Environmental Product Declaration

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

se:flex

from

Sedus Stoll AG



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of a single product from a manufacturer
EPD registration number:	EPD-IES-0035712:001
Version date:	2026-10-23
Validity date:	2031-10-22

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

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:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14: Construction products (EN 15804+A2) (version 2.0.1)
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com/TC for a list of members. Chair of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair). *The review panel may be contacted via support@environdec.com.*
c-PCR: 2019:14-c-PCR-021 Furniture and components of furniture (c-PCR to PCR 2019:14) (adopted from EPD Norway) (2.0.1)

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: Vijay Thakur, Eco-Assure Verification & Advisory Approved by: 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 published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Sedus Stoll AG
Address: Christof-Stoll-Straße 1, D-79804 Dogern
Contact: Niklas Flum, *Email:* NiklasFlum@sedus.com / Simon Roquette *Email:* SimonRoquette@sedus.com
Address and contact information of the LCA practitioner commissioned by the EPD owner:
Lina Kindermann
Organisation: Greensysco
Address: Kriemhildenstraße 22, 80639 München
Email: info@greensysco.de
Description of the organisation: Founded in 1871, Sedus Stoll AG is now one of the leading European manufacturers of office furniture. The product range includes seating furniture, such as swivel and visitor chairs, as well as conference and office furniture – all "Made in Germany". In its 150-year company history, Sedus has been continuously setting new standards, in terms of ergonomics, manufacturing processes and sustainability. The brand is synonymous with innovation and technology, quality and aesthetics and it constantly enriches the office world with contemporary concepts and high-quality office furniture.
Product-related or management system-related certifications: Sedus is certified after ISO 9001, ISO 14001, ISO 45001, ISO 50001 and SA8000. The product has the following certifications: FEMB, GS, Greenguard, Quality Office, AGR, TÜV Toxproof.

PRODUCT INFORMATION

Product name: se:flex
UN CPC code: 3811 (seats)
Product description: se:flex is an ergonomic swivel chair. Thanks to its individually adjustable "Similar" mechanism and height adjustable backrest, se:flex adapts perfectly to individual needs - whether in the office or in the home office. The product has a backrest with membrane cover, similar mechanism with automatic weight adjustment, a gas spring with mechanical depth springing, sliding seat and a black plastic star base.
Production process: The manufacturing process located in Drogern (Germany) is dedicated to the final assembly of office chairs using components sourced globally from external suppliers. The only processing of materials happening at this facility, are the finishing of individual metal parts (galvanizing through electroplating and powder coating), finishing of fabrics and wooden parts if occurring in the product. No further treatment of plastic parts occurs in the in-house production. On the assembly line, workers assemble these parts in a specific sequence using mechanical fasteners. Once assembly is complete, the chairs are packaged and prepared for distribution.

Name and location of production site:
SEDUS Stoll Manufacturing plant,
Christof-Stoll-Straße 1, D-79804 Dogern

Visual representation of the product:



CONTENT DECLARATION

The mass of one unit of a product: 14.5 kg

Product content	Mass, kg	Pre-consumer recycled material, mass-% of product	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Steel	1.992	8.8	-	-	-
Aluminium	0.892	5.7	-	-	-
ABS	0.000	-	-	-	-
PA6	0.017	-	-	-	-
PA6, glass fibre filled	4.752	-	-	-	-
POM	0.014	-	-	-	-
PP	1.620	-	3.4	-	-
PP, glass fibre filled	0.759	-	-	-	-
PUR	1.813	-	-	-	-
Other plastic composite	2.359	-	-	-	-
Polyester fibre	0.247	-	-	-	-
Lubricating oil	0.007	-	-	-	-
Paper	0.024	-	-	0.07	0.01
Synthetic rubber	0.005	-	-	-	-
TOTAL	14.500	15.3	3.4	0.07	0.01

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
PE foil	0.3	2	-
Cardboard	3.6	25	1.8
TOTAL	3.9	27	1.8

Information on the environmental and hazardous/toxic properties of a substances contained in the product:

The product does not contain substances is in the candidate list of Substances of Very High Concern (SVHCs) which exceeds the limits for registration with the European Chemicals Agency (i.e., if the substance constitutes more than 0.1% of the weight of the product or any component of the product). The absence of harmful substances is tested and confirmed by the labels TÜV Schadstoffgeprüft and Green Guard.

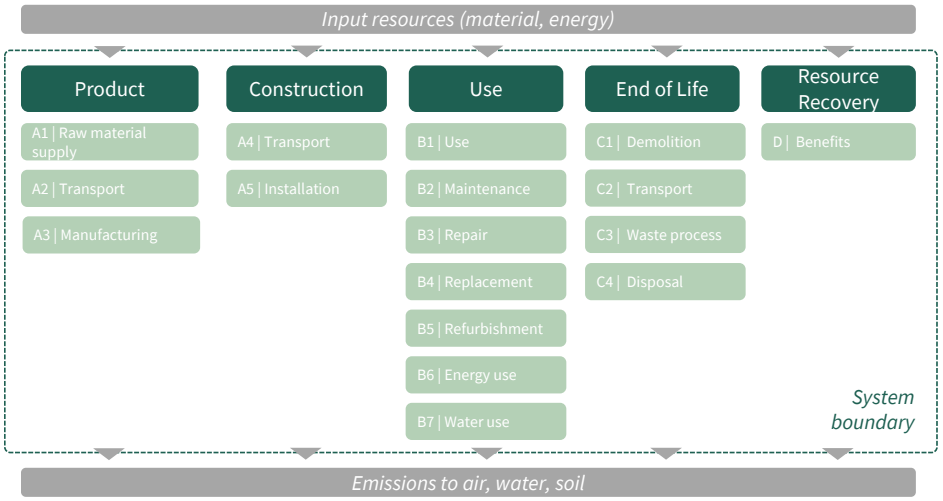
LCA INFORMATION

Functional unit: 1 piece of indoor office chair used for 15 years
Weight conversion: 14.5 kg product/FU
Reference service life: The reference service life (RSL) of the indoor office chair designed in use for 8 hours a day, 5 days a week, is set as 15 years.
Time representativeness: The reference period of production data practices spans from 03-2025 until 03-2026 to represent as recent data as possible.
Geographical scope:
A1-A2: Global
A3: Germany
A4, A5, B, C: Europe

Database(s) and LCA software used: OpenLCA 2.6.0. software, ecoinvent 3.12 EN15804 and database and EN 15804 reference package (EF 3.1) assessment methodology.

Description of system boundaries: Cradle to grave and module D (A + B + C + D)

Process flow diagram:



More information:

Cut-off criteria:
The LCA model includes all significant material and energy flows. The cut-off criteria comply with EN 15804+A2, ensuring that at least 99% of mass and energy inflows are captured per unit process, and at least 95% per life cycle stage. Known exclusions are limited to minor metal pre-treatments (degreasing) and negligible steel offcuts. These omitted processes contribute less than 1% to the total mass and energy inputs and less than 5% to the overall environmental impact, which is verified via expert judgment.

Allocation rules:
Allocation is only required regarding the assignment of manufacturing resource streams across different product types that are fabricated at the production site. Because the manufacturing site produces various product lines, facility-wide inputs (such as electricity, heating, water, and general waste) are allocated to the declared product based on its mass share of the total annual production volume. Economic allocation is strictly avoided to prevent impact distortions from price fluctuations.

General Assumptions and Scenario Information:

Product Stage
A1 Raw Material Supply: The product configuration represents an average se:flex chair with plastic base. To accurately reflect the physical product, component weights are uniformly scaled to match the total measured product mass. Where specific supplier processing data is unavailable, expert estimations and adjusted ecoinvent datasets model the average production processes.

A2 Inbound Transport: Transport modes and distances rely on logistics expert statements. Inbound transport for European goods is assumed as 500 km by truck. For Asian goods, the assumption is 500 km by truck in the country of origin, 20000 km by container ship, and 800 km by truck to the production facility in Germany.

A3 Manufacturing: The manufacturing facility operates electricity consisting of 65% purchased hydropower-based electricity (0.004 kWh kg CO_{2eq}/kWh, reference year 2021 of modelling dataset), 16% on-site photovoltaic generation (0.097 kg CO_{2eq}/kWh, reference year 2021 of modelling dataset) as well as electricity from an on-site CHP powered by natural gas (0.692 kg CO_{2eq}/kWh, reference year 2021 of modelling dataset). The resulting electricity mix results in 0.150 kg CO_{2eq}/kWh. Facility-wide resource consumption is gathered for reference year 2025 and is allocated to the product based on applicable manufacturing processes and mass basis. The treatment of waste occurring in this stage is included.

Construction Stage
A4 Outbound Transport: The outbound distribution represents an average European market scenario. An average distance is calculated based on the top-selling countries. Following the description of the dataset, the average freight load factor is 5.79 tonnes, with a gross vehicle weight (GVW) of 15.79 tonne and the diesel consumption is 0.037 l/tkm. The transport data basis for that dataset includes empty returns.

Parameters to describe the transport to the building site	Value per declared unit	Unit
Average transport distance	559	km
Vehicle type	Lorry, 28 metric ton, EURO 5	-
Fuel type and average consumption of vehicle	Diesel, 21.42	l/100km
Maximum transport mass	18	tons
Capacity utilisation (including empty returns)	32	%
Bulk density of transported products	37.6	kg/m3
Volume capacity utilisation factor	=1	-
Dataset used	transport, freight, lorry, 16-32 metric ton, diesel, EURO 5 | EN15804GD, U - RER	

A5 Installation: Installation requires no additional resources. The generated packaging waste returns to the Sedus facility, therefore the model accounts for the 559 km return transport of the packaging material as well as the waste treatment itself.

Use Stage
B1 Use, B3 Repair, B4 Replacement, B5 Refurbishment and B6/B7 Operational Energy/Water: The office chair functions as a passive component, meaning it requires neither power, water, nor

resource consumption during operation and produces no direct emissions. Refurbishment, repair and replacement is not a standard practice for this product. Impacts for these modules are declared as 0

B2 Maintenance: The model applies a "most likely scenario" based on anticipated standard industry cleaning cycles and considers cleaning agent as well as energy for vacuuming.

End-of-Life Stage
C1 Deconstruction: The product is manually removed from its environment without energy-intensive tools, impacts are declared as 0.

C2 Transport: A standard transport distance of 80 km for materials for recycling/landfill, 130km for materials for incineration by truck to the end-of-life treatment facility is assumed.

C3/C4 Waste Processing and Disposal: A conservative European average end-of-life treatment scenario is applied. For instance, steel and aluminium undergo predominantly material recycling (85-90% and ~90% collection rates, respectively), while plastics and textiles primarily go to municipal incineration with energy recovery. It is assumed that the whole product weight undergoes the sorting process.

Benefits
Module D: The benefits from avoided primary production are calculated using European "market" datasets where available. For material recycling, a quality adjustment factor is applied.

Data Quality Assessment
The data quality of the background datasets applied in this Life Cycle Assessment is evaluated in accordance with EN 15941. The assessment utilizes UN Environment Global Guidance on LCA database development (EN 15804 Appendix E.1), applying five quality levels from very good to very poor. In instances where a specific evaluation of background data is not possible, a conservative worst-case score of "5" is applied across all categories. The individual data quality ratings are aggregated through a weighted average within the OpenLCA Software. The quality of the relevant datasets assessed included no poor or very poor data and no fair data contributing more than 30% to the core indicator results per the data quality summary requirements.

Primary data share

Process Name	Source Type	Source	Ref. Year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Production of raw materials and supplied goods	Database	EPD owner	2025	Representative generic data	0.000%
Transport of supply chain goods to manufacturing site	Collected data, Database	EPD owner	2025	Representative generic data	0.000%
Electricity (in manufacturing)	Collected data	EPD owner	2025	Primary Data	1.025%
Heat from Gas (in Manufacturing)	Collected data	EPD owner	2025	Primary Data	2.681%
Rest production of product (in manufacturing)	Collected data	EPD owner	2025	Representative secondary data	0.000%
Total share of primary data, of GWP-GHG results for A1-A3					3.706%

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Modules declared, geographical scope, share of primary data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product Stage			Construc-tion process stage		Use stage							End of Life stage				Beyond product life cycle
Module name	Raw material Supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy use	Operational water use	Deconstruction / demolition	Transport	Waste Processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Geography	GLO	GLO	DE	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU
Share of primary data	3.706%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ENVIRONMENTAL PERFORMANCE

LCA results of the product

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	8.22E+01	1.96E+00	8.04E+00	0.00E+00	1.05E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E-01	1.40E+01	2.13E-01	-2.26E+01
GWP-fossil	kg CO_2 eq.	8.84E+01	1.96E+00	1.44E+00	0.00E+00	9.69E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E-01	1.39E+01	2.12E-01	-2.26E+01
GWP-biogenic	kg CO_2 eq.	-6.29E+00	4.10E-04	6.60E+00	0.00E+00	2.29E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.76E-05	3.61E-02	9.97E-06	2.10E-02
GWP-luluc	kg CO_2 eq.	4.86E-02	6.30E-04	1.50E-04	0.00E+00	7.65E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.92E-05	8.85E-05	5.78E-06	6.19E-03
ODP	kg CFC 11 eq.	3.63E-06	4.43E-08	1.08E-08	0.00E+00	5.51E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.26E-09	4.79E-09	8.39E-10	1.21E-06
AP	mol H^+ eq.	3.59E-01	6.14E-03	2.34E-03	0.00E+00	6.58E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.70E-04	3.31E-03	1.70E-04	-9.31E-02
EP-freshwater	kg P eq.	2.40E-03	1.46E-05	4.40E-06	0.00E+00	6.85E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.07E-06	4.49E-06	2.10E-07	-4.90E-04
EP-marine	kg N eq.	9.99E-02	2.12E-03	9.20E-04	0.00E+00	2.08E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.00E-04	1.60E-03	2.40E-04	-2.11E-02
EP-terrestrial	mol N eq.	7.27E-01	2.33E-02	9.84E-03	0.00E+00	1.43E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.29E-03	1.65E-02	7.80E-04	-1.80E-01
POCP	kg NMVOC eq.	2.76E-01	9.72E-03	3.28E-03	0.00E+00	4.24E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.37E-03	4.15E-03	3.30E-04	-6.28E-02
ADP-minerals&metals [1]	kg Sb eq.	6.57E-04	6.82E-06	1.77E-06	0.00E+00	1.24E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.64E-07	9.25E-07	5.43E-08	-7.31E-05
ADP-fossil [1]	MJ	1.44E+03	2.76E+01	6.59E+00	0.00E+00	1.62E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.91E+00	2.73E+00	5.92E-01	-3.32E+02
WDP [1]	m^3	6.08E+01	1.44E-01	3.19E-01	0.00E+00	1.19E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-02	9.35E-01	2.90E-02	-1.26E+01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

[1] *Disclaimer: 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 experienced with the indicator.*

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

Additional mandatory impact category indicators according to EN 15804

Results per functional or declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG [2]	kg CO_2 eq.	8.88E+01	1.96E+00	1.44E+00	0.00E+00	1.05E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.77E-01	1.39E+01	2.13E-01	-2.26E+01

[2] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.

Results per functional or declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Particulate matter	disease inc.	4.23E-06	1.56E-07	4.08E-08	0.00E+00	7.18E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-08	2.16E-08	4.04E-09	-3.29E-07
Ionizing radiation [3]	kBq U235 eq.	2.07E+00	1.18E-02	3.45E-03	0.00E+00	2.30E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E-03	4.87E-03	5.30E-04	-5.41E-01
Ecotoxicity, freshwater [4]	CTUe	4.90E+02	4.10E+00	7.87E+00	0.00E+00	1.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.79E-01	2.96E+01	6.40E+00	-1.60E+01
Human toxicity, cancer [4]	CTUh	3.07E-08	3.20E-10	2.85E-10	0.00E+00	1.18E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.52E-11	7.86E-10	8.85E-12	-1.92E-09
Human toxicity, non-cancer [4]	CTUh	5.43E-07	1.68E-08	1.27E-08	0.00E+00	1.12E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.37E-09	3.19E-08	1.33E-09	-3.62E-08
Land Use (Soil Quality Index) [4]	Pt	3.06E+02	1.64E+01	3.68E+00	0.00E+00	1.59E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.32E+00	5.66E-01	1.42E+00	2.86E+01

[3] Disclaimer: 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.
[4] Disclaimer: 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 experienced with the indicator.

Resource use indicators

Results per functional or declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	6.49E+01	4.55E-01	5.09E+01	0.00E+00	5.68E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.43E-02	5.20E-01	1.95E-02	-1.04E+01
PERM	MJ	5.11E+01	0.00E+00	-5.08E+01	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	-3.31E-01	0.00E+00	0.00E+00
PERT	MJ	1.16E+02	4.55E-01	1.41E-01	0.00E+00	5.68E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.43E-02	1.89E-01	1.95E-02	-1.04E+01
PENRE	MJ	1.16E+03	2.76E+01	1.93E+01	0.00E+00	1.64E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.91E+00	2.14E+02	5.27E+01	-3.32E+02

PENRM	MJ	2.76E+02	0.00E+00	-1.28E+01	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	-2.11E+02	-5.21E+01	0.00E+00
PENRT	MJ	1.44E+03	2.76E+01	6.59E+00	0.00E+00	1.64E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.91E+00	2.73E+00	5.92E-01	-3.32E+02
SM	kg	1.14E+01	2.68E-02	9.57E-03	0.00E+00	6.55E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.78E-03	1.29E-02	5.50E-04	8.94E-01
RSF	MJ	1.98E+00	6.27E-03	2.54E-03	0.00E+00	1.21E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.90E-04	5.45E-03	1.20E-04	-5.31E-01
NRSF	MJ	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	0.00E+00	0.00E+00
FW	m^3	1.35E+00	3.27E-03	5.04E-03	0.00E+00	2.79E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.60E-04	1.59E-02	-1.07E-02	-2.88E-01
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															

Waste indicators

Results per functional or declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	1.86E+01	1.69E-01	8.42E-02	0.00E+00	3.44E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E-02	1.50E-01	3.37E-03	-1.60E+00
Non-hazardous waste disposed	kg	2.41E+02	2.22E+00	4.70E+00	0.00E+00	3.69E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.14E-01	6.92E+00	1.38E+01	-1.51E+01
Radioactive waste disposed	kg	1.55E-03	7.64E-06	2.28E-06	0.00E+00	1.39E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.08E-06	3.52E-06	2.93E-07	-4.20E-04

Output flow indicators

Results per functional or declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	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	0.00E+00	0.00E+00
Material for recycling	kg	4.92E+00	2.47E-02	1.78E-02	0.00E+00	6.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.49E-03	6.08E+00	4.00E-04	0.00E+00
Materials for energy recovery	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	0.00E+00	0.00E+00
Exported energy, electricity	MJ	1.21E+00	5.12E-03	1.88E-03	0.00E+00	8.79E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.52E-03	1.05E-03	0.00E+00
Exported energy, thermal	MJ	5.23E-01	6.49E-03	2.04E-03	0.00E+00	3.40E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-03	3.44E-03	0.00E+00

SCENARIO – 100% single-treatment EoL

In accordance with PCR 2019:14, three single-treatment 100% end-of-life scenarios were assessed—assuming 100% of the product mass is routed individually to recycling, incineration with energy recovery, or landfill—to transparently reflect the environmental impacts and Module D benefits/loads of each individual disposal pathway

Mandatory impact category indicators according to EN 15804

Results per functional or declared unit													
		100% Recycling				100% Incineration				100% Landfill			
Indicator	Unit	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
GWP-total	kg CO_2 eq.	2.21E-01	7.98E-02	0.00E+00	-7.27E+01	3.59E-01	2.76E+01	0.00E+00	4.27E+00	2.21E-01	0.00E+00	1.14E+00	1.36E+01
GWP-fossil	kg CO_2 eq.	2.21E-01	4.39E-02	0.00E+00	-7.27E+01	3.59E-01	2.75E+01	0.00E+00	4.22E+00	2.21E-01	0.00E+00	1.07E+00	1.35E+01
GWP-biogenic	kg CO_2 eq.	4.60E-05	3.60E-02	0.00E+00	-1.18E-02	7.47E-05	3.64E-02	0.00E+00	4.16E-02	4.60E-05	0.00E+00	7.02E-02	5.17E-02
GWP-luluc	kg CO_2 eq.	7.12E-05	3.43E-05	0.00E+00	1.01E-02	1.20E-04	1.70E-04	0.00E+00	1.26E-02	7.12E-05	0.00E+00	3.40E-05	2.54E-02
ODP	kg CFC 11 eq.	4.99E-09	6.83E-10	0.00E+00	-1.56E-06	8.11E-09	1.01E-08	0.00E+00	1.63E-06	4.99E-09	0.00E+00	4.55E-09	1.92E-06
AP	mol H^+ eq.	6.90E-04	3.50E-04	0.00E+00	-3.31E-01	1.13E-03	6.29E-03	0.00E+00	4.48E-02	6.90E-04	0.00E+00	9.30E-04	7.07E-02
EP-freshwater	kg P eq.	1.65E-06	1.24E-06	0.00E+00	-9.30E-04	2.68E-06	8.40E-06	0.00E+00	-4.26E-05	1.65E-06	0.00E+00	1.19E-06	4.20E-04
EP-marine	kg N eq.	2.40E-04	1.40E-04	0.00E+00	-7.98E-02	3.90E-04	3.04E-03	0.00E+00	1.06E-02	2.40E-04	0.00E+00	1.26E-03	1.51E-02
EP-terrestrial	mol N eq.	2.62E-03	1.58E-03	0.00E+00	-6.52E-01	4.26E-03	3.12E-02	0.00E+00	9.47E-02	2.62E-03	0.00E+00	4.22E-03	1.45E-01
POCP	kg NMVOC eq.	1.10E-03	4.80E-04	0.00E+00	-2.29E-01	1.78E-03	7.87E-03	0.00E+00	2.94E-02	1.10E-03	0.00E+00	1.78E-03	4.77E-02
ADP-minerals&metals*	kg Sb eq.	7.69E-07	3.61E-08	0.00E+00	-3.00E-04	1.25E-06	1.95E-06	0.00E+00	1.10E-04	7.69E-07	0.00E+00	3.02E-07	1.20E-04
ADP-fossil*	MJ	3.12E+00	6.64E-01	0.00E+00	-9.84E+02	5.06E+00	5.53E+00	0.00E+00	-2.31E+01	3.12E+00	0.00E+00	3.24E+00	1.52E+02
WDP*	m^3	1.62E-02	7.23E-03	0.00E+00	-4.66E+01	2.63E-02	1.87E+00	0.00E+00	3.72E+00	1.62E-02	0.00E+00	1.60E-01	6.27E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption												

Additional mandatory impact category indicators according to EN 15804

Results per functional or declared unit													
		100% Recycling				100% Incineration				100% Landfill			
Indicator	Unit	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
GWP-GHG	kg CO_2 eq.	2.21E-01	4.39E-02	0.00E+00	-7.27E+01	3.59E-01	2.75E+01	0.00E+00	4.27E+00	2.21E-01	0.00E+00	1.10E+00	1.36E+01

Results per functional or declared unit													
		100% Recycling				100% Incineration				100% Landfill			
Indicator	Unit	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
Particulate matter	disease inc.	1.76E-08	8.52E-09	0.00E+00	-4.14E-06	2.85E-08	3.60E-08	0.00E+00	2.00E-06	1.76E-08	0.00E+00	2.19E-08	2.09E-06
Ionizing radiation	kBq U235 eq.	1.33E-03	2.15E-03	0.00E+00	-1.54E-01	2.17E-03	7.88E-03	0.00E+00	-8.69E-01	1.33E-03	0.00E+00	3.13E-03	-3.86E-02
Ecotoxicity, freshwater	CTUe	4.62E-01	6.94E-02	0.00E+00	-4.83E+01	7.50E-01	6.02E+01	0.00E+00	4.39E+01	4.62E-01	0.00E+00	6.10E+01	5.78E+01
Human toxicity, cancer	CTUh	3.61E-11	4.98E-12	0.00E+00	-3.65E-09	5.86E-11	1.60E-09	0.00E+00	5.41E-09	3.61E-11	0.00E+00	4.79E-11	6.69E-09
Human toxicity, non-cancer	CTUh	1.89E-09	1.40E-10	0.00E+00	-7.02E-08	3.08E-09	6.33E-08	0.00E+00	7.86E-08	1.89E-09	0.00E+00	7.02E-09	1.14E-07
Land Use (Soil Quality Index)	Pt	1.85E+00	6.51E-02	0.00E+00	2.96E+01	3.01E+00	2.11E+00	0.00E+00	4.74E+01	1.85E+00	0.00E+00	7.59E+00	6.27E+01

Resource use indicators

Results per functional or declared unit													
		100% Recycling				100% Incineration				100% Landfill			
Indicator	Unit	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
PERE	MJ	5.13E-02	3.90E-01	0.00E+00	-7.21E+00	8.33E-02	6.64E-01	0.00E+00	-8.87E+00	5.13E-02	0.00E+00	4.45E-01	1.35E+01
PERM	MJ	0.00E+00	-3.32E-01	0.00E+00	0.00E+00	0.00E+00	-3.32E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-3.32E-01	0.00E+00
PERT	MJ	5.13E-02	5.88E-02	0.00E+00	-7.21E+00	8.33E-02	3.33E-01	0.00E+00	-8.87E+00	5.13E-02	0.00E+00	1.14E-01	1.35E+01
PENRE	MJ	3.12E+00	2.64E+02	0.00E+00	-9.84E+02	5.06E+00	2.69E+02	0.00E+00	-2.30E+01	3.12E+00	0.00E+00	2.67E+02	1.52E+02

PENRM	MJ	0.00E+00	-2.63E+02	0.00E+00	0.00E+00	0.00E+00	-2.63E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.63E+02	0.00E+00
PENRT	MJ	3.12E+00	6.64E-01	0.00E+00	-9.84E+02	5.06E+00	5.53E+00	0.00E+00	-2.30E+01	3.12E+00	0.00E+00	3.24E+00	1.52E+02
SM	kg	3.02E-03	3.62E-03	0.00E+00	1.39E+00	4.91E-03	2.38E-02	0.00E+00	1.59E+00	3.02E-03	0.00E+00	3.17E-03	2.98E+00
RSF	MJ	7.10E-04	2.00E-03	0.00E+00	-1.39E-01	1.15E-03	9.06E-03	0.00E+00	-8.92E-01	7.10E-04	0.00E+00	6.50E-04	-8.09E-02
NRSF	MJ	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
FW	m^3	3.70E-04	1.70E-04	0.00E+00	-1.08E+00	6.00E-04	3.19E-02	0.00E+00	8.09E-02	3.70E-04	0.00E+00	-5.46E-02	1.40E-01
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												

Waste indicators

Results per functional or declared unit													
		100% Recycling				100% Incineration				100% Landfill			
Indicator	Unit	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
Hazardous waste disposed	kg	1.90E-02	2.60E-03	0.00E+00	-3.11E+00	3.09E-02	3.04E-01	0.00E+00	4.83E+00	1.90E-02	0.00E+00	1.99E-02	5.28E+00
Non-hazardous waste disposed	kg	2.50E-01	5.97E-02	0.00E+00	-1.39E+01	4.07E-01	1.87E+01	0.00E+00	4.48E+00	2.50E-01	0.00E+00	7.20E+01	2.65E+01
Radioactive waste disposed	kg	8.62E-07	1.63E-06	0.00E+00	-1.20E-04	1.40E-06	5.59E-06	0.00E+00	-6.80E-04	8.62E-07	0.00E+00	1.72E-06	-4.03E-05

Output flow indicators

Results per functional or declared unit													
		100% Recycling				100% Incineration				100% Landfill			
Indicator	Unit	C2	C3	C4	D	C2	C3	C4	D	C2	C3	C4	D
Components for re-use	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
Material for recycling	kg	0.00E+00	1.45E+01	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
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.45E+01	0.00E+00	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	1.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ABBREVIATIONS

Abbreviation	Definition
ABS	Acrylonitrile Butadiene Styrene (type of plastic)
ADP	Abiotic Depletion Potential
ADPE / ADP-minerals&metals	Abiotic Depletion Potential for non-fossil resources
ADPF / ADP-fossil	Abiotic Depletion Potential for fossil resources
AG	Aktiengesellschaft (German Stock Corporation)
AIB	Association of Issuing Bodies
AP	Acidification Potential, Accumulated Exceedance
BGR	BGR (Specific material or supplier code for plastics)
BOM	Bill of Materials
CE	Circular Economy
CFC-11	Trichlorofluoromethane (used as a reference for ozone depletion)
CH	Confoederatio Helvetica (Switzerland - geographical dataset region)
CN	China (geographical dataset region)
CO2	Carbon Dioxide
CPC	Central Product Classification
DE	Deutschland (Germany - geographical dataset region)
EEA	European Environment Agency
EF	Environmental Footprint
EN	European Norm / European Standard
EoL	End of Life
EP	Eutrophication Potential
EPD	Environmental Product Declaration
eq	Equivalent
ERP	Enterprise Resource Planning (internal company system)
EU	European Union
FAE	Municipal Incineration FAE (Specific dataset identifier for waste incineration)
FW	Use of net fresh water
GF [X]	Glass Fiber (with [X] percentage, e.g., 30% glass fiber)
GHG	Greenhouse Gases
GLO	Global (geographical dataset region)
GPI	General Programme Instructions
GWP	Global Warming Potential
GWP-biogenic	Global Warming Potential - biogenic
GWP-fossil	Global Warming Potential - fossil fuels
GWP-luluc	Global Warming Potential - land use and land use change
H+	Hydrogen ion (used as a reference for acidification)
ISO	International Organization for Standardization
JRC	Joint Research Centre (European Commission)
kg	Kilogram
kWh	Kilowatt hour
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
luluc	Land Use and Land Use Change
m3	Cubic meter
MJ	Megajoule
mol	Mole (unit of measurement)
N	Nitrogen (used as a reference for eutrophication)
ND	Not Declared
NMVOC	Non-Methane Volatile Organic Compounds
NRSF	Use of non-renewable secondary fuels
ODP	Depletion potential of the stratospheric ozone layer (Ozone Depletion Potential)
P	Phosphorus (used as a reference for eutrophication)
PA6	Polyamide 6 (Nylon 6)
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
PEF	Product Environmental Footprint

PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
PENRM	Use of non-renewable primary energy resources used as raw materials
PENRT	Total use of non-renewable primary energy resources
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
POCP	Photochemical Ozone Creation Potential (Formation potential of tropospheric ozone)
POM	Polyoxymethylene (type of plastic)
PP	Polypropylene (type of plastic)
PUR	Polyurethane
PV	Photovoltaic
RAS	Rest of Asia (geographical dataset region) / Recycled Aluminium Scrap
RER	Europe (geographical dataset region / Région Europe)
RoW	Rest of World (geographical dataset region)
RSF	Use of renewable secondary fuels
RSL	Reference Service Life
SAP	Systems, Applications, and Products in Data Processing (ERP software)
Sb	Antimony (used as a reference for abiotic depletion)
SM	Use of secondary material
tkm	Ton-kilometer (unit of freight transport)
UN	United Nations
WDP	Water (user) deprivation potential (deprivation-weighted water consumption)
ZJ	Zhejiang (Province in China - geographical dataset region)

REFERENCES

Core Programme and Category Rules

- **EPD International (2025)** General Programme Instructions for the International EPD System. Version 5.0.1. www.environdec.com.
- **EPD International (2025)** PCR 2019:14 Construction products (to which c-PCR-021 is complementary). Version 2.0.1.
- **EPD International (2025)** c-PCR-021 Furniture and components of furniture (to PCR 2019:14). Version 2.0.1.

Normative Standards

- **CEN (2021) EN 15804:2012+A2:2019+AC:2021**, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
- **CEN (2024) EN 15941:2024**, Sustainability of construction works – Data quality for environmental assessment of products and construction work – Selection and use of data.
- **ISO (2006) ISO 14025:2006**, Environmental labels and declarations – Type III environmental declarations – Principles and procedures.
- **ISO (2006) ISO 14040:2006**, Environmental management – Life cycle assessment – Principles and framework.
- **ISO (2006) ISO 14044:2006**, Environmental management – Life cycle assessment – Requirements and guidelines.

Additional Technical References

- **European Commission (2021)** Product Environmental Footprint (PEF) Method (for default values if used in Module D).
- **IPCC (2021)** Sixth Assessment Report (AR6) (as the basis for current EF 3.1 characterization factors used in the EPD).
- **United Nations** Central Product Classification (UN CPC), identifying the code for the specific office chair (e.g., UN CPC 381)

VERSION HISTORY

Version 1, 2026-10-23
Original Version of the EPD