Life Cycle Assessment

LCA generated 15th May 2026

In accordance with EN 15804+A2 and ISO 14040 / ISO 14044



GWP-Fossil
90.1 kgCO2e
cradle to gate

TLA100 Tola Armchair

The Senator Group

GENERAL INFORMATION

MANUFACTURER

Manufacturer	The Senator Group
Address	Altham Business Park
Contact details	marketingteam@thesenatorgroup.com
Website	www.thesenatorgroup.com

LCA STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
LCA software provider	One Click LCA
Reference standard	EN 15804+A2:2019 and ISO 14025/14040/14044
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025
Sector	Manufactured product
Scope of the LCA	Cradle to gate with options, A4-A5, and modules C1-C4, D
LCA verification	Self-verified by The Senator Group

The manufacturer has the sole ownership, liability, and responsibility for the LCA. LCAs within the same product category but from different programs may not be comparable. LCAs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Tola Armchair
Additional labels	-
Product reference	TLA100
Place of production	United Kingdom
Period for data	01/01/2025 - 31/12/2025
Averaging in LCA	No averaging
Variation in GWP-fossil for A1-A3	-%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1
Declared unit mass	15.934kg
GWP-fossil, A1-A3 (kgCO2e)	90.1
GWP-total, A1-A3 (kgCO2e)	93.4
GWP-total for A1-A5, C1-C4 & D (kgCO2e)	96.4
Secondary material, inputs (%)	14.7
Secondary material, outputs (%)	99.8
Total energy use, A1-A3 (kWh)	4900
Net freshwater use, A1-A3 (m3)	1.65

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

The tale begins in 1976, when our Chairman Colin Mustoe began designing and manufacturing office furniture. In the early days he would even build and deliver the products to customers himself. All these years on and although we've grown into one of the largest office furniture manufacturers in the world, we remain an independent, family-owned business. All the things that were important to us in the beginning; our attention to detail, integrity, investment in people and passion for design, are still very much running through the veins of our business today.

PRODUCT DESCRIPTION

Tola is a sculpted armchair that combines architectural presence with refined comfort, blending hospitality aesthetics with workplace ergonomics. Ideal for receptions, lobbies, and collaborative spaces. Featuring a unified panel base that seamlessly integrates seat, arms, and legs into a single form. Tailored upholstery and subtle vertical stitching provide tactile warmth and supportive comfort.

Further information can be found at www.thesenatorgroup.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	10.69	UK & Europe
Minerals	-	-
Fossil materials	12.74	UK & Europe
Bio-based materials	76.57	UK & Europe

MATERIAL CONTENT

Raw material category	Amount, mass- KG
Plywood	11.000
Steel	1.704
Polypropylene	0.030
Polyurethane Foam	2.000
Wool	1.200

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1
Mass per declared unit	15.934 kg

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This LCA covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

An average transportation distance of 400 kms has been used within the model based on the distance from our manufacturing site to a delivery address in central London. The product is manually carried and installed on-site by The Senator Group operatives and assembled by hand using hand-tools. Installation waste is returned to The Senator Group for reuse/recycling.

PRODUCT USE AND MAINTENANCE (B1-B7)

If the products are properly assembled no repair, replacement or refurbishment processes are expected within its service life.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

We can strip products down to their component parts and recycle, ensuring that no waste goes to landfill. Every product from The Senator Group is 99-100% recyclable, so we can guarantee recycling or repurposing on all Senator products. We will additionally recycle as much of our competitor products as possible. You will receive a certificate outlining volumes of products recycled and carbon emissions. All waste packaging is sent back to our Sustain division for recycling. Our packaging programme covers both Senator waste packaging and that of our competitors. In fact, we actively encourage our dealers, suppliers, and other contractors to utilise our packaging recycling scheme. Other companies can purchase The Senator Group white bags for a nominal price, fill with packaging waste, and return to Sustain for us to recycle on their behalf.

MANUFACTURING PROCESS

We support our clients Sustainability through:

1. Life cycle understanding

To understand product lifecycle in more detail, our Life Cycle Assessments (LCAs) are more detailed and incorporate elements of the product lifecycle. LCAs will provide our clients with more insight to support decision making, with publicly comparable data to compare our products against our competitors and support our design teams in better designing out carbon.

2. Servicing

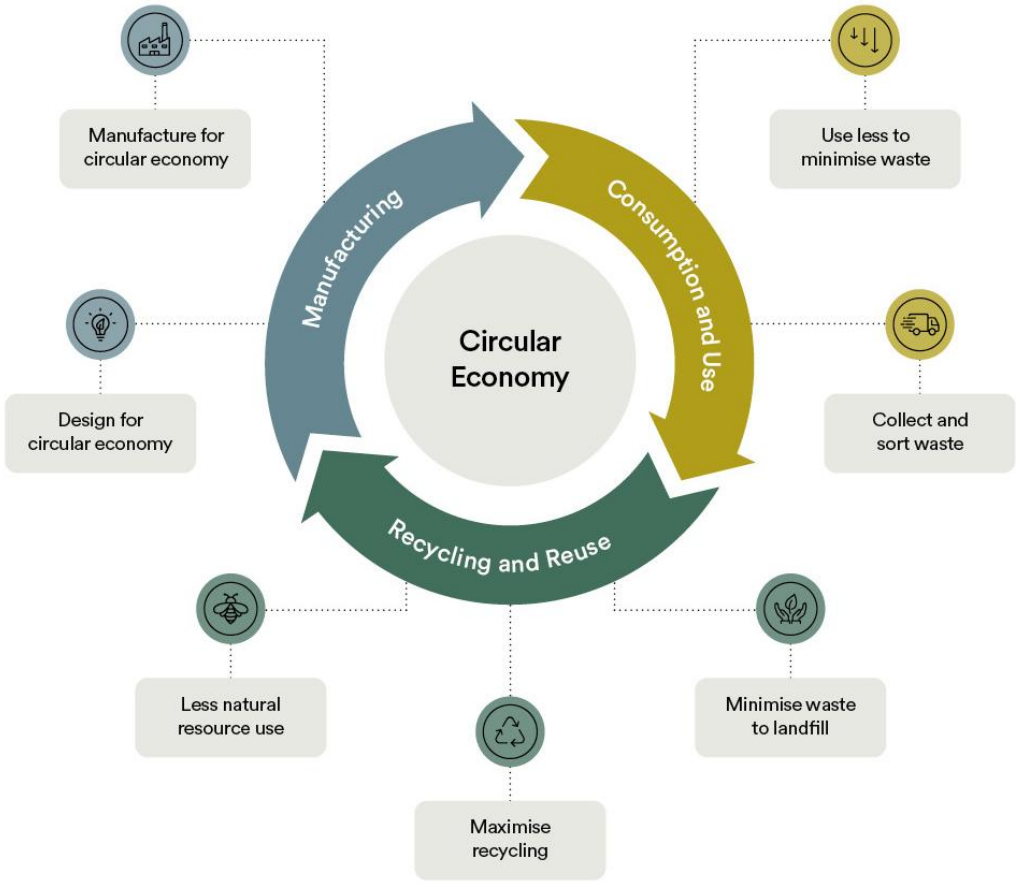
We offer servicing agreements where products are serviced periodically to extend the product lifecycle.

3. Subscription

We can agree a subscription service – this will be assessed alongside the client to consider both commerciality and sustainability benefits alongside the other services we offer.

4. End of Life

Sustainability services via Sustain.



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	%

This LCA is factory specific.

LCA SOFTWARE AND BIBLIOGRAPHY

This LCA has been created using One Click LCA EPD Generator. The LCA has been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	4.47E+01	1.71E+00	4.70E+01	9.34E+01	7.10E-01	7.54E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.76E-01	8.39E+00	9.10E-01	2.17E-19
GWP – fossil	kg CO_2e	4.15E+01	1.71E+00	4.69E+01	9.01E+01	7.09E-01	7.54E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.75E-01	3.89E+00	9.10E-01	0.00E+00
GWP – biogenic	kg CO_2e	-4.50E+00	0.00E+00	0.00E+00	-4.50E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	4.50E+00	0.00E+00	0.00E+00
GWP – LULUC	kg CO_2e	7.73E+00	7.63E-04	5.80E-02	7.79E+00	3.16E-04	3.94E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.45E-04	5.55E-03	3.78E-05	2.17E-19
Ozone depletion pot.	kg CFC_{-11}e	1.92E-06	2.49E-08	1.18E-06	3.13E-06	1.03E-08	4.03E-11	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.13E-08	8.56E-09	3.45E-09	0.00E+00
Acidification potential	mol H^+e	1.94E+00	6.01E-03	2.76E-01	2.23E+00	2.47E-03	1.51E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.70E-03	5.16E-03	3.27E-03	0.00E+00
EP-freshwater[2)]	kg Pe	4.26E-04	1.86E-04	1.67E-02	1.73E-02	7.69E-05	7.78E-07	ND	ND	ND	ND	ND	ND	ND	0.00E+00	8.41E-05	2.22E-04	1.85E-05	-1.08E-19
EP-marine	kg Ne	3.37E-01	1.98E-03	5.01E-02	3.89E-01	8.16E-04	7.78E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	8.92E-04	1.75E-02	2.42E-03	0.00E+00
EP-terrestrial	mol Ne	8.37E+00	2.14E-02	5.15E-01	8.91E+00	8.82E-03	4.99E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	9.64E-03	2.37E-02	1.63E-02	0.00E+00
POCP ("smog")[3)]	kg NMVOCe	1.44E-01	8.76E-03	1.69E-01	3.21E-01	3.62E-03	1.73E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.95E-03	7.79E-03	3.99E-03	0.00E+00
ADP-minerals & metals[4)]	kg Sbe	4.83E-04	4.90E-06	1.44E-03	1.93E-03	2.03E-06	2.58E-08	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.22E-06	3.85E-06	4.12E-07	0.00E+00
ADP-fossil resources	MJ	2.47E+02	2.44E+01	1.16E+03	1.43E+03	1.01E+01	4.20E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.11E+01	7.29E+00	1.94E+00	3.55E-15
Water use[5)]	m^3e depr.	2.37E+01	1.43E-01	3.21E+01	5.60E+01	5.91E-02	9.73E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.46E-02	3.84E-01	1.05E-01	5.55E-17

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	8.58E-07	1.68E-07	2.32E-06	3.35E-06	6.95E-08	3.15E-10	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.59E-08	3.30E-08	1.19E-08	2.65E-23
Ionizing radiation[6)]	kBq U235e	6.63E-01	2.05E-02	2.31E+00	2.99E+00	8.49E-03	1.72E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	9.28E-03	8.16E-02	1.86E-03	-6.94E-18
Ecotoxicity (freshwater)	CTUe	2.25E+02	5.07E+00	2.50E+02	4.80E+02	2.10E+00	2.44E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.30E+00	1.33E+01	9.92E-01	8.88E-16
Human toxicity, cancer	CTUh	1.09E-08	2.69E-10	2.58E-08	3.70E-08	1.11E-10	2.97E-12	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.22E-10	8.04E-10	7.57E-11	4.14E-25
Human tox. non-cancer	CTUh	1.56E-07	1.52E-08	1.12E-06	1.29E-06	6.29E-09	6.21E-11	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.88E-09	1.74E-08	8.00E-10	0.00E+00
SQP[7)]	-	3.62E+03	2.44E+01	3.99E+02	4.05E+03	1.01E+01	5.77E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.10E+01	1.12E+02	2.31E-01	5.33E-15

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	2.30E+02	3.40E-01	1.56E+04	1.58E+04	1.41E-01	2.68E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.54E-01	-6.73E+01	-1.62E+01	1.55E-15
Renew. PER as material	MJ	5.23E+02	0.00E+00	0.00E+00	5.23E+02	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-5.23E+02	0.00E+00	0.00E+00
Total use of renew. PER	MJ	7.52E+02	3.40E-01	1.56E+04	1.64E+04	1.41E-01	2.68E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.54E-01	-5.90E+02	-1.62E+01	1.55E-15
Non-re. PER as energy	MJ	2.79E+02	2.44E+01	1.51E+03	1.82E+03	1.01E+01	-1.44E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.11E+01	-5.54E+01	-4.35E+00	0.00E+00
Non-re. PER as material	MJ	1.49E+02	0.00E+00	0.00E+00	1.49E+02	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	-1.49E+02	0.00E+00	0.00E+00
Total use of non-re. PER	MJ	4.28E+02	2.44E+01	1.51E+03	1.97E+03	1.01E+01	-1.44E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.11E+01	-2.04E+02	-4.35E+00	0.00E+00
Secondary materials	kg	2.34E+00	1.02E-02	1.39E+00	3.74E+00	4.24E-03	1.27E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.63E-03	3.95E-03	7.07E-04	0.00E+00
Renew. secondary fuels	MJ	6.73E-02	1.33E-04	1.77E-02	8.51E-02	5.53E-05	1.08E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.04E-05	9.57E-05	6.75E-06	0.00E+00
Non-ren. secondary fuels	MJ	2.24E-01	0.00E+00	0.00E+00	2.24E-01	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m^3	7.67E-01	3.50E-03	8.75E-01	1.65E+00	1.45E-03	1.62E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.59E-03	6.06E-03	1.76E-03	8.67E-19

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	4.42E+00	1.56E-01	6.38E+00	1.10E+01	6.47E-02	5.25E-04	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.08E-02	7.92E-02	5.01E-02	0.00E+00
Non-hazardous waste	kg	2.28E+01	3.08E+00	1.01E+02	1.27E+02	1.28E+00	1.45E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.40E+00	5.75E+00	1.38E+00	0.00E+00
Radioactive waste	kg	2.46E-02	4.90E-06	8.15E-03	3.27E-02	2.03E-06	4.37E-08	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.22E-06	2.06E-05	4.74E-07	1.69E-21

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	2.05E-01	0.00E+00	0.00E+00	2.05E-01	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	5.12E-02	0.00E+00	1.60E-08	5.12E-02	0.00E+00	3.50E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	1.47E+01	1.20E+00	0.00E+00
Materials for energy rec	kg	1.81E-03	0.00E+00	0.00E+00	1.81E-03	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy – Electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy – Heat	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	5.13E+00	1.70E+00	4.74E+01	5.43E+01	7.05E-01	7.52E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.71E-01	3.88E+00	8.99E-01	0.00E+00
Ozone depletion Pot.	kg CFC-$_{11}$e	4.79E-07	1.99E-08	6.89E-06	7.39E-06	8.23E-09	3.30E-11	ND	ND	ND	ND	ND	ND	ND	0.00E+00	8.99E-09	7.04E-09	2.96E-09	8.27E-25
Acidification	kg SO_2e	2.82E-02	4.59E-03	4.17E-01	4.50E-01	1.88E-03	1.16E-05	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.06E-03	3.71E-03	2.30E-03	0.00E+00
Eutrophication	kg PO_4^3e	1.01E-02	1.23E-03	8.25E-02	9.39E-02	5.10E-04	2.98E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.57E-04	2.19E-03	9.78E-04	0.00E+00
POCP ("smog")	kg C_2H_4e	2.15E-03	3.97E-04	2.45E-02	2.70E-02	1.64E-04	1.13E-06	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.79E-04	5.49E-04	1.35E-04	0.00E+00
ADP-elements	kg Sbe	3.19E-04	4.77E-06	1.33E-03	1.66E-03	1.98E-06	2.54E-08	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.16E-06	3.74E-06	2.97E-07	0.00E+00
ADP-fossil	MJ	1.74E+02	2.41E+01	9.50E+02	1.15E+03	9.99E+00	3.90E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.09E+01	5.88E+00	1.91E+00	0.00E+00

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	4.92E+01	1.71E+00	4.70E+01	9.79E+01	7.10E-01	7.54E-03	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.76E-01	3.90E+00	9.10E-01	2.17E-19

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Electricity production, deep geothermal, United Kingdom, Ecoinvent, 0.0718 kgCO2e/kWh
2. Electricity production, hydro, run-of-river, United Kingdom, Ecoinvent, 0.0044 kgCO2e/kWh
3. Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted, United Kingdom, Ecoinvent, 0.0806 kgCO2e/kWh
4. Electricity production, wind, <1MW turbine, onshore, United Kingdom, Ecoinvent, 0.0136 kgCO2e/kWh
5. Electricity, United Kingdom, United Kingdom, One Click LCA
6. Electricity from photovoltaik (1 kWh), Germany, GaBi, 0.0340 kgCO2e/kWh

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry >32 metric ton, EURO5, 400 km

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	
Collection process: Mixed waste (kg)	
Recovery: re-use (kg)	0
Recovery: recycling (kg)	15.9
Recovery: energy recovery (kg)	0
Disposal (kg)	0
Scenario assumptions e.g. transportation (mode, km) & other	