Environmental Product Declaration (EPD)
According to ISO 14025 and EN 15804+A2:2019

Chair 611

Registration number:	EPD-Kiwa-EE-192619-EN
Issue date:	09-09-2025
Valid until:	09-09-2030
Declaration owner:	Artek oy ab
Publisher:	Kiwa-Ecobility Experts
Programme operator:	Kiwa-Ecobility Experts
Status:	verified

1 General information

1.1 PRODUCT

Chair 611

1.2 REGISTRATION NUMBER

EPD-Kiwa-EE-192619-EN

1.3 VALIDITY

Issue date: 09-09-2025

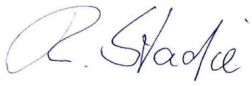
Valid until: 09-09-2030

1.4 PROGRAMME OPERATOR

Kiwa-Ecobility Experts
Wattstraße 11-13
13355 Berlin
DE

Raoul Mancke

(Head of programme operations, Kiwa-Ecobility Experts)



Dr. Ronny Stadie

(Verification body, Kiwa-Ecobility Experts)

1.5 OWNER OF THE DECLARATION

Declaration owner: Artek oy ab

Address: Mannerheimintie 12 B, 4. krs, 00100 Helsinki, Finland

E-mail: transparency@artek.fi

Website: https://www.artek.fi

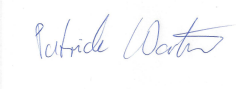
Production location: a-factory oy ab

Address production location: Otto Korhosen katu 2-4, 20660 Littoinen, Finland

1.6 VERIFICATION OF THE DECLARATION

The independent verification is in accordance with the ISO 14025:2011. The LCA is in compliance with ISO 14040:2006 and ISO 14044:2006. The EN 15804+A2:2019 serves as the core PCR.

☐ Internal ☒ External



Patrick Wortner, PeoplePlanetProfit GmbH & Co. KG.

1.7 STATEMENTS

The owner of this EPD shall be liable for the underlying information and evidence. The programme operator Kiwa-Ecobility Experts shall not be liable with respect to manufacturer data, life cycle assessment data and evidence.

1.8 PRODUCT CATEGORY RULES

Kiwa-EE GPI R.3.0
Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, SOP EE 1203_R. 3.0 (27.02.2025)

Kiwa-EE GPI R.3.0 Annex B1
Kiwa-Ecobility Experts, General Programme Instructions “Product Level” – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930, SOP EE 1203_R. 3.0 (27.02.2025)

PCR B
EPD Norway - NPCR 026 Part B for Furniture and components of furniture (references to EN 15804+A2) version 3.0 (2024-10-08)

1 General information

1.9 COMPARABILITY

In principle, a comparison or assessment of the environmental impacts of different products is only possible if they have been prepared in accordance with EN 15804+A2:2019. For the evaluation of the comparability, the following aspects have to be considered in particular: PCR used, functional or declared unit, geographical reference, the definition of the system boundary, declared modules, data selection (primary or secondary data, background database, data quality), scenarios used for use and disposal phases, and the life cycle inventory (data collection, calculation methods, allocations, validity period). PCRs and general program instructions of different EPD program operators may differ. Comparability needs to be evaluated. For further guidance, see EN 15804+A2:2019 and ISO 14025.

1.10 CALCULATION BASIS

LCA method R<THINK: Ecobility Experts | EN15804+A2

LCA software*: Simapro 9.6

Characterization method: RETHINK characterization method (see references for more details)

LCA database profiles: ecoinvent (for version see references)

Version database: v3.19 (20250306)

** Simapro is used for calculating the characterized results of the Environmental profiles within R<THINK.*

1.11 LCA BACKGROUND REPORT

This EPD is generated on the basis of the LCA background report 'Chair 611' with the calculation identifier ReTHiNK-92619.

2 Product

2.1 PRODUCT DESCRIPTION

This Specific-EPD refers to the product “Chair 611”, which brings together a solid birch frame with a woven fabric seat and backrest. Designed to offer comfort and practicality, the fabric webbing yields to the sitter, making the chair exceptionally comfortable. Chair 611 can be easily reupholstered, which means the chair can have many life cycles. One of Alvar Aalto’s first modern furniture designs, Chair 611 has been in continuous production ever since its creation. Suitable for almost any environment, Chair 611 stacks up to four chairs on the floor.
Chair 611 frame is made from solid birch wood harvested from sustainably managed Finnish forests.
The chair's frame is manufactured at Artek's long standing partner Senkki oy in Jurva, Finland.
Seat and backrest are upholstered with a 100% linen webbing exclusively developed by Artek. The flax fibers originating from Belgium are spun in Italy and exclusively woven for Artek in Germany.
Upholstery, final quality check and packaging are made at our a-factory in Littoinen, Finland.

The product (configuration as described) has the following material composition:

Material	Weight (kg)	Share (%)
Solid birch wood	4.0	83.2
Linen webbing (100% linen)	0.57	11.9
Lacquer	0.2	4.2
Plastic glides	0.01	0.2
Other (steel screws and staples)	0.03	0.6

2.2 REFERENCE SERVICE LIFE

RSL PRODUCT

The declaration of reference service life (RSL) is not mandatory as the use stage (Module B) is not included in this EPD. For the RSL, 50 years are used for Chair 611 in this EPD, as this is the expected average service life of the chairs solid wooden frame.

Across more than ninety years of production Chair 611's purity of aesthetics and solidity of construction have proven that it is built to last. Many Chair 611 have been in regular use for 50 years or more. Chair 611 is often inherited to the next generation or sold on the vintage market and re-used.

Exchanging worn upholstery on a Chair 611 is simple and Artek sells linen webbing by the meter to local upholstery shops for re-webbing on site.

USED RSL (YR) IN THIS LCA CALCULATION:

50

2.3 TECHNICAL DATA

Chair 611 frame made of solid birchwood, harvested in sustainably managed Finnish forests (PEFC-certificate of birch sawmill available on www.artek.fi).
Solid birch wood frame with double mortise and tenon joints for extra stability and longevity.
Webbed upholstery made from 100% linen webbing of 50 mm in width, woven in Germany.
Webbing attached to frame by zinc plated steel staples.
Felt glides mounted each with two steel screws.
Solid birch chair frame is clear lacquered with water-based lacquer.

Chair 611 is tested at Vitra's Test Center in Weil am Rhein to following product safety and longevity standards and beyond:
EN 16139 (2014)Tab1/EN 1728 (2012), Level 1
EN 1022 (2005)
DIN 68878 (Tilt-drop-test, 80.000 cycles)

Chair 611 can be re-upholstered with basic tools by any professional upholsterer.

A care and maintenance guide as well as a re-webbing guide are available on www.artek.fi

2 Product

2.4 SUBSTANCES OF VERY HIGH CONCERN

Chair 611 does not contain any SVHC (Substances of very high concern).

2.5 DESCRIPTION PRODUCTION PROCESS

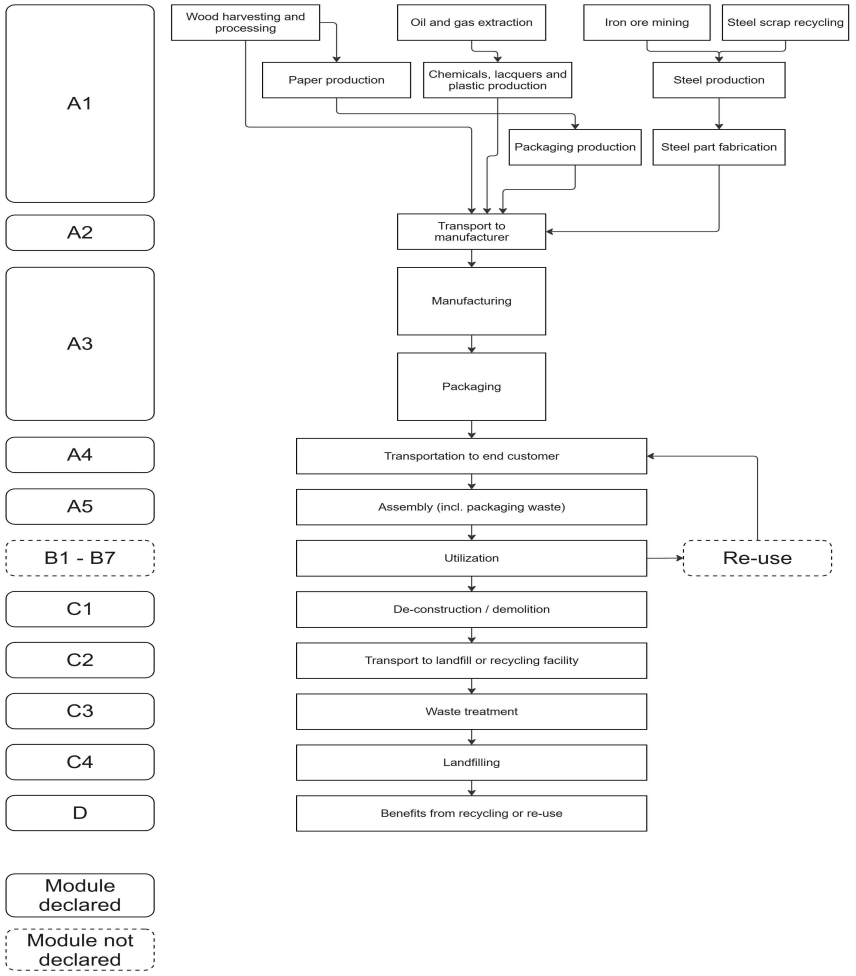
The manufacture of Chair 611 takes place at our long-standing partner Senkki oy in Jurva (Finland) and at out own a-factory in Littoinen (Finland) both factories are ISO9001 and ISO14001 certified.
All wood used in Chair 611 is harvested in sustainably managed Finnish forests (PEFC-certification available).

Production steps for the chair frame:

- birch timber harvest
- birch timber sawing
- birch plank seasoning, open air
- birch plank cutting and milling to shape
- drying in kiln
- joinery (tenon and dowel joints)
- painting (water based lacquer)
- transport of finished chair frame to a-factory
- upholstery with linen webbing
- final quality check
- packaging in corrugated carboard box

Production steps for the chair's linen webbing:

- flax harvesting and processing (Belgium)
- spinning and dyeing of linen yarn (Italy)
- weaving of linen webbing (Germany)



2.6 CONSTRUCTION DESCRIPTION

The product is delivered assembled and packaged and needs no further assembly or installation at the site.

3 Calculation rules

3.1 DECLARED UNIT

one complete product

The declared unit is one complete product serving the function of a universal chair. The product name is Chair 611. The product version is: birch frame, clear lacquered with black linen webbing. The weight for one complete product is 4.8 kg. The measurements for one complete product are 80 x 48.5 x 49 cm (height x width x depth).

Reference unit: piece (p)

3.2 CONVERSION FACTORS

Description	Value	Unit
Reference unit	1	p
Weight per reference unit	4.810	kg
Conversion factor to 1 kg	0.207900	p

3.3 SCOPE OF DECLARATION AND SYSTEM BOUNDARIES

This is a Cradle to gate with options, modules C1-C4 and module D EPD. The life cycle stages included are as shown below:

(X = module included, ND = module not declared)

A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

The modules of the EN 15804 contain the following:

Module A1 = Raw material supply	Module B5 = Refurbishment
Module A2 = Transport	Module B6 = Operational energy use
Module A3 = Manufacturing	Module B7 = Operational water use
Module A4 = Transport	Module C1 = De-construction / Demolition
Module A5 = Construction - Installation process	Module C2 = Transport
Module B1 = Use	Module C3 = Waste Processing
Module B2 = Maintenance	Module C4 = Disposal
Module B3 = Repair	Module D = Benefits and loads beyond the product system boundaries
Module B4 = Replacement	

3.4 REPRESENTATIVENESS

This EPD is representative for Chair 611, a product of Artek oy ab. The results of this EPD are representative for European Union.

3.5 CUT-OFF CRITERIA

For each unit process, the cut-off criteria of 1% of renewable and non-renewable primary energy usage and 1% of the total mass input of that unit process are complied with. The total neglected input flows do not exceed the limit of 5% of energy use and mass.

3 Calculation rules

Product stage (A1-A3)
All input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. production waste) are considered in this LCA.

Construction process stage (A4-A5)
All input flows (e.g. transportation to the construction site, additional raw material use for construction, installation energy (use) of energy use for assembly, etc.) and output flows (e.g. construction waste, packaging waste, etc.) are considered in this LCA.

End of life stage (C1-C4)
All input flows (e.g. energy use for demolition or disassembly, transport to waste processing, etc.) and output flows (e.g. end-of-life waste processing of the product, etc.) are considered in this LCA. Demolition of the product is accomplished using hand tools with no associated emissions and negligble impacts.

Benefits and loads beyond the system boundary (Module D)
All benefits and loads beyond the system boundary resulting from reusable products, recyclable materials and/or useful energy carriers leaving the product system are considered in this LCA.

The following processes are excluded:

- Manufacturing of equipment used in production, buildings or any other capital asset
- Water and electricity consumption for the building
- Transportation of personnel to the plant
- Transportation of personnel within the plant
- Research and development activities
- Long-term emissions

3.6 ALLOCATION

The energy consumption is calculated based on the total consumption at the production site in 2024 (for all products manufactured) and are converted into the amount used solely for the production of the declared product. The amount of energy is given per piece of product manufactured.

No allocation is performed with regard to the use of secondary materials or fuels, co-products, plant-specific production processes or multi-input systems.

The polluter pays principle applies to the use of waste as a substitute for primary fuels or materials. Double counting is avoided.

3.7 DATA COLLECTION & REFERENCE PERIOD

Production waste and energy consumption data are based on the reference year 2024 (Jan 1st 2024 - Dec 31st 2024).

3.8 ESTIMATES AND ASSUMPTIONS

For all raw materials used (raw materials, operating materials, packaging), the transportation distance is recorded. A payload factor of 50% is used for all truck transports (suppliers, disposal transports and internal transports), which corresponds to a full delivery and empty return journey.

The assumed distance of 590 km for module A4 is an average distance which takes into account the sales shares and their respecitive transport distances.

Excluded are the manufacturing of capital equipment, construction undertakings, and infrastructure development, along with the maintenance and operation of capital equipment. Additionally, activities related to personnel, as well as energy and water consumption associated with company management and sales, are also excluded.

The scenarios included are currently in use and are representative for one of the most likely scenario alternatives.

3.9 DATA QUALITY

The data are based on the annual average of the year 2024. Generic datasets from the ecoinvent database V3.9.1 are used for the secondary data, which refers to reference year 2022. This database is regularly maintained and meets the requirements of EN 15804+A2 (background data not older than 10 years). All consistent datasets contained in the ecoinvent database are documented and can be viewed in the online ecoinvent documentation. In the operating data survey all relevant process-specific data could be collected. The quality of the data can be thus considered as good.

The primary data are collected and provided by Artek. The assessment of data quality on the basis of ISO 14044 is presented below.

Aspect	Data quality assessment

3 Calculation rules

Time-related coverage	The primary data represent the current situation of the date of study (2024) or as close as possible (<5 years). The secondary data are updated within last 10 years.
Geographical coverage	Most of the datasets selected for the LCA refer to Europe as the geographical reference.
Technology coverage	The data are representative of the technology used in production processes.
Completeness	Specific data are benchmarked with literature data. Simple validation checks (e.g. mass or energy balances) are performed.
Representativeness	The data fulfill the defined time-related, geographical, and technological scope.
Precision	The data used are as representative as possible. The data are derived from credible sources, and references are provided.
Reproducibility	Information about the method and data (reference source) are provided.
Sources of the data	The data are derived from credible sources, and references are provided.

3.10 POWER MIX

The use of green electricity is included in the calculation of the environmental impacts, which is based on the purchased electricity mix, referring to the market based approach. Artek's own a-factory uses 100% Nordic Hydropower from Vattenfall. The share of green electricity with guarantees of origin in total electricity consumption is 100%. The GWP-total of the electricity is calculated at 0.0434 kg CO2 eqv./kWh.

Senkki oy facility, who manufactures all solid birch frames for Chair 611, uses “100% carbon-free Energy” from VENI Group. VENI declares the electricity mix for 2024 as follows: Hydro 13.5%, Wind 3.4%, Solar 5.4%, Thermic 0.2%, Biomass 5.5% and Nuclear 72%. The above electricity mix is considered in the calculation of energy consumption during the manufacturing of solid birch frames.

4 Scenarios and additional technical information

4.1 TRANSPORT TO CONSTRUCTION SITE (A4)

For the transport from production place to assembly/user, the following scenario is assumed for module A4 of this EPD.

	Value and unit
Vehicle type used for transport	(ei3.9.1) Lorry (Truck) 16-32t, EURO4 | market for (EU)
Fuel type and consumption of vehicle	not available
Distance	590 km
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.2 ASSEMBLY (A5)

The following information describes the scenarios for flows entering the system and flows leaving the system at module A5.

FLOWS ENTERING THE SYSTEM

There are no significant environment impacts as a result of materials or energy used in the construction stage (A5).

FLOWS LEAVING THE SYSTEM

The following output flows leaving the system at module A5 are assumed.

Description	Value	Unit
Output materials as result of loss during construction	0	%
Output materials as result of waste processing of materials used for installation/assembly at the building site	0.000	kg
Output materials as result of waste processing of used packaging	3.150	kg

4.3 DE-CONSTRUCTION, DEMOLITION (C1)

No inputs are needed for the product at the de-construction / demolition phase

4.4 TRANSPORT END-OF-LIFE (C2)

The following distances and transport conveyance are assumed for transportation during end of life for the different types of waste processing.

4 Scenarios and additional technical information

Waste Scenario	Transport conveyance	Not removed (stays in work) [km]	Landfill [km]	Incineration [km]	Recycling [km]	Re-use [km]
(ei3.9.1) organic material, other (i.a. insulation) (NMD ID 52)	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.9.1) plastics, via residue (NMD ID 43)	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.9.1) Steel, light (NMD ID 73)	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.9.1) wood 'clean', via residue (NMD ID 35) | (u=10%) corr. acc. EN16449	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0
(ei3.9.1) finishes (adhered to wood, plastic, metal) (NMD ID 2)	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)	0	100	150	50	0

The transport conveyance(s) used in the scenario(s) for transport during end of life has the following characteristics.

	Value and unit
Vehicle type used for transport	(ei3.9.1) Lorry (Truck), unspecified (default) | market group for (GLO)
Fuel type and consumption of vehicle	not available
Capacity utilisation (including empty returns)	50 % (loaded up and return empty)
Bulk density of transported products	inapplicable
Volume capacity utilisation factor	1

4.5 END OF LIFE (C3, C4)

The scenario(s) assumed for end of life of the product are given in the following tables.
First the assumed percentages per type of waste processing are displayed, followed by the assumed amounts.

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
(ei3.9.1) organic material, other (i.a. insulation) (NMD ID 52)	NL	0	5	95	0	0
(ei3.9.1) plastics, via residue (NMD ID 43)	NL	0	20	80	0	0

4 Scenarios and additional technical information

Waste Scenario	Region	Not removed (stays in work) [%]	Landfill [%]	Incineration [%]	Recycling [%]	Re-use [%]
(ei3.9.1) Steel, light (NMD ID 73)	NL	0	1	0	87	12
(ei3.9.1) wood 'clean', via residue (NMD ID 35) | (u=10%) corr. acc. EN16449	NL	0	10	85	5	0
(ei3.9.1) finishes (adhered to wood, plastic, metal) (NMD ID 2)	NL	0	0	100	0	0

Waste Scenario	Not removed (stays in work) [kg]	Landfill [kg]	Incineration [kg]	Recycling [kg]	Re-use [kg]
(ei3.9.1) organic material, other (i.a. insulation) (NMD ID 52)	0.000	0.029	0.541	0.000	0.000
(ei3.9.1) plastics, via residue (NMD ID 43)	0.000	0.002	0.008	0.000	0.000
(ei3.9.1) Steel, light (NMD ID 73)	0.000	0.000	0.000	0.026	0.004
(ei3.9.1) wood 'clean', via residue (NMD ID 35) | (u=10%) corr. acc. EN16449	0.000	0.400	3.400	0.200	0.000
(ei3.9.1) finishes (adhered to wood, plastic, metal) (NMD ID 2)	0.000	0.000	0.200	0.000	0.000
Total	**0.000**	**0.431**	**4.149**	**0.226**	**0.004**

4.6 BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY (D)

The presented Benefits and loads beyond the system boundary in this EPD are based on the following calculated Net output flows in kilograms and Energy recovery displayed in MJ Lower Heating Value.

Waste Scenario	Net output flow [kg]	Energy recovery [MJ]
(ei3.9.1) organic material, other (i.a. insulation) (NMD ID 52)	0.000	9.206
(ei3.9.1) plastics, via residue (NMD ID 43)	0.000	0.246
(ei3.9.1) Steel, light (NMD ID 73)	0.022	0.000
(ei3.9.1) wood 'clean', via residue (NMD ID 35) | (u=10%) corr. acc. EN16449	0.200	47.566
(ei3.9.1) finishes (adhered to wood, plastic, metal) (NMD ID 2)	0.000	2.028
Total	**0.222**	**59.046**

5 Results

For the impact assessment long-term emissions (>100 years) are not considered. The results of the impact assessment are only relative statements that do not make any statements about end-points of the impact categories, exceedance of threshold values, safety margins or risks. The following tables show the results of the indicators of the impact assessment, of the use of resources as well as of waste and other output flows.

5.1 ENVIRONMENTAL IMPACT INDICATORS PER PIECE

CORE ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	-3.03E+0	3.76E-1	-2.25E+0	-4.91E+0	8.79E-1	5.40E+0	0.00E+0	1.01E-1	7.44E+0	7.18E-1	-5.16E-1
GWP-f	kg CO_2 eq.	3.67E+0	3.76E-1	2.68E+0	6.73E+0	8.78E-1	3.14E-1	0.00E+0	1.00E-1	5.38E-1	6.10E-3	-5.09E-1
GWP-b	kg CO_2 eq.	-6.72E+0	1.52E-4	-4.95E+0	-1.17E+1	2.81E-4	5.09E+0	0.00E+0	3.27E-5	6.90E+0	7.12E-1	-3.21E-3
GWP-luluc	kg CO_2 eq.	1.36E-2	1.26E-4	1.85E-2	3.23E-2	4.29E-4	2.00E-4	0.00E+0	3.58E-4	1.90E-5	2.97E-6	-3.88E-3
ODP	kg CFC 11 eq.	7.25E-8	8.85E-8	7.33E-8	2.34E-7	1.92E-8	1.01E-8	0.00E+0	1.79E-9	2.53E-9	1.36E-9	-5.03E-8
AP	mol H+ eq.	3.86E-2	1.62E-3	2.19E-2	6.21E-2	3.64E-3	1.22E-3	0.00E+0	4.81E-4	1.27E-3	4.30E-5	-9.53E-3
EP-fw	kg P eq.	2.67E-4	3.00E-6	2.42E-4	5.12E-4	7.07E-6	3.11E-6	0.00E+0	9.99E-7	9.63E-7	2.76E-7	-5.95E-5
EP-m	kg N eq.	1.46E-2	4.91E-4	6.13E-3	2.12E-2	1.38E-3	4.81E-4	0.00E+0	1.83E-4	5.95E-4	6.00E-5	-2.81E-3
EP-T	mol N eq.	1.22E-1	5.43E-3	6.20E-2	1.90E-1	1.48E-2	5.13E-3	0.00E+0	1.95E-3	6.81E-3	1.49E-4	-4.59E-2
POCP	kg NMVOC eq.	2.04E-2	1.68E-3	1.84E-2	4.05E-2	5.32E-3	1.72E-3	0.00E+0	6.66E-4	1.80E-3	5.90E-5	-8.76E-3
ADP-mm	kg Sb-eq.	1.99E-5	8.90E-6	4.96E-5	7.85E-5	2.84E-6	8.47E-7	0.00E+0	3.15E-7	1.09E-7	7.52E-9	-8.34E-7
ADP-f	MJ	4.80E+1	5.87E+0	1.18E+2	1.72E+2	1.25E+1	2.30E+0	0.00E+0	1.44E+0	4.53E-1	1.14E-1	-6.88E+0
WDP	m3 world eq.	1.04E+1	1.75E-2	1.71E+0	1.22E+1	5.11E-2	2.67E-2	0.00E+0	7.86E-3	9.18E-3	4.98E-3	-7.35E-2

GWP-total=Global Warming Potential total (GWP-total) | **GWP-f**=Global Warming Potential fossil fuels (GWP-fossil) | **GWP-b**=Global Warming Potential biogenic (GWP-biogenic) | **GWP-luluc**=Global Warming Potential land use and land use change (GWP-luluc) | **ODP**=Depletion potential of the stratosperic ozon layer (ODP) | **AP**=Acidification potential, Accumulated Exceedance (AP) | **EP-fw**=Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater) | **EP-m**=Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine) | **EP-T**=Eutrophication potential, Accumulated Exceedance (EP-terrestrial) | **POCP**=Formation potential of tropospheric ozone (POCP) | **ADP-mm**=Abiotic depletion potential for non fossil resources (ADP mm) | **ADP-f**=Abiotic depletion for fossil resources potential (ADP fossil) | **WDP**=Water (user) deprication potential, deprivation-weighted water consumption (WDP)

5 Results

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	disease incidence	5.45E-7	2.95E-8	7.12E-7	1.29E-6	7.17E-8	2.08E-8	0.00E+0	9.92E-9	1.03E-8	7.82E-10	-1.35E-7
IR	kBq U235 eq.	9.88E-2	2.57E-2	1.39E+0	1.52E+0	6.28E-3	2.94E-3	0.00E+0	5.61E-4	7.75E-4	4.19E-4	-7.12E-3
ETP-fw	CTUe	3.16E+1	4.70E+0	2.10E+1	5.73E+1	6.18E+0	4.25E+0	0.00E+0	1.06E+0	9.05E-1	1.20E-1	-3.47E+0
HTP-c	CTUh	3.40E-9	1.25E-10	2.70E-9	6.22E-9	4.01E-10	4.09E-10	0.00E+0	5.32E-11	1.77E-9	3.43E-12	-7.68E-10
HTP-nc	CTUh	-3.90E-8	5.12E-9	7.45E-8	4.07E-8	8.83E-9	2.96E-9	0.00E+0	1.16E-9	4.14E-9	1.23E-10	-2.44E-8
SQP	Pt	6.70E+2	5.16E+0	4.74E+2	1.15E+3	7.46E+0	8.81E-1	0.00E+0	1.14E+0	1.29E-1	2.62E-1	-3.48E+2

PM=Potential incidence of disease due to PM emissions (PM) | **IR**=Potential Human exposure efficiency relative to U235 (IRP) | **ETP-fw**=Potential Comparative Toxic Unit for ecosystems (ETP-fw) | **HTP-c**=Potential Comparative Toxic Unit for humans (HTP-c) | **HTP-nc**=Potential Comparative Toxic Unit for humans (HTP-nc) | **SQP**=Potential soil quality idex (SQP)

CLASSIFICATION OF DISCLAIMERS TO THE DECLARATION OF CORE AND ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS

ILCD classification	Indicator	Disclaimer
ILCD type / level 1	Global warming potential (GWP)	None
	Depletion potential of the stratospheric ozone layer (ODP)	None
	Potential incidence of disease due to PM emissions (PM)	None
ILCD type / level 2	Acidification potential, Accumulated Exceedance (AP)	None
	Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	None
	Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	None
	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	None
	Formation potential of tropospheric ozone (POCP)	None
	Potential Human exposure efficiency relative to U235 (IRP)	1
ILCD type / level 3	Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
	Abiotic depletion potential for fossil resources (ADP-fossil)	2
	Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
	Potential Comparative Toxic Unit for humans (HTP-c)	2
	Potential Comparative Toxic Unit for humans (HTP-nc)	2

5 Results

ILCD classification	Indicator	Disclaimer
	Potential Soil quality index (SQP)	2

Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

5.2 INDICATORS DESCRIBING RESOURCE USE AND ENVIRONMENTAL INFORMATION BASED ON LIFE CYCLE INVENTORY (LCI)

PARAMETERS DESCRIBING RESOURCE USE

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	1.48E+2	7.95E-2	4.92E+1	1.98E+2	1.94E-1	8.98E-2	0.00E+0	2.03E-2	2.61E-2	3.73E-3	-7.24E+1
PERM	MJ	5.60E+1	0.00E+0	4.84E+1	1.04E+2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	MJ	2.04E+2	7.95E-2	9.75E+1	3.02E+2	1.94E-1	8.98E-2	0.00E+0	2.03E-2	2.61E-2	3.73E-3	-7.24E+1
PENRE	MJ	3.60E+1	6.24E+0	1.15E+2	1.58E+2	1.25E+1	2.30E+0	0.00E+0	1.44E+0	4.53E-1	1.14E-1	-6.81E+0
PENRM	MJ	1.20E+1	0.00E+0	3.11E+0	1.51E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-7.11E-2
PENRT	MJ	4.81E+1	6.24E+0	1.18E+2	1.73E+2	1.25E+1	2.30E+0	0.00E+0	1.44E+0	4.53E-1	1.14E-1	-6.88E+0
SM	Kg	5.07E-3	0.00E+0	0.00E+0	5.07E-3	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	m^3	3.18E-1	6.42E-4	4.98E-2	3.68E-1	1.79E-3	1.22E-3	0.00E+0	3.48E-4	1.98E-3	1.21E-4	-2.17E-3

PERE=Use of renewable primary energy excluding renewable primary energy resources used as raw materials | **PERM**=Use of renewable primary energy resources used as raw materials | **PERT**=Total use of renewable primary energy resources | **PENRE**=Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials | **PENRM**=Use of non-renewable primary energy resources used as raw materials | **PENRT**=Total use of non-renewable primary energy resources | **SM**=Use of secondary material | **RSF**=Use of renewable secondary fuels | **NRSF**=Use of non-renewable secondary fuels | **FW**=Net use of fresh water

5 Results

OTHER ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	Kg	1.89E-4	1.49E-5	1.47E-4	3.51E-4	7.98E-5	1.38E-5	0.00E+0	9.18E-6	2.84E-6	1.49E-7	-3.71E-5
NHWD	Kg	1.01E+0	3.76E-1	7.51E-1	2.13E+0	6.12E-1	9.03E-1	0.00E+0	9.51E-2	4.18E+0	4.32E-1	-1.41E-1
RWD	Kg	6.97E-5	4.00E-5	1.13E-3	1.24E-3	4.07E-6	2.15E-6	0.00E+0	3.29E-7	5.50E-7	6.27E-7	-5.19E-6

HWD=Hazardous waste disposed | **NHWD**=Non-hazardous waste disposed | **RWD**=Radioactive waste disposed

ENVIRONMENTAL INFORMATION DESCRIBING OUTPUT FLOWS

Abbr.	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.60E-3	0.00E+0	0.00E+0
MFR	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.33E+0	0.00E+0	0.00E+0	2.26E-1	0.00E+0	0.00E+0
MER	Kg	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.27E+1
EEE	MJ	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.32E+1

CRU=Components for re-use | **MFR**=Materials for recycling | **MER**=Materials for energy recovery | **EET**=Exported Energy, Thermic | **EEE**=Exported Energy, Electric

5 Results

5.3 INFORMATION ON BIOGENIC CARBON CONTENT PER PIECE

BIOGENIC CARBON CONTENT

The following Information describes the biogenic carbon content in (the main parts of) the product at the factory gate per piece:

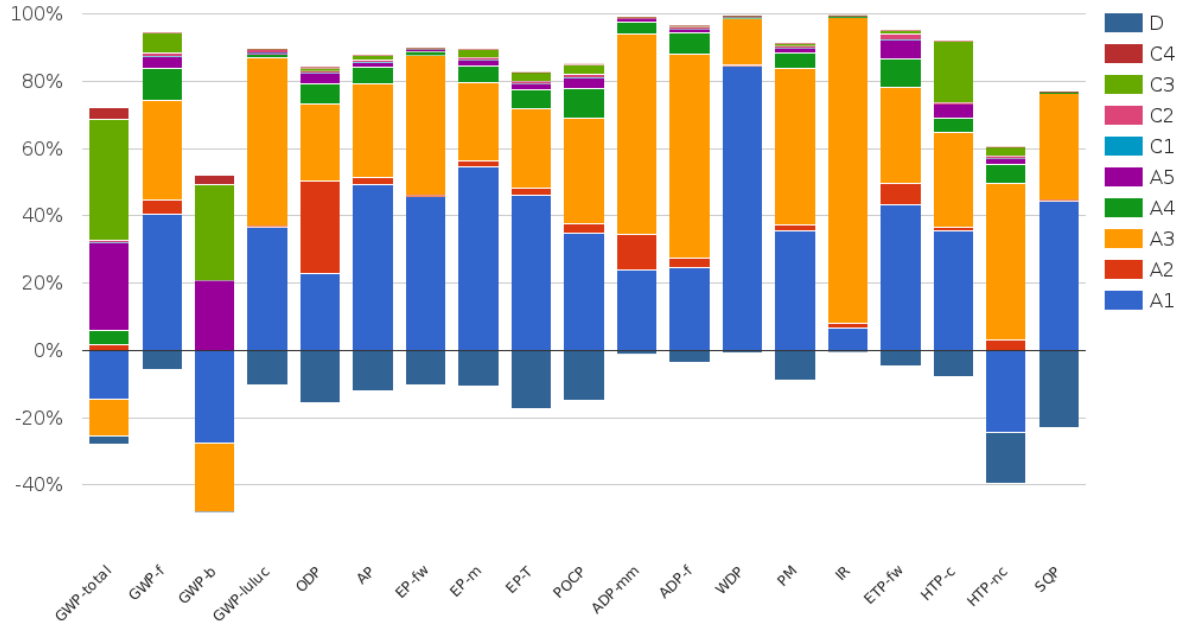
Biogenic carbon content	Amount	Unit
Biogenic carbon content in the product	2.105	kg C
Biogenic carbon content in accompanying packaging	1.381	kg C

UPTAKE OF BIOGENIC CARBON DIOXIDE

The following amount of carbon dioxide uptake is taken into account. Related uptake and release of carbon dioxide in downstream processes are not taken into account in this number although they do appear in the presented results. One kilogram of biogenic Carbon content is equivalent to 44/12 kg of biogenic carbon dioxide uptake.

Uptake Biogenic Carbon dioxide	Amount	Unit
product	7.718	kg CO2 (biogenic)
Packaging	5.063	kg CO2 (biogenic)

6 Interpretation of results



The extraction and processing of raw materials (Module A1) and the manufacturing processes (Module A3) dominate most impact categories. End-of-life (C1-C4) contributes notably to GWP mainly due to the treatment of biogenic carbon at end-of-life. Although wood-based materials are typically recycled and the carbon technically remains stored within the recycled material, EN 15804+A2 requires that this carbon be counted as emitted. Some categories show negative values from Module A1 and A3, reflecting temporary biogenic carbon storage.

7 References

ISO 14040
ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework; EN ISO 14040:2006

ISO 14044
ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines; EN ISO 14044:2006

ISO 14025
ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804+A2
EN 15804:2012+A2:2019/AC:2021, Sustainability of Buildings - Environmental Product Declarations - Framework Development Rules by Product Category

Kiwa-EE GPI R.3.0
Kiwa-Ecobility Experts, General Programme Instructions “Product Level”, SOP EE 1203_R. 3.0 (27.02.2025)

Kiwa-EE GPI R.3.0 Annex B1
Kiwa-Ecobility Experts, General Programme Instructions “Product Level” – Annex B1 Environmental Information Programme according to EN 15804 / ISO 21930, SOP EE 1203_R. 3.0 (27.02.2025)

PCR B
EPD Norway - NPCR 026 Part B for Furniture and components of furniture (references to EN 15804+A2) version 3.0 (2024-10-08)

Ecoinvent
ecoinvent Version 3.9.1 (December 2022)

R<THINK characterization method
ecoinvent 3.9.1: EN 15804+A2 indicators (EF 3.1)

EN 16139
EN 16139:2014-03, Furniture - Safety, strength and durability - Requirements and test methods for non-domestic seating

EN 1728
EN 1728:2012-10, Furniture - Seating - Test methods for the determination of strength and durability

EN 1022
EN 1022:2005-09, Domestic furniture - Seating - Determination of stability

7 References

DIN 68878
DIN 68878:2011-11, Chairs for domestic use - Performance characteristics - Requirements and test methods

8 Contact information

Publisher	Operator	Owner of declaration
Kiwa-Ecobility Experts Wattstraße 11-13 13355 Berlin, DE	**Kiwa-Ecobility Experts** Wattstraße 11-13 13355 Berlin, DE	**Artek oy ab** Mannerheimintie 12 B, 4. krs 00100 Helsinki, FI
E-mail: DE.Ecobility.Experts@kiwa.com **Website:** https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/	**E-mail:** DE.Ecobility.Experts@kiwa.com **Website:** https://www.kiwa.com/de/en/themes/ecobility-experts/ecobility-experts-epd-program/	**E-mail:** transparency@artek.fi **Website:** https://www.artek.fi

Kiwa-Ecobility Experts is established member of the ECO PLATFORM