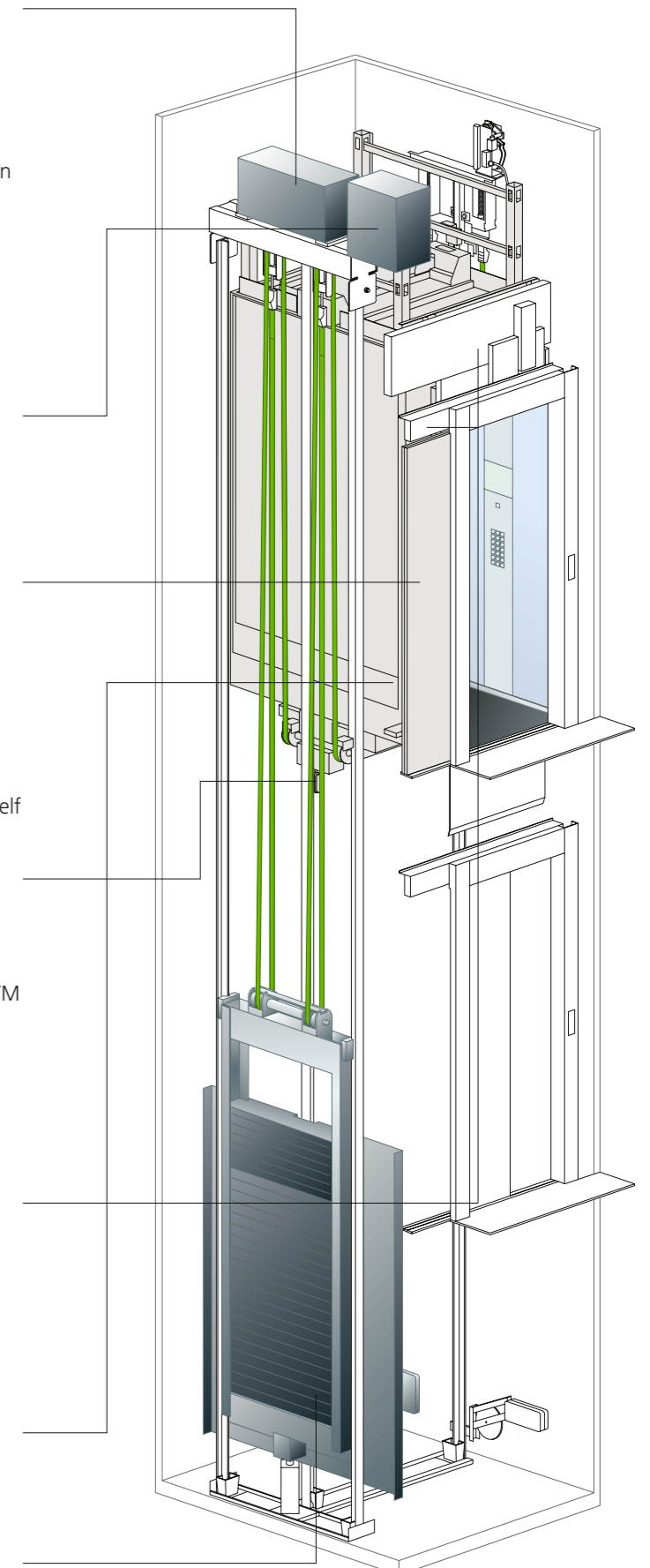
Car

- Optimized design resulting in weight reduction
- LED car lighting available
- Car light switches off automatically
- Stand-by function

Counterweight

- Substitution of lead for balancing weight

* safety component



Elevator life cycle insights

System boundary

This EPD covers the full life cycle with a cradle to grave approach. The PCR focuses on four main stages. The Product stage includes the raw material extraction and production (A1), transport to the manufacturing site (A2) primarily by truck, and manufacturing and assembly of components (A3), considering the demand of energy, auxiliary and operational materials, and packaging. The Construction process stage includes the transportation to the installation site by truck (A4) and the installation (A5), considering the energy demand and auxiliary materials used, including related Volatile Organic Compound (VOC) emissions and the disposal of packaging material. The Use stage includes the maintenance (B2), considering the transportation of employees to the installation site and auxiliary materials,

including related VOC emissions, and preventive maintenance parts production and energy use (B6) during operation and standby. All other modules are not relevant, and modernization is not foreseen. The End-of-life stage includes the deconstruction (C1), considering the energy demand and auxiliary materials, the transportation by truck to waste processing facilities (C2), the waste processing (C3), considering sorting, incineration, and landfill is considered. Finally, the benefits and loads beyond the system boundaries stage (D) include the potential from substitution of primary material by recycling material and energy recovery out of waste incineration.

Cut-off criteria

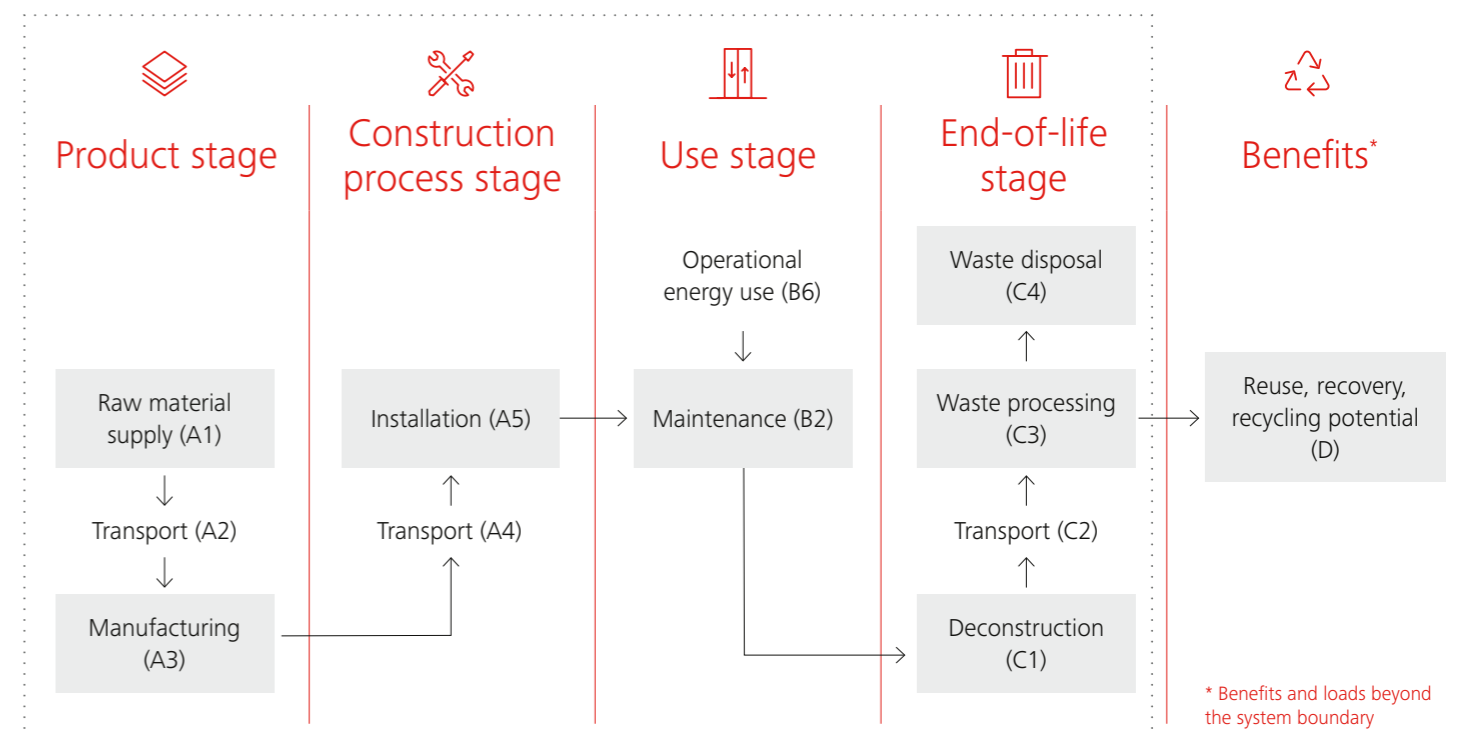
General quality and cut-off criteria were considered, as defined for the evaluation in the PCR and EN 15804. The total mass of the elevator materials considered equals the total mass of the elevator. All inflows and

outflows, for which data are mandatory, are included in the calculations. Special emphasis was given to material and energy flows that are known to have a large impact.

Stage	Module	Code	Status
Product stage	Raw material supply	A1	✓
	Transport	A2	✓
	Manufacturing	A3	✓
Construction Process stage	Transport	A4	✓
	Installation	A5	✓
Use stage	Use	B1	ND
	Maintenance	B2	✓
	Repair	B3	ND
	Replacement	B4	ND
	Refurbishment	B5	ND
	Operational energy use	B6	✓
	Operational water use	B7	ND
End-of-life stage	Deconstruction	C1	✓
	Transport	C2	✓
	Waste processing	C3	✓
	Waste disposal	C4	✓
Benefits	Reuse, recovery, recycling, potential	D	✓

This declaration covers "cradle to grave". All mandatory modules covered in the EPD are marked with a ✓. For non-relevant fields, ND is marked in the table.

System boundary

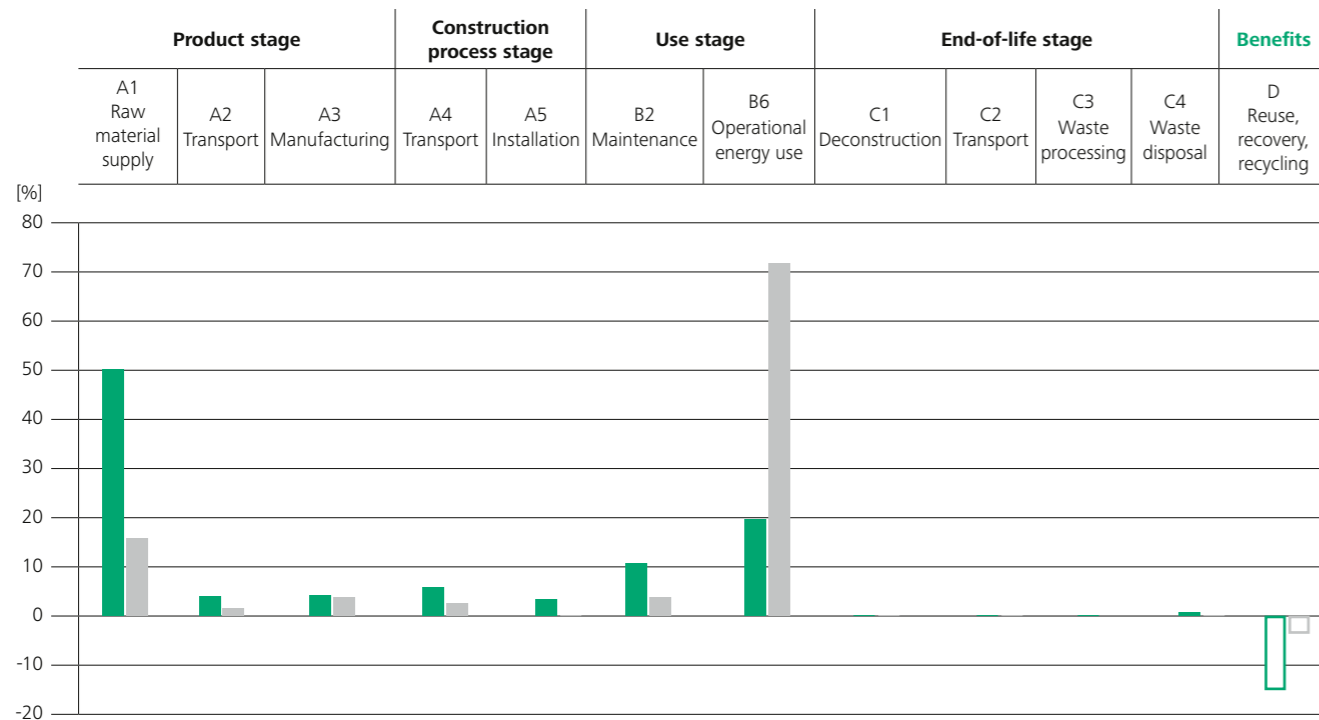


Our mission: reduce emissions

Consolidated impact based on a reference service life of 25 years

Values shown refer to the representative unit of Schindler 5500, as shown on page 7. The most relevant processes, energy and material flows are indicated

- Climate change total (GWP_{tot})
- Resource use - fossil fuels (ADPF)



Data reflects UC4 results

Summary

In the operations stage, we have achieved a Class A energy efficiency rating for the defined representative elevator. The material supply for production, the energy consumption of the elevator during operation, and the maintenance during the lifetime of the elevator system have the biggest impact on resources. The profile of the impacts of the energy consumption depends on the

chosen electricity supply. The French supply mix was considered for the installation in Paris. Further relevant factors are the elevator lifetime and the usage category. With shorter lifetime and lower usage, the portion of materials becomes more important.

Environmental impact

In the LCA, impact assessment methods and characterization factors were used at the midpoint level as requested in the PCR (i.e. without normalization and weighting). Selected core environmental impact categories for this study were global warming (IPCC 2013 100 year horizon), effects on the stratospheric ozone layer (WMO, 2014), acidification (Seppälä et al., 2006), eutrophication (Struijs et al. 2009b), photochemical ozone creation (Van Zelm et al.), abiotic depletion of elements (CML 2001, baseline, August 2016 version), and abiotic depletion of fossil fuels (Guinée et al.), water deprivation potential (Boulay et al., 2016).

Impacts per functional unit

The PCR defines the following functional unit for product comparison.

The primary purpose of an elevator is to transport goods and passengers vertically. Therefore, for the purpose of this EPD, the functional unit is the result of a load transported over a distance, expressed in tonne - kilometer [tkm].

The Transportation Performance (TP) indicates the total amount of tkm performed by the elevator over the defined service life with an average load according to ISO 25745-2.

For the defined representative unit and a lifetime of 25 years, the TP per applied usage category is:

Usage Category	Transportation Performance (TP)
3	1267.6 tkm
4	3794.2 tkm



Minimizing material, maximizing space

Material that matters

The table and graph below show the resulting material composition of the installed elevator with a total weight of 4788.9 kg, without packaging. It is mainly composed of ferrous metals and concrete. The biogenic carbon content in the product is below 5%

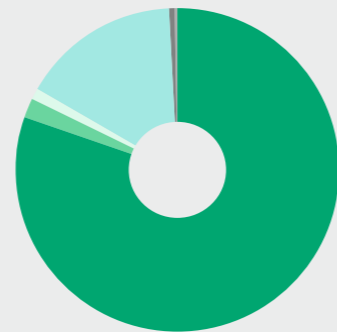
At the end of use almost all material is suitable for recycling. An average material loss of 5% in production was assumed additionally for the consumption of raw material. The Schindler 5500 elevators emit no VOCs or other harmful substances once installed. The elevator can optionally be ordered halogen free – which

includes the cabling and wiring. Hazardous substances are avoided as much as possible, in accordance with REACH, its candidate list and other regulations. However, the following substances may still exist above 0.1% weight by weight in articles used in our products (see table below).

Substance	CAS-No.	Present in
Lead	7439-92-1	Batteries, Metal alloys
Diboron Trioxide	1303-86-2	Electronic articles
Boric Acid	10043-35-3	Electronic articles

Used material – an overview

Product components	Weight (kg)	Weight (%)	Post-consumer material weight (%)
● Ferrous metal	3857.65	80.55	unknown
● Non-ferrous metals	91.18	1.90	unknown
● Plastics and rubbers	54.04	1.13	0
● Inorganic materials	749.27	15.65	0
● Organic materials	2.24	0.05	0
● Lubricants	2.77	0.06	0
● Electric and electronic equipment	25.34	0.53	unknown
● Batteries and accumulators	6.41	0.13	unknown
● Other materials	0.00	0.00	0
Total	4788.90	100%	



Weight (%)

Packaging material

The table shows the typical composition of material used for packaging in relation to the total weight of the elevator system – once the elevator arrives on the construction site.

Schindler seeks to maximize the transport capacity per pallet for each delivery. Furthermore, almost all materials are suitable for recycling, e.g. paperboard and wood.

Composition of packaging material

Product components	Weight (kg)	Weight (%)	Weight (%) packaging vs product	Biogenic carbon content (kg C)
Wood*	341.30	89.37	7.13	1.71E+02
Cardboard*	34.50	9.03	0.72	1.59E+01
Plastic	3.90	1.02	0.08	0.00E+00
Steel	2.20	0.58	0.05	0.00E+00
Total	381.90	100%	7.97%	1.87E+02

*Renewable material

Potential environmental impact

Table of results – core environmental impact UC 3 per tkm

Impact category	Unit	Product stage				Construction process stage		Use stage		End-of-life stage				Total	Net Benefits
		A1	A2	A3	Sum A1-A3	A4	A5	B2	B6	C1	C2	C3	C4		
GWP _{tot}	kg CO ₂ eq.	8.13E+00	6.42E-01	7.06E-01	9.48E+00	9.46E-01	5.61E-01	1.76E+00	1.99E+00	1.49E-03	5.79E-02	2.90E-02	1.26E-01	1.49E+01	-2.42E+00
GWP _{fos}	kg CO ₂ eq.	8.11E+00	6.42E-01	1.23E+00	9.98E+00	9.45E-01	2.11E-02	1.75E+00	1.99E+00	1.48E-03	5.79E-02	2.89E-02	1.25E-01	1.49E+01	-2.42E+00
GWP _{bio}	kg CO ₂ eq.	1.36E-02	2.27E-04	-5.32E-01	-5.18E-01	3.45E-04	5.40E-01	3.82E-03	6.75E-03	5.04E-06	2.85E-05	4.06E-05	9.76E-05	3.22E-02	1.20E-03
GWP _{luluc}	kg CO ₂ eq.	7.79E-03	2.49E-04	4.09E-03	1.21E-02	3.32E-04	4.94E-06	1.95E-03	1.63E-03	1.22E-06	3.24E-05	9.09E-06	1.09E-05	1.61E-02	8.90E-04
ODP	kg CFC 11 eq.	5.01E-07	1.44E-07	9.15E-08	7.37E-07	2.15E-07	1.94E-09	2.06E-07	1.14E-06	8.50E-10	1.25E-08	6.81E-10	4.63E-09	2.32E-06	-7.85E-08
AP	mol H ⁺ eq.	8.22E-02	4.54E-03	6.02E-03	9.27E-02	3.88E-03	1.03E-04	1.29E-02	1.03E-02	7.68E-06	2.80E-04	3.38E-05	1.34E-04	1.20E-01	-2.06E-02
EP _{fw}	kg P eq.	7.00E-04	4.84E-06	8.44E-05	7.89E-04	7.45E-06	5.48E-07	1.79E-04	7.93E-05	5.92E-08	6.53E-07	2.86E-07	7.37E-07	1.06E-03	-2.17E-04
EP _{fw}	kg PO4 eq.	2.11E-03	1.46E-05	2.54E-04	2.37E-03	2.24E-05	1.65E-06	5.40E-04	2.39E-04	1.78E-07	1.97E-06	8.62E-07	2.22E-06	3.18E-03	-6.54E-04
EP _{mar}	kg N eq.	9.92E-03	1.23E-03	1.00E-03	1.22E-02	1.15E-03	3.48E-05	2.05E-03	1.67E-03	1.25E-06	8.78E-05	6.98E-06	5.30E-05	1.72E-02	-2.39E-03
EP _{ter}	mol N eq.	1.48E-01	1.36E-02	1.09E-02	1.72E-01	1.28E-02	3.52E-04	2.44E-02	1.83E-02	1.37E-05	9.72E-04	7.77E-05	4.44E-04	2.30E-01	-2.95E-02
POCP	kg NMVOC eq.	4.34E-02	3.90E-03	3.48E-03	5.08E-02	3.90E-03	9.92E-05	7.21E-03	5.04E-03	3.76E-06	2.81E-04	2.08E-05	1.26E-04	6.75E-02	-1.43E-02
ADPE*	kg Sb eq.	2.03E-03	1.61E-05	1.21E-05	2.06E-03	2.58E-05	1.80E-07	9.41E-04	4.82E-05	3.60E-08	2.87E-06	9.39E-08	2.20E-07	3.07E-03	-6.65E-05
ADPF*	MJ	9.19E+01	9.54E+00	2.26E+01	1.24E+02	1.43E+01	3.96E-01	2.26E+01	2.60E+02	1.94E-01	8.62E-01	7.87E-02	2.42E-01	4.22E+02	-1.95E+01
WDP*	m ³ depriv.	2.80E+00	2.58E-02	4.35E-01	3.27E+00	3.98E-02	3.82E-03	4.09E-01	6.83E-01	5.10E-04	3.08E-03	2.18E-02	4.13E-02	4.47E+00	-4.71E-01
Additional impact															
GWP _{GHG} **	kg CO ₂ eq.	7.81E+00	6.37E-01	1.22E+00	9.67E+00	9.37E-01	2.05E-02	1.72E+00	1.96E+00	1.46E-03	5.74E-02	2.88E-02	1.24E-01	1.45E+01	-2.29E+00

Table of results – core environmental impact UC 4 per tkm

Impact category	Unit	Product stage				Construction process stage		Use stage		End-of-life stage				Total	Net Benefits
		A1	A2	A3	Sum A1-A3	A4	A5	B2	B6	C1	C2	C3	C4		
GWP _{tot}	kg CO ₂ eq.	2.72E+00	2.15E-01	2.36E-01	3.17E+00	3.16E-01	1.87E-01	5.87E-01	1.07E+00	4.97E-04	1.94E-02	9.67E-03	4.20E-02	5.40E+00	-8.09E-01
GWP _{fos}	kg CO ₂ eq.	2.71E+00	2.14E-01	4.12E-01	3.33E+00	3.16E-01	7.05E-03	5.85E-01	1.07E+00	4.95E-04	1.93E-02	9.66E-03	4.19E-02	5.38E+00	-8.10E-01
GWP _{bio}	kg CO ₂ eq.	4.55E-03	7.58E-05	-1.78E-01	-1.73E-01	1.15E-04	1.80E-01	1.28E-03	3.62E-03	1.68E-06	9.52E-06	1.36E-05	3.26E-05	1.21E-02	8.51E-03
GWP _{luluc}	kg CO ₂ eq.	2.60E-03	8.32E-05	1.37E-03	4.05E-03	1.11E-04	1.65E-06	6.52E-04	8.76E-04	4.07E-07	1.08E-05	3.04E-06	3.63E-06	1.04E-02	2.97E-04
ODP	kg CFC 11 eq.	1.67E-07	4.82E-08	3.06E-08	2.46E-07	7.17E-08	6.49E-10	6.89E-08	6.11E-07	2.84E-10	4.16E-09	2.28E-10	1.55E-09	4.29E-05	-2.62E-08
AP	mol H ⁺ eq.	2.74E-02	1.52E-03	2.01E-03	3.10E-02	1.30E-03	3.43E-05	4.30E-03	5.52E-03	2.57E-06	9.34E-05	1.13E-05	4.49E-05	3.77E-02	-6.89E-03
EP _{fw}	kg P eq.	2.34E-04	1.62E-06	2.82E-05	2.64E-04	2.49E-06	1.83E-07	5.99E-05	4.25E-05	1.98E-08	2.18E-07	9.57E-08	2.46E-07	1.02E-02	-7.25E-05
EP _{fw}	kg PO4 eq.	7.04E-04	4.87E-06	8.49E-05	7.93E-04	7.49E-06	5.51E-07	1.80E-04	1.28E-04	5.95E-08	6.57E-07	2.88E-07	7.41E-07	3.69E-03	-2.18E-04
EP _{mar}	kg N eq.	3.32E-03	4.11E-04	3.34E-04	4.06E-03	3.86E-04	1.16E-05	6.86E-04	8.98E-04	4.18E-07	2.93E-05	2.33E-06	1.77E-05	5.22E-03	-7.97E-04
EP _{ter}	mol N eq.	4.93E-02	4.55E-03	3.65E-03	5.76E-02	4.26E-03	1.17E-04	8.15E-03	9.83E-03	4.57E-06	3.25E-04	2.60E-05	1.49E-04	1.39E+02	-9.85E-03
POCP	kg NMVOC eq.	1.45E-02	1.30E-03	1.16E-03	1.70E-02	1.30E-03	3.31E-05	2.41E-03	2.71E-03	1.26E-06	9.38E-05	6.96E-06	4.20E-05	2.36E-02	-4.79E-03
ADPE*	kg Sb eq.	6.77E-04	5.37E-06	4.05E-06	6.87E-04	8.61E-06	6.03E-08	3.14E-04	2.59E-05	1.20E-08	9.57E-07	3.14E-08	7.35E-08	1.04E-03	-2.22E-05
ADPF*	MJ	3.07E+01	3.19E+00	7.54E+00	4.14E+01	4.76E+00	1.32E-01	7.56E+00	1.39E+02	6.47E-02	2.88E-01	2.63E-02	8.08E-02	1.94E+02	-6.53E+00
WDP*	m ³ depriv.	9.37E-01	8.61E-03	1.45E-01	1.09E+00	1.33E-02	1.28E-03	1.37E-01	3.67E-01	1.70E-04	1.03E-03	7.28E-03	1.38E-02	1.26E+00	-1.57E-01
Additional impact															
GWP _{GHG} **	kg CO ₂ eq.	2.61E+00	2.13E-01	4.07E-01	3.23E+00	3.13E-01	6.86E-03	5.75E-01	1.05E+00	4.88E-04	1.92E-02	9.63E-03	4.15E-02	5.25E+00	-7.66E-01

GWP_{tot} Climate change total
 GWP_{fos} Climate change – fossil
 GWP_{bio} Climate change – biogenic
 GWP_{luluc} Climate change – land use and land use change
 ODP Ozone Depletion
 AP Acidification
 EP_{fw} Eutrophication aquatic freshwater
 EP_{mar} Eutrophication aquatic marine
 EP_{ter} Eutrophication terrestrial
 POCP Photochemical ozone formation

ADPE Depletion of abiotic resources – minerals and metals
 ADPF Depletion of abiotic resources – fossil fuels
 WDP Water use
 GWP_{GHG} Climate change - greenhouse gas

* 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 experience with the indicator.
 **The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. Thus, this indicator is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Impact on natural resources

Use of resources

Material resources are based on specific data of the product, i.e. new and replacement material, packaging, and auxiliary materials used in the manufacturing.

Energy resources are calculated based on measurements or LCI-data. All data has been extended to their life cycle scope.

Table of results – use of resources UC 3 per tkm

Impact category	EN15804 Unit	Product stage				Construction process stage		Use stage		End-of-life stage				Total	Net Benefits D
		A1	A2	A3	Sum A1-A3	A4	A5	B2	B6	C1	C2	C3	C4		
PERE	MJ	6.07E+00	1.28E-01	6.70E+00	1.29E+01	2.02E-01	2.04E-02	1.37E+00	1.90E+01	1.42E-02	1.85E-02	8.11E-03	1.16E-02	3.17E+01	-1.87E+00
PERM	MJ	3.71E-02	0.00E+00	0.00E+00	3.71E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.91E+00	0.00E+00
PERT	MJ	6.11E+00	1.28E-01	6.70E+00	1.29E+01	2.02E-01	2.04E-02	1.37E+00	1.90E+01	1.42E-02	1.85E-02	8.11E-03	1.16E-02	3.36E+01	-1.87E+00
PENRE	MJ	9.06E+01	9.54E+00	2.26E+01	1.23E+02	1.43E+01	3.96E-01	2.21E+01	2.60E+02	1.94E-01	8.62E-01	7.87E-02	2.42E-01	-9.89E+01	-1.95E+01
PENRM	MJ	1.34E+00	0.00E+00	0.00E+00	1.34E+00	0.00E+00	0.00E+00	5.75E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.62E+02	0.00E+00
PENRT	MJ	9.19E+01	9.54E+00	2.26E+01	1.24E+02	1.43E+01	3.96E-01	2.26E+01	2.60E+02	1.94E-01	8.62E-01	7.87E-02	2.42E-01	1.63E+02	-1.95E+01
SM*	kg	9.76E-01	0.00E+00	2.07E-03	9.78E-01	0.00E+00	0.00E+00	1.45E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.92E-01	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	3.37E-02	3.37E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.37E-02	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	3.37E-02	3.37E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E-01	0.00E+00
FW	m ³	7.72E-02	9.05E-04	2.11E-02	9.93E-02	1.42E-03	1.69E-04	1.31E-02	7.46E-02	5.56E-05	1.17E-04	6.76E-04	9.94E-04	1.16E-01	-1.04E-02

Table of results – use of resources UC 4 per tkm

Impact category	EN15804 Unit	Product stage				Construction process stage		Use stage		End-of-life stage				Total	Net Benefits D
		A1	A2	A3	Sum A1-A3	A4	A5	B2	B6	C1	C2	C3	C4		
PERE	MJ	2.03E+00	4.29E-02	2.24E+00	4.31E+00	6.75E-02	6.80E-03	4.59E-01	1.02E+01	4.74E-03	6.18E-03	2.71E-03	3.89E-03	1.41E+01	-6.25E-01
PERM	MJ	1.24E-02	0.00E+00	0.00E+00	1.24E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.02E+00	0.00E+00
PERT	MJ	2.04E+00	4.29E-02	2.24E+00	4.32E+00	6.75E-02	6.80E-03	4.59E-01	1.02E+01	4.74E-03	6.18E-03	2.71E-03	3.89E-03	1.51E+01	-6.25E-01
PENRE	MJ	3.03E+01	3.19E+00	7.54E+00	4.10E+01	4.76E+00	1.32E-01	7.37E+00	1.39E+02	6.47E-02	2.88E-01	2.63E-02	8.08E-02	-8.56E+01	-6.53E+00
PENRM	MJ	4.49E-01	0.00E+00	0.00E+00	4.49E-01	0.00E+00	0.00E+00	1.92E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E+02	0.00E+00
PENRT	MJ	3.07E+01	3.19E+00	7.54E+00	4.14E+01	4.76E+00	1.32E-01	7.56E+00	1.39E+02	6.47E-02	2.88E-01	2.63E-02	8.08E-02	5.44E+01	-6.53E+00
SM*	kg	3.26E-01	0.00E+00	6.93E-04	3.27E-01	0.00E+00	0.00E+00	4.85E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.32E-01	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	1.13E-02	1.13E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-02	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	1.13E-02	1.13E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.13E-02	0.00E+00
FW	m ³	2.58E-02	3.02E-04	7.06E-03	3.32E-02	4.74E-04	5.63E-05	4.37E-03	4.00E-02	1.86E-05	3.90E-05	2.26E-04	3.32E-04	3.87E-02	-3.49E-03

PERE Use of renewable primary energy excluding renewable energy resources used as raw material
 PERM Use of renewable primary energy resources used as raw material
 PERT Total use of renewable primary energy resources (primary energy and primary energy resources used as raw material)
 PENRE Use of non-renewable primary energy excluding non-renewable energy resources used as raw material

PENRM Use of non-renewable primary energy resources used as raw material
 PENRT Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw material)
 SM Use of secondary material
 RSF Use of renewable secondary fuels
 NRSF Use of non-renewable secondary fuels
 FW Net use of fresh water

*Average recycled content was considered for metal supply; ferrous metal 30% (World Steel Association), aluminum 74%, copper 20% (ecoinvent).

Recognizing value at the end of life

Waste – Categories

Information on waste is given in three categories, considering potential risks from deposition of materials. The highest amount of waste is related to categories with low risk „non-hazardous waste“. Relevant

contributions result from raw material extraction and transformation including mining and processing of metals and from manufacturing.

Table of results – waste categories UC 3 per tkm

Impact category	EN15804 Unit	Product stage				Construction process stage		Use stage		End-of-life stage				Total	Net Benefits D
		A1	A2	A3	Sum A1-A3	A4	A5	B2	B6	C1	C2	C3	C4		
HWD	kg	1.48E-03	2.35E-05	7.18E-05	1.58E-03	3.74E-05	2.05E-07	1.37E-04	7.25E-05	5.41E-08	2.39E-06	7.36E-08	4.64E-07	3.50E-01	-2.21E-04
NHWD	kg	1.69E+00	4.27E-01	1.18E-01	2.24E+00	6.79E-01	6.56E-03	3.75E-01	3.55E-01	2.65E-04	2.62E-02	5.10E-03	6.23E-01	3.96E+00	-1.07E+00
RWD	kg	1.99E-04	6.51E-05	8.21E-05	3.46E-04	9.72E-05	2.79E-06	8.93E-05	3.38E-03	2.52E-06	5.72E-06	2.87E-07	1.09E-06	6.92E-03	-1.16E-05

Table of results – waste categories UC 4 per tkm

Impact category	EN15804 Unit	Product stage				Construction process stage		Use stage		End-of-life stage				Total	Net Benefits D
		A1	A2	A3	Sum A1-A3	A4	A5	B2	B6	C1	C2	C3	C4		
HWD	kg	4.95E-04	7.85E-06	2.40E-05	5.27E-04	1.25E-05	6.86E-08	4.56E-05	3.89E-05	1.81E-08	7.99E-07	2.46E-08	1.55E-07	1.87E-01	-7.37E-05
NHWD	kg	5.65E-01	1.43E-01	3.93E-02	7.47E-01	2.27E-01	2.19E-03	1.25E-01	1.90E-01	8.84E-05	8.76E-03	1.70E-03	2.08E-01	1.32E+00	-3.58E-01
RWD	kg	6.65E-05	2.17E-05	2.74E-05	1.16E-04	3.25E-05	9.32E-07	2.98E-05	1.81E-03	8.43E-07	1.91E-06	9.58E-08	3.64E-07	3.60E-03	-3.89E-06

HWD Hazardous waste disposal RWD Radioactive waste disposal
 NHWD Non-hazardous waste disposal

Waste – Output flow

The elevator consists of a high number of materials with recycling potential. Plastic and organic material

delivered to municipal incineration were considered for energy recovery. No parts are considered for re-use.

Table of results – environmental output flow UC 3 per tkm

Impact category	EN15804 Unit	Product stage				Construction process stage		Use stage		End-of-life stage				Total
		A1	A2	A3	Sum A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	
CRU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	3.56E-01	3.56E-01	0.00E+00	1.74E-03	6.35E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.13E+00	3.55E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E-01	1.99E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.86E-02	3.48E-01
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E+00	1.81E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E-01	2.58E+00
EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.92E+00	3.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E-01	4.82E+00

Table of results – environmental output flow UC 4 per tkm

Impact category	EN15804 Unit	Product stage				Construction process stage		Use stage		End-of-life stage				Total
		A1	A2	A3	Sum A1-A3	A4	A5	B2	B6	C1	C2	C3	C4	
CRU	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	1.19E-01	1.19E-01	0.00E+00	5.80E-04	2.12E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.05E+00	1.19E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-01	6.64E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.57E-03	1.16E-01
EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.02E-01	6.06E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E-01	8.63E-01
EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E+00	1.13E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.87E-01	1.61E+00

CRU Components for re-use EEE Exported Energy Electrical
 MFR Materials for recycling EET Exported Energy Thermal
 MER Materials for energy recovery

Scenarios

Electricity and district heat in manufacturing (A3) und operation (B6) stage

Electricity and district heat are used during the manufacturing stage from suppliers in different countries. Each country has its own electricity and district heat mix with its own composition and environmental impact. The following table shows the GWP_{GHG} emission factors in kg CO₂ eq./kWh of the country specific supply mix. French electricity was applied for the operational energy use stage (B6).

Country	Electricity kg CO ₂ eq./kWh	District Heat kg CO ₂ eq./kWh
China	1.07	
Czech Republic	0.94	
France	0.09	
Italy	0.42	
Schweiz / FL	0.11	0.06
Slovakia	0.51	0.15
Spain	0.33	

Transport to installation site (A4)

Transport from Schindler hub to the installation site in Paris. A load factor based on ecoinvent 3.6 including empty returns has been considered.

Means of transport	Distance	Load factor
Truck 16 – 32 metric tons, EURO 5, Diesel	1360 km	5.17 t
Truck 7.5 – 16 metric tons, EURO 4, Diesel	23.5 km	3.29 t

Maintenance (B2)

Proper maintenance assures good operation over the entire service life. This includes preventive replacement of worn parts. For the commuting of the maintenance personnel, an annual average per installation was applied based on the fleet mileage of the region.

Scenario	Amount	
Preventive maintenance interval	As per component individual plan	
Commuting to installation	104 km / year	Passenger car diesel with particle filter

Preventive maintenance replacement materials	Weight (kg)	Weight (%)
Ferrous metal	57.69	46.78
Non-ferrous metals	4.97	4.03
Plastics and rubbers	24.29	19.70
Inorganic materials	0.70	0.57
Lubricants	0.02	0.02
Electric and electronic equipment	10.05	8.15
Batteries and accumulators	25.60	20.76
Total	123.32	100%

Energy consumption in operation phase (B6) and energy efficiency classification

Increasing energy efficiency is essential in order to reduce the environmental impact of the elevator and the building. The longest phase in the life cycle is the usage stage, which is up to 25 years or longer, depending on maintenance and modernization.

Schindler energy efficiency calculation and classification is performed according to ISO 25745-2. The typical usage expectation for a Schindler 5500 is between 200 to 1000 trips per day. The classification and estimated annual energy consumption always refer to a specific configuration. Usage, load capacity, energy saving options and site conditions also influence the final rating.

Usage category	Assumption	Estimated annual energy consumption	Energy efficiency classification
UC3	300 trips per day	1072 kWh	Class A
UC4	750 trips per day	1721 kWh	Class A

According to the representative elevator, as defined for the Life Cycle Assessment, see page 7.

End of life (C2 – C4)

Most materials are suitable for recycling, for example metal and glass, where a recycling rate of 83% is assumed. Plastic and wood are assumed to be disposed of using waste incineration. Energy recovery is assumed standard for municipal waste incineration facilities.

The amount of material delivered to recovery systems is used for the calculations of net benefits in module D. A net flow calculation is used according to EN 15804. Input and outflows of recycled materials are considered.

Processes	Unit*	Amount kg/kg
Collection process	kg collected separately	1
	kg collected with mixed construction waste	0
Recovery system	kg for re-use	0.00
	kg for recycling	0.83
	kg for energy recovery	0.01
Disposal	kg product or material for final deposition	0.16
Distance for end-of-life treatment	km	30

* Expressed per functional unit or per declared unit of components products or materials and by type of material





References

References

ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

PCR 2019:14 Construction Products, version 1.1

C-PCR-008 Lifts (to PCR 2019:14), version 2020-10-30

ISO 25745-2:2015 Energy performance of lifts, escalators and moving walks - Part 2: Energy calculation and classification for lifts (elevators)

ecoinvent database v3.6, SimaPro V9

Glossary

LCA – Life Cycle Assessment: Assessment methodology of the environmental impact of all relevant material and energy flows throughout the entire life cycle of a product, according to ISO 14040.

LCI – Life Cycle Inventory: Creation of inventory of input and output flows for a product system. These flows include inputs such as water, energy, and raw materials. Outputs are releases to air, land, and water. Inventories are based on literature analysis or process simulation.

EPD – Environmental Product Declaration: A declaration that provides quantified environmental data using predetermined parameters defined in a Product Category Rule according to ISO 14025.

PCR – Product Category Rule: A set of specific rules, requirements, and guidelines for developing environmental declarations for one or more product categories.

REACH – Registration, Evaluation, Authorization and Restriction of Chemicals: EU regulation (EC 1907/2006) that addresses the production and use of chemical substances, and their potential impacts on both human health and the environment.

RSL – Reference Service Life: The reference service life considered for the LCA corresponds to the designed lifetime of the product.

FU – Functional Unit: For lifts it is defined as the transportation of a load over a distance, expressed as one tonne [t] transported over one kilometre [km], i.e. tonne-kilometer [tkm] over a vertical (or inclined) trajectory.

UC – Usage Category: Defines the intensity of the lift usage by categories, based on average number of trips per day according to ISO 25745-2.



Sustainability

We Elevate... Our World

Sustainability at Schindler is more than striving to minimize the use of natural resources. We facilitate sustainable, smart urban mobility, while committing to a sustainable supply chain for all our products and driving innovation for green building management.



Sustainability at Schindler also means enabling an inclusive work environment where our workforce, which is as diverse as our customers and passengers, can thrive. It also means creating value in the communities where we operate, by helping develop young talent through education and training, by fostering lifelong learning for our technicians and by designing products and systems that make it easy and safe for people to move about in cities.

If you would like to learn more about Schindler's sustainability initiatives or access the latest Sustainability Report, you can find them here:
<https://www.schindler.com/com/internet/en/about-schindler/sustainability.html>

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We Elevate



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