# ENVIRONMENTAL PRODUCT DECLARATION

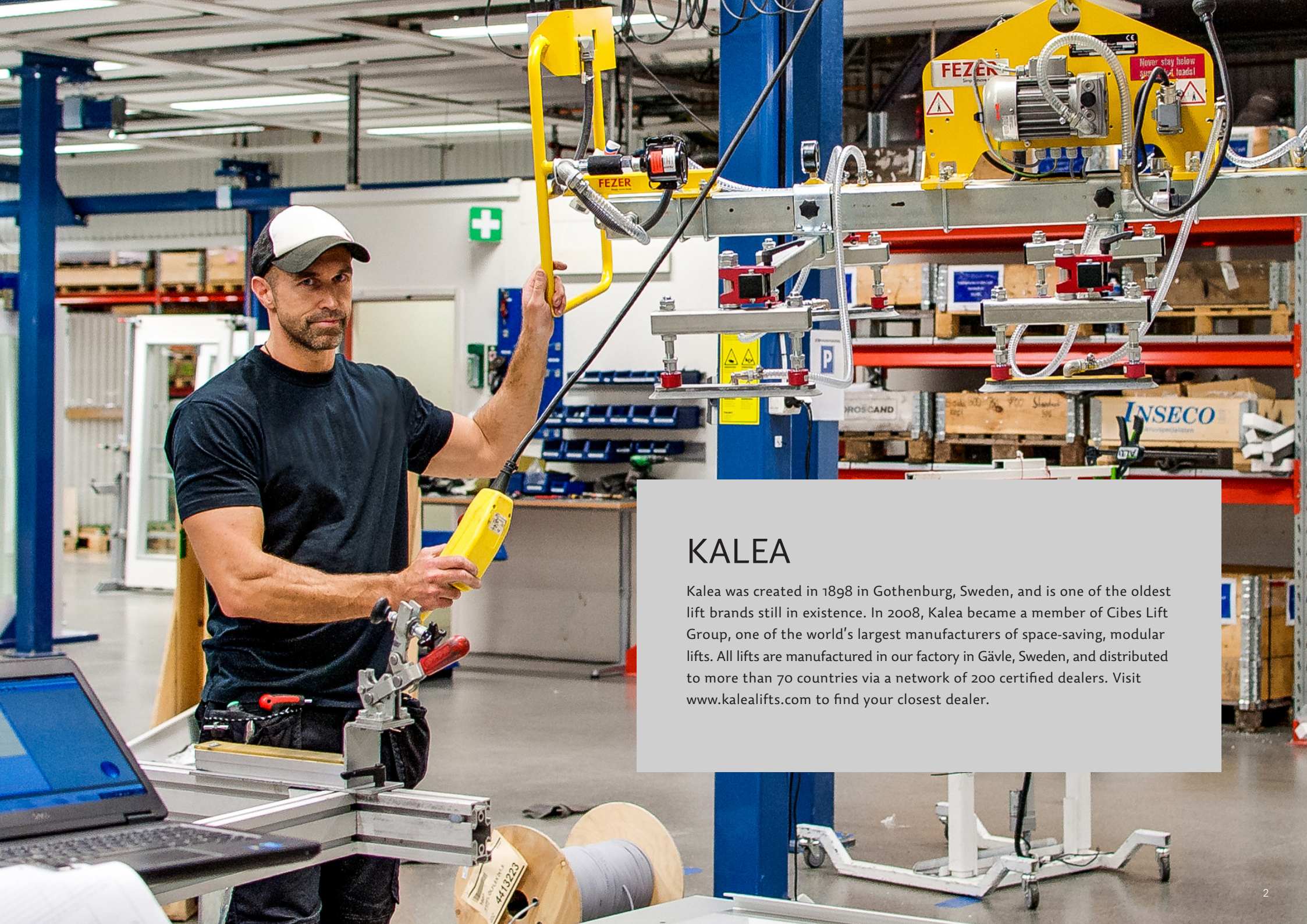
# KALEA A4 PRIMO

EPD®

ECO PLATFORM EPD VERIFIED

| | |
|---|---|
| Programme: | The International EPD® System, www.environdec.com |
| Programme operator: | EPD International AB |
| EPD registration number: | S-P-02766 |
| Publication date: | 2022-03-17 |
| Valid until: | 2027-03-16 |

KALEA LIFTS®




# KALEA

Kalea was created in 1898 in Gothenburg, Sweden, and is one of the oldest lift brands still in existence. In 2008, Kalea became a member of Cibes Lift Group, one of the world's largest manufacturers of space-saving, modular lifts. All lifts are manufactured in our factory in Gävle, Sweden, and distributed to more than 70 countries via a network of 200 certified dealers. Visit www.kalealifts.com to find your closest dealer.

## PERSONAL

- Simplicity is a virtue – Always take responsibility to ensure simplicity for the customer
- Local presence through people
- Act as a team player with sense of urgency towards your colleagues

## PROGRESSIVE

- Continuously review the product line to ensure design and flexibility
- Quality throughout the value chain
- Profit enables investments
- Always strive to improve, never get satisfied

## PROFESSIONAL

- Most things remain to be done
- We believe that having fun at work creates success
- We believe in a decentralized model with central coordination

# OUR CORE VALUES

Our company vision is underpinned by three strong values which shape and guide our behavior as a company: Personal, Progressive and Professional. These core values, which we call the three P's, help us drive our strategies forward and act as one in our day-to-day operations, regardless of where in the world we are, or the task at hand.

# OUR 5 PILLARS OF SUSTAINABILITY

Our work for a sustainable business is based on five pillars, which are also integrated with our business strategy: **Safety, Business, Planet, People** and **Ethics.**

**SAFETY – zero harm to people**
The health and safety of our employees, customers and partners is our top priority and a prerequisite for our business. We implement a very strict safety strategy to ensure that our products, services and work environments are safe.

**BUSINESS – sustainable business advantage**
We see no contradiction between sustainability and profitability. Being a leading company in our field, our sustainable business model strengthens our brand, attracts and retains the right talent and gives us a competitive edge.

**PLANET – responsible for a higher purpose**
Our planet is facing some serious enviromental threats, and although we cannot change the world on our own, we are committed to do whatever we can to mobilise our organisation and minimise our environmental impact.

**PEOPLE – make the difference**
We believe that our employees is our greatest asset and that wasting their talents would be unsustainable. We want to give people the opportunity to develop their skills and grow in a company culture characterised by openness, diversity and respect.

**ETHICS – values matter**
We work actively to inform our our employees, suppliers and business partners, that they are expected to observe and comply with the high standards for equal treatment, work rights and business integrity stated in our Code of Conduct.

# GENERAL INFORMATION

## PROGRAMME INFORMATION


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


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

Product category rules (PCR): C-PCR-008 Lifts (Elevators) to PCR2019-14 Construction products v1.11 and UN CPC code(s) 4354 Together with EN 15804:2012+A2:2019

PCR review was conducted by:the Technical Committee of the International EPD® System. Review chair: Gorka Benito. Contact via info@environdec.com

Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☐ EPD process certification ☒ EPD verification

Third party verifier: Hüdai Kara, PhD Metsims Sustainability Consulting
hudai.kara@metsims.com Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier:
☐ Yes ☒ No

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

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

The LCA approach harmonizes with the Product Environmental Footprint Category Rules for building products, cradle to grave (EPD International, 2021). The Life Cycle Assessment report (Böckin, 2022) is available to EPD-auditor on request and include all the detailed information required according to ISO 14044 (ISO, 2006b).

## PRODUCT SPECIFICATION

| Index | Values | Representatives values chosen in case of range |
|---|---|---|
| **Type of installation** | New generic lift | |
| **Commercial name** | A4 Primo | |
| **Main purpose** | Transport of passengers | |
| **Type of lift** | Platform lift (electric) | |
| **Type of drive system** | Screw and nut drive | |
| **Rated load (fixed or range)** | 300–500 kg | 400 kg |
| **Rated speed (fixed or range)** | 0,15 m/s | |
| **Number of stops (fixed or range)** | 2–6 | 2 |
| **Travelled height (fixed or range)** | 1–20 m | 3,28 m |
| **Number of operating days/year (fixed or range)** | 365 days | |
| **Applied usage category (UC) according to ISO 25745-2** | UC1 | |
| **Designed Reference Service Life (RSL)** | 25 years | |
| **Geographic region of intended installation** | Europe | The Netherlands |
| **Additional information** | N/A | |
| **Recommended application (main market)**<br>**- Building rise (typical)**<br>**- Building type** | Low-rise residential/commercial | |
| **Optional equipment** | N/A | |
| **Additional requirements** | N/A | |
| **Standby power requirement** | 24 W (idle mode) | 18 W (standby after 5 min) |

## COMPANY INFORMATION

**Owner of the EPD:** Cibes Lift Group **Contact:** Emil Mårtensson
**Product-related or management system-related certifications:** All Kalea lift models carry the CE mark and go through extensive testing and quality checks before leaving our factory. Our lifts are certified products that comply with European Safety Standard Machinery Directive 2006/42/EC. The brand Kalea Lifts is owned by Cibes Lift Group AB ©. For more product details and information about the product and accessory selection, contact Kalea Lifts. This product information is general, and we reserve the right to modify product design and specifications. Minor deviations in colour reproduction can occur. © CIBES LIFT GROUP AB.
**Name and location of production site:** Cibes Lift AB, Gävle, Sweden.

## PRODUCT INFORMATION

**Product name:** Kalea A4 Primo
**Product identification:** Platform lift
**Product description:** Accessibility adapted platform lift solution, with included shaft for public and residential application areas.

**Third party verifier:** Hüdai Kara, Metsims, hudai.kara@metsims.com
**Approved by:** The International EPD® System

Hüdai Kara

EPD®
THE INTERNATIONAL EPD® SYSTEM

# LIFE CYCLE ASSESSMENT (LCA) INFORMATION

**Functional Unit**
The functional unit was defined as the transportation of a load over a distance, expressed as one tonne transported over one kilometre (i.e. 1 tkm) over a vertical trajectory

**Lifetime**
Reference Service Life: 25 years.

**Product group classification**
UN CPC 4653

**Goal and Scope**
Understanding the product's environmental impact during the life cycle. This data will form the ground for internal product development to reduce the climat impact of our product. This information can also be used in external communication.

**Manufacturing Site**
Cibes Lift Group, Gävle, Sweden.

**Geographical Area**
Europe. Use and disposal is represented by an average European situation.

**Compliant with**
This EPD follows the "Book-keeping" LCA approach which is defined as attributional LCA in the ISO 14040 standard.
In accordance with ISO 14025, ISO 14040 – ISO 140 44 and EN 15804:2012+A2:2019
This EPD follows the Product Category Rules PCR2019-14 Construction products v1.11 valid until 2024-12-20, and the c-PCR-008 Lifts (Elevators)

**Cut-Off Rules**
The following procedure is followed for the exclusion of inputs and output:

Data for elementary flows to and from the product system contributing to a minimum of 99% of the declared environmental impacts shall be included.
A screening and expert judgement showed that the following aspects contribute less than 1% and could be cut-off:

– Various supplier packaging
– Production of capital goods for manufacturing (machines and facilities)
– Transport to site for components weighing less than ca 10 kg
– Energy for installation

**Background data**
The data quality is considered good. All site-specific data for raw materials, auxiliary materials as well as energy and emissions in the manufacturing process is from 2021 and have been represented with ecoinvent datasets. All other relevant environmental aspects have been represented by generic ecoinvent data. Ecoinvent is the world's biggest LCI (Life cycle inventory) data library and the latest and most updated version was used. Ecoinvent contains data for the specific geographical regions relevant for this study. The background data from ecoinvent 3.8 are from 2016-2021.

**Foreground data – primary**
Weight of articles and composition of (most) raw materials. Suppliers' location for transport and specific data on energy and material use for ca 50 wt% of the lift. Packaging, electricity and waste.

**Electricity data**
Electricity consumption in the A3 module is average Swedish grid mix and B6 electricity is represented by data for average European grid mix in Ecoinvent 3.8.

**Allocations**
Polluter Pays / Allocation by Classification

**Impact Assessment methods**
Potential environmental impacts are calculated with Environmental Footprint 3.0 method as implemented in SimaPro 9.3. Resource use values are calculated from Cumulative Energy Demand V1.11.

**Based on LCA Report**
Miljögiraff LCA Report 942 A4 Primo.
LCA Practitioner Daniel Böckin, Miljögiraff AB

**Software**
SimaPro 9.3

## FUNCTIONAL UNIT AND TRANSPORTATION PERFORMANCE

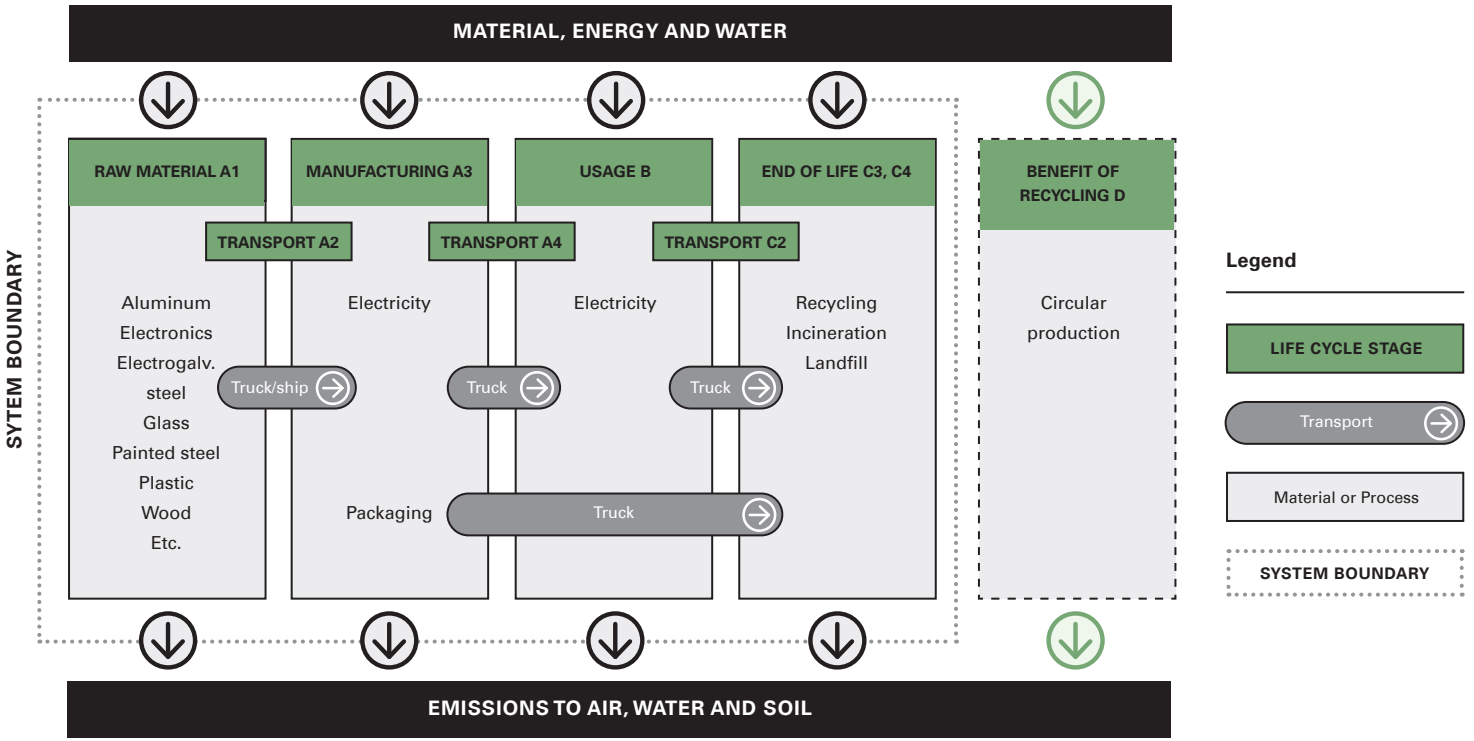
The LCA results shall be presented per functional unit (f.u.). The function of a lift is the transportation of persons and/or freight. In accordance with the PCR, the f.u. is thus defined as the transportation of a load over a distance, expressed as one tonne transported vertically over one kilometre, i.e. tonne-kilometre (tkm).

The total amount of tkm fulfilled by the lift during its lifetime (known as transportation performance, TP) is calculated according to the PCR and ISO 25745-2, according to the table below. The LCA results per functional unit are then obtained by dividing all inputs and outputs by the TP, which for the A4 Primo is 19,71 tkm.

| Parameter | How to calculate | Calculation |
|---|---|---|
| **TP = transportation performance** | Average car load (Qav) multiplied by the distance travelled by the lift during the service life (sRSL) | 0,03 tonnes * 657 km = **19,71 tkm** |
| **$Q_{av}$ = average car load** | Rated load (in tonnes) multiplied by the corresponding percentage from Table 3 of ISO 25745–2 | 0,4 tonnes * 0,075 = 0,03 tonnes |
| **$^{s}_{RSL}$ = Distance travelled by the lift during the service life** | One-way average travel distance ($^{s}_{av}$)* number of trips per day ($n_d$)* number of operating days per year ($d_{op}$)* Reference Service Life (RSL) | 3,6 meters * 20 trips * 365 days * 25 years = 657 km |

# SYSTEM DIAGRAM

**This study includes a cradle-to-grave perspective. That means that all processes needed for raw material extraction, manufacturing, transport, usage and end-of-life are included in the study.**




**Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:**

| | Product stage | | Construction process stage | | | Use stage | | | | | | | End of life stage | | | | Resource recovery stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw material supply | Transport | Manufacturing | Transport | Installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| **Module** | **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Modules declared | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Geography | GLO | SE | SE | SE | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU | EU |
| Type of data used | G/S | G/S | S | G | G | – | – | G | – | – | G | – | – | G | G | – | G |

G: General data
S: Specific data

# CONTENT AND LIFE CYCLE INFORMATION

**The following table shows the material content of the A4 Primo lift and the percentage of recycled and renewable material in the product.**

| Product materials | Weight, kg | Recycled material, weight-% | | Renewable material, weight-% |
|---|---|---|---|---|
| | | Pre-consumer | Post-consumer | |
| Painted steel | 668,3 | 2,6 | 0 | 0 |
| Electrogalvanized steel | 97,7 | 0 | 0 | 0 |
| Aluminium | 77,5 | 0 | 1,1 | 0 |
| Electronics | 59,8 | 0 | 0 | 0 |
| Glass | 44,0 | 0 | 0 | 0 |
| Plastic | 18,3 | 0 | 0 | 0 |
| Door stopper | 2,64 | 0 | 0 | 0 |
| Glue/tape | 2,33 | 0 | 0 | 0 |
| Zink | 0,81 | 0 | 0 | 0 |
| Oil | 0,71 | 0 | 0 | 0 |
| Brass | 0,54 | 0 | 0 | 0 |
| **TOTAL** | **972,6** | **1,8** | **0,1** | **0** |
| **Packaging materials** | | | | |
| Wood and steel packaging | 137,4 | 0 | 0 | 88,8 |

| Dangerous substances from the candidate list of SVHC for Authorisation | EC/List No. | CAS No. | Weight-% per functional or declared unit |
|---|---|---|---|
| Substance: Lead | 231-100-4 | 7439-92-1 | 0,13% |

The majority of the product weight comes from the painted steel components. Additionally, a significant share is electrogalvanized steel, aluminium, electronic and glass components.

**Manufacturing** takes place in Gävle, Sweden and includes assembling and mounting the different modules of the lift. The source of the energy used for manufacturing is an average Swedish grid mix (0,044 kg $CO_2$-eq/kWh).

**Packaging** is shown in the table above and includes packaging for the bulk of the lift as well as separate packaging for the guide profile and lift screws. They consist of wood, plywood and steel.

It is assumed that there are no environmental aspects during **installation** of the product, except the waste management of packaging after installation.

For the **use phase,** the lift is assumed to be installed somewhere in central Europe. The lifetime energy consumption of 4,83 MWh was calculated in accordance with ISO 25745-1 and -2 (with a yearly energy use of 193 kWh, assuming 20 trips per day, and the reference service life of 25 years; for the certified report by Liftinstituut B.V., contact Cibes Lift Group). The energy source was average European electricity on the grid (0,394 kg $CO_2$-eq/kWh).

**End of life** is based on a generic scenario of Dutch waste management. The exception is the electronics, which are assumed to be separated and the copper and steel recycled while the rest is incinerated.

# ENVIRONMENTAL INFORMATION

**Potential environmental impact per functional unit (1 tkm) – mandatory indicators according to EN 15804 and additional voluntary indicators**

| Results per 1 tkm vertical transport by the Kalea A4 Primo lift | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **Tot.A1-A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP-fossil | kg $CO_2$ eq. | 174 | 3,55 | 3,92 | 182 | 14,7 | 0,46 | 0 | 0,04 | 0 | 0 | 0 | 97,1 | 0 | 0 | 3,07 | 1,45 | 0 | -170 |
| GWP-biogenic | kg $CO_2$ eq. | 3,65 | 0,00 | -10,3 | -6,61 | 0,01 | 8,41 | 0 | 0,00 | 0 | 0 | 0 | 2,99 | 0 | 0 | 0,00 | 0,72 | 0 | -5,33 |
| GWP-luluc | kg $CO_2$ eq. | 0,73 | 0,00 | 0,03 | 0,77 | 0,01 | 0,00 | 0 | 0,00 | 0 | 0 | 0 | 0,23 | 0 | 0 | 0,00 | 0,00 | 0 | -0,67 |
| GWP-total | kg $CO_2$ eq. | 180 | 3,56 | -6,28 | 177 | 14,7 | 8,88 | 0 | 0,04 | 0 | 0 | 0 | 100 | 0 | 0 | 3,07 | 2,17 | 0 | -176 |
| ODP | kg CFC 11 eq. | 1,46E-05 | 8,06E-07 | 4,59E-07 | 1,59E-05 | 3,40E-06 | 9,58E-08 | 0 | 2,80E-08 | 0 | 0 | 0 | 4,89E-06 | 0 | 0 | 6,65E-07 | 6,09E-08 | 0 | -1,56E-05 |
| AP | mol $H^+$ eq. | 1,06 | 0,03 | 0,03 | 1,12 | 0,04 | 0,00 | 0 | 0,00 | 0 | 0 | 0 | 0,55 | 0 | 0 | 0,02 | 0,00 | 0 | -1,01 |
| EP-freshwater[1] | kg $PO_4^{3-}$ eq. | 2,05E-01 | 6,63E-04 | 5,92E-03 | 2,11E-01 | 2,95E-03 | 1,27E-04 | 0 | 4,04E-05 | 0 | 0 | 0 | 3,00E-01 | 0 | 0 | 1,41E-04 | 4,28E-04 | 0 | -1,79E-01 |
| EP-freshwater[1] | kg P eq | 6,67E-02 | 2,16E-04 | 1,93E-03 | 6,88E-02 | 9,62E-04 | 4,12E-05 | 0 | 1,32E-05 | 0 | 0 | 0 | 9,78E-02 | 0 | 0 | 4,58E-05 | 1,39E-04 | 0 | -5,82E-02 |
| EP-marine | kg N eq. | 1,04E-01 | 5,83E-03 | 9,51E-03 | 1,19E-01 | 8,47E-03 | 2,11E-03 | 0 | 4,81E-05 | 0 | 0 | 0 | 9,21E-02 | 0 | 0 | 7,97E-03 | 7,78E-04 | 0 | -9,70E-02 |
| EP-terrestrial | mol N eq. | 1,01 | 0,06 | 0,10 | 1,18 | 0,09 | 0,02 | 0 | 0,00 | 0 | 0 | 0 | 0,81 | 0 | 0 | 0,09 | 0,01 | 0 | -0,94 |
| POCP | kg NMVOC eq. | 3,36E-01 | 1,91E-02 | 3,15E-02 | 3,86E-01 | 3,55E-02 | 6,62E-03 | 0 | 9,55E-04 | 0 | 0 | 0 | 2,23E-01 | 0 | 0 | 3,07E-02 | 1,86E-03 | 0 | -3,06E-01 |
| ADP-m&m[2] | kg Sb eq. | 1,46E-02 | 1,15E-05 | 3,08E-05 | 1,46E-02 | 5,20E-05 | 5,50E-07 | 0 | 6,91E-07 | 0 | 0 | 0 | 9,00E-04 | 0 | 0 | 2,61E-06 | 3,55E-06 | 0 | -1,34E-02 |
| ADP-f[2] | MJ | 2219 | 52,7 | 102 | 2374 | 222,5 | 6,02 | 0 | 2,22 | 0 | 0 | 0 | 2058 | 0 | 0 | 40,5 | 3,61 | 0 | -2224 |
| WDP | $m^3$ | 34,4 | 0,15 | 4,90 | 39,5 | 0,68 | 0,02 | 0 | 0,01 | 0 | 0 | 0 | 24,1 | 0 | 0 | 0,02 | 0,12 | 0 | -34,0 |
| Particulate matter | disease inc. | 6,14E-06 | 2,61E-07 | 6,34E-07 | 7,0E-06 | 1,18E-06 | 7,28E-08 | 0 | 2,29E-09 | 0 | 0 | 0 | 1,76E-06 | 0 | 0 | 4,35E-07 | 1,96E-08 | 0 | -5,44E-06 |
| Ionising radiation | kBq U-235 eq | 11,8 | 0,27 | 3,22 | 15,3 | 1,15 | 0,03 | 0 | 0,01 | 0 | 0 | 0 | 55,9 | 0 | 0 | 0,18 | 0,03 | 0 | -10,6 |
| ET | CTUe | 4828 | 40,2 | 141 | 5008 | 175 | 4,24 | 0 | 1,32 | 0 | 0 | 0 | 1303 | 0 | 0 | 22,0 | 44,2 | 0 | -4242 |
| HT, cancer | CTUh | 2,50E-07 | 1,47E-09 | 2,66E-08 | 2,78E-07 | 5,62E-09 | 1,76E-09 | 0 | 3,01E-11 | 0 | 0 | 0 | 4,00E-08 | 0 | 0 | 3,85E-10 | 9,17E-10 | 0 | -1,99E-07 |
| HT, non-cancer | CTUh | 6,63E-06 | 3,92E-08 | 8,45E-08 | 6,75E-06 | 1,76E-07 | 7,14E-09 | 0 | 8,05E-10 | 0 | 0 | 0 | 1,28E-06 | 0 | 0 | 1,56E-08 | 1,62E-08 | 0 | -6,39E-06 |
| Land use | Pt | 365 | 33,0 | 1190 | 1588 | 155 | 1,39 | 0 | 0,31 | 0 | 0 | 0 | 373 | 0 | 0 | 7,28 | 1,59 | 0 | -275 |
| GWP-GHG[3] (IPCC) | kg $CO_2$ eq. | 175 | 3,53 | 3,87 | 182 | 14,6 | 0,49 | 0 | 0,04 | 0 | 0 | 0 | 96,6 | 0 | 0 | 3,05 | 1,46 | 0 | 170 |
| 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-m&m = Abiotic depletion potential for non-fossil resources; ADP-f = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption. ET = Ecotoxicity, freshwater. HT = Human toxicity | | | | | | | | | | | | | | | | | |

[1] Disclaimer: The EP-freshwater indicator is calculated both in kg PO4 eq and kg P eq as required in the charactarization model. (EUTREND model, Struijs et al, 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml)

[2] Disclaimer: 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.

[3] 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. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

**Potential environmental impact for the complete product over its Reference Service Life (25 years, with a total transportation performance of 19,71 tkm) – mandatory indicators according to EN 15804 and additional voluntary indicators**

| Results per Kalea A4 Primo lift for 25 years | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **Tot.A1-A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP-fossil | kg $CO_2$ eq. | 3430 | 70,0 | 77,3 | 3578 | 289 | 9,15 | 0 | 0,87 | 0 | 0 | 0 | 1915 | 0 | 0 | 60,6 | 28,6 | 0 | -3348 |
| GWP-biogenic | kg $CO_2$ eq. | 71,9 | 0,05 | -202 | -130 | 0,25 | 166 | 0 | 0,00 | 0 | 0 | 0 | 59,0 | 0 | 0 | 0,02 | 14,1 | 0 | -105 |
| GWP-luluc | kg $CO_2$ eq. | 14,4 | 0,03 | 0,68 | 15,1 | 0,12 | 0,00 | 0 | 0,00 | 0 | 0 | 0 | 4,53 | 0 | 0 | 0,01 | 0,01 | 0 | -13,3 |
| GWP-total | kg $CO_2$ eq. | 3550 | 70,1 | -124 | 3496 | 290 | 175 | 0 | 0,88 | 0 | 0 | 0 | 1979 | 0 | 0 | 60,6 | 42,8 | 0 | -3470 |
| ODP | kg CFC 11 eq. | 2,88E-04 | 1,59E-05 | 9,05E-06 | 3,13E-04 | 6,70E-05 | 1,89E-06 | 0 | 5,52E-07 | 0 | 0 | 0 | 9,64E-05 | 0 | 0 | 1,31E-05 | 1,20E-06 | 0 | -3,07E-04 |
| AP | mol $H^+$ eq. | 20,9 | 0,50 | 0,58 | 22,0 | 0,82 | 0,08 | 0 | 0,01 | 0 | 0 | 0 | 10,9 | 0 | 0 | 0,37 | 0,04 | 0 | -19,8 |
| EP-freshwater[4] | kg $PO_4^{3-}$ eq. | 4,03 | 0,01 | 0,12 | 4,16 | 0,06 | 0,00 | 0 | 0,00 | 0 | 0 | 0 | 5,92 | 0 | 0 | 0,00 | 0,01 | 0 | -3,52 |
| EP-freshwater[4] | kg P eq | 1,31 | 0,00 | 0,04 | 1,36 | 0,02 | 0,00 | 0 | 0,00 | 0 | 0 | 0 | 1,93 | 0 | 0 | 0,00 | 0,00 | 0 | -1,15 |
| EP-marine | kg N eq. | 2,04 | 0,11 | 0,19 | 2,35 | 0,17 | 0,04 | 0 | 0,00 | 0 | 0 | 0 | 1,82 | 0 | 0 | 0,16 | 0,02 | 0 | -1,91 |
| EP-terrestrial | mol N eq. | 19,8 | 1,27 | 2,06 | 23,2 | 1,82 | 0,42 | 0 | 0,01 | 0 | 0 | 0 | 16,0 | 0 | 0 | 1,72 | 0,14 | 0 | -18,5 |
| POCP | kg NMVOC eq. | 6,62 | 0,38 | 0,62 | 7,62 | 0,70 | 0,13 | 0 | 0,02 | 0 | 0 | 0 | 4,40 | 0 | 0 | 0,61 | 0,04 | 0 | -6,03 |
| ADP-m&m[5] | kg Sb eq. | 0,29 | 0,00 | 0,00 | 0,29 | 0,00 | 0,00 | 0 | 0,00 | 0 | 0 | 0 | 0,02 | 0 | 0 | 0,00 | 0,00 | 0 | -0,26 |
| ADP-f[5] | MJ | 43741 | 1038 | 2003 | 46782 | 4385 | 119 | 0 | 43,8 | 0 | 0 | 0 | 40572 | 0 | 0 | 799 | 71,2 | 0 | -43828 |
| WDP | $m^3$ | 678 | 2,99 | 96,6 | 778 | 13,3 | 0,39 | 0 | 0,26 | 0 | 0 | 0 | 475 | 0 | 0 | 0,41 | 2,46 | 0 | -670 |
| Particulate matter | disease inc. | 1,21E-04 | 5,15E-06 | 1,25E-05 | 1,39E-04 | 2,33E-05 | 1,43E-06 | 0 | 4,52E-08 | 0 | 0 | 0 | 3,46E-05 | 0 | 0 | 8,58E-06 | 3,86E-07 | 0 | -1,07E-04 |
| Ionising radiation | kBq U-235 eq | 233 | 5,26 | 63,4 | 302,0 | 22,6 | 0,53 | 0 | 0,23 | 0 | 0 | 0 | 1101 | 0 | 0 | 3,61 | 0,68 | 0 | -209 |
| ET | CTUe | 95151 | 792 | 2771 | 98714 | 3442 | 83,5 | 0 | 26,0 | 0 | 0 | 0 | 25676 | 0 | 0 | 435 | 871 | 0 | -83609 |
| HT, cancer | CTUh | 4,93E-06 | 2,90E-08 | 5,25E-07 | 5,48E-06 | 1,11E-07 | 3,47E-08 | 0 | 5,93E-10 | 0 | 0 | 0 | 7,89E-07 | 0 | 0 | 7,59E-09 | 1,81E-08 | 0 | -3,92E-06 |
| HT, non-cancer | CTUh | 1,31E-04 | 7,72E-07 | 1,66E-06 | 1,33E-04 | 3,48E-06 | 1,41E-07 | 0 | 1,59E-08 | 0 | 0 | 0 | 2,52E-05 | 0 | 0 | 3,08E-07 | 3,20E-07 | 0 | -1,26E-04 |
| Land use | Pt | 7186 | 651 | 23461 | 31298 | 3056 | 27,5 | 0 | 6,11 | 0 | 0 | 0 | 7355 | 0 | 0 | 143 | 31,4 | 0 | -5426 |
| GWP-GHG[6] (IPCC) | kg $CO_2$ eq. | 3450 | 69,5 | 76,2 | 3596 | 287 | 9,64 | 0 | 0,9 | 0 | 0 | 0 | 1904 | 0 | 0 | 60,1 | 28,7 | 0 | -3353 |
| 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-m&m = Abiotic depletion potential for non-fossil resources; ADP-f = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption. ET = Ecotoxicity, freshwater. HT = Human toxicity | | | | | | | | | | | | | | | | | |

[4] Disclaimer: The EP-freshwater indicator is calculated both in kg PO4 eq and kg P eq as required in the charactarization model. (EUTREND model, Struijs et al, 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml)

[5] Disclaimer: 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.

[6] 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. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Use of resources - per functional unit (1 tkm)

| Results per 1 tkm vertical transport by the Kalea A4 Primo lift | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **Tot.A1–A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| PERE | MJ | 16,3 | 0 | -105 | -88,7 | 0,16 | 0 | 0 | 0 | 0 | 0 | 0 | 21,0 | 0 | 0 | 0 | 0 | 0 | -11,4 |
| PERM | MJ | 0 | 0 | 118 | 118 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 16,3 | 0 | 12,6 | 29,0 | 0,16 | 0 | 0 | 0 | 0 | 0 | 0 | 21,0 | 0 | 0 | 0 | 0 | 0 | -11,4 |
| PENRE | MJ | 66,0 | 2,84 | 5,41 | 74,2 | 12,0 | 0,32 | 0 | 0,12 | 0 | 0 | 0 | 110 | 0 | 0 | 2,18 | 0,20 | 0 | -72,6 |
| PENRM | MJ. | 53,5 | 0 | 0 | 53,5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 120 | 2,84 | 5,41 | 128 | 12,0 | 0,32 | 0 | 0,12 | 0 | 0 | 0 | 110 | 0 | 0 | 2,18 | 0,20 | 0 | -72,6 |
| SM | kg | 0,18 | 0 | 0 | 0,18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | $m^3$ | 0,52 | 0,01 | 0,01 | 0,53 | 0,02 | 0,00 | 0 | 0 | 0 | 0 | 0 | 0,08 | 0 | 0 | 0,00 | 0,01 | 0 | 0 |

Acronyms PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

## Use of resources - for the complete product over its Reference Service Life (25 years, with a total transportation performance of 19,71 tkm)

| Results per 1 tkm vertical transport by the Kalea A4 Primo lift | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **Tot.A1–A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| PERE | MJ | 321 | 0,70 | -2069 | -1747 | 3,18 | 0,06 | 0 | 0 | 0 | 0 | 0 | 413 | 0 | 0 | 0,22 | 0,38 | 0 | -224 |
| PERM | MJ | 0 | 0 | 2318 | 2318 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 321 | 0,70 | 249 | 571 | 3,18 | 0,06 | 0 | 0 | 0 | 0 | 0 | 413 | 0 | 0 | 0,22 | 0,38 | 0 | -224 |
| PENRE | MJ | 1301 | 55,9 | 107 | 1463 | 236 | 6,40 | 0 | 2,37 | 0 | 0 | 0 | 2160 | 0 | 0 | 43,0 | 3,84 | 0 | -1430 |
| PENRM | MJ. | 1055 | 0 | 0 | 1055 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PENRT | MJ | 2356 | 55,9 | 107 | 2519 | 236 | 6,40 | 0 | 2,37 | 0 | 0 | 0 | 2160 | 0 | 0 | 43,0 | 3,84 | 0 | -1430 |
| SM | kg | 3,57 | 0 | 0 | 3,57 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| RSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NRSF | MJ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FW | $m^3$ | 10,2 | 0,12 | 0,16 | 10,5 | 0,37 | 0,01 | 0 | 0,00 | 0 | 0 | 0 | 1,61 | 0 | 0 | 0,03 | 0,10 | 0 | 0,00 |

Acronyms PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-re newable secondary fuels; FW = Use of net fresh water

## Waste production and output flows

### Waste production per functional unit (1 tkm), for the Kalea A4 Primo

| Results per 1 tkm vertical transport by the Kalea A4 Primo lift | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **Tot.A1–A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Hazardous waste disposed | kg | 0,12 | 0 | 0 | 0,12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-hazardous waste disposed | kg | 0 | 0 | 0 | 0 | 0 | 0,48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Radioactive waste disposed | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

### Waste production, per lifetime (19,71 tkm over 25 years), for the Kalea A4 Primo

| Results per 1 tkm vertical transport by the Kalea A4 Primo lift | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **Tot.A1–A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Hazardous waste disposed | kg | 2,30 | 0 | 0 | 2,30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Non-hazardous waste disposed | kg | 0 | 0 | 0 | 0 | 0 | 8,92 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Radioactive waste disposed | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

### Output flows, per functional unit (1 tkm), for the Kalea A4 Primo

| Results per Kalea A4 Primo lift for 25 years | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **Tot.A1–A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Components for re-use | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Material for recycling | kg | 4,79E-03 | 0 | 0 | 4,79E-03 | 0 | 0,43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 39,6 | 0 |
| Materials for energy recovery | kg | 0 | 0 | 0 | 0 | 0 | 6,06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported energy, electricity | MJ | 1,88E-06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported energy, thermal | MJ | 3,86E-06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Output flows, per lifetime (19,71 tkm over 25 years), for the Kalea A4 Primo

| Results per Kalea A4 Primo lift for 25 years | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1** | **A2** | **A3** | **Tot.A1–A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Components for re-use | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Material for recycling | kg | 9,44E-02 | 0 | 0 | 9,44E-02 | 0 | 8,04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 781 | 0 |
| Materials for energy recovery | kg | 0 | 0 | 0 | 0 | 0 | 113 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported energy, electricity | MJ | 3,71E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported energy, thermal | MJ | 7,61E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Information on biogenic carbon content

| Results per functional or declared unit | | |
|---|---|---|
| **BIOGENIC CARBON CONTENT** | **Unit** | **QUANTITY** |
| Biogenic carbon content in product | kg C | 3,7 |
| Biogenic carbon content in packaging | kg C | 57,7 |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg $CO_2$.

# ADDITIONAL INFORMATION

From a life cycle perspective, the environmental impact of the A4 Primo lift can mainly be attributed to the production of materials and components (module A1) as well as electricity consumption in the use phase (module B6).

The environmental impact of the raw materials is dominated by resource use of minerals and metals and by climate impacts. The painted steel components (such as steel sheets) represent the largest amount of resource use, along with the electronics (mainly cables, drive package and electric motors) which consume copper. Of the raw materials, the painted steel components also cause most of the climate impacts, as do the aluminium components such as the guide profile.

The environmental impact of the use-phase electricity use is dominated by fossil resource use and climate impacts. The electricity was from an average European grid mix and stood for 32% of total climate impacts (IPCC). Hence, the model of the product system is sensitive to the source of energy in the use phase. If the product is used with wind power instead, the total climate impact per functional unit is reduced by 31%. On the other hand, if the energy source is a mix with a high share of non-renewable electricity, the total climate impact per functional unit is increased by 55%.

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