



Statement of Verification

BREG EN EPD No: 000820

Issue: 01

This is to verify that the Environmental Product Declaration provided by:

Teknion Furniture Systems (M) Sdn Bhd

are in accordance with the requirements of:

EN 15804:2012+A2:2019

and

BRE Global Scheme Document SD207

This declaration is for:

Sprout bar stool with the weight of 9kg. Service life 10 years.

Company Address

Teknion Furniture Systems (M) Sdn Bhd,
Lot 761, Jalan Haji Sirat, Off Jalan Meru,
42100 Klang, Selangor,
Malaysia



teknion

Signed for BRE Global Limited

Hayley Thomson

Operator

29 June 2026

Date of this Issue

29 June 2026

Date of First Issue

28 October 2031

Expiry Date



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Environmental Product Declaration

EPD Number: 000820

General Information

EPD Programme Operator	Applicable Product Category Rules
BRE Global Watford, Herts WD25 9XX United Kingdom	BRE Environmental Profiles 2025 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.2
Commissioner of LCA study	LCA consultant/Tool
Teknion Furniture Systems (M) Sdn Bhd, Lot 761, Jalan Haji Sirat, Off Jalan Meru, 42100 Klang, Selangor, Malaysia	Grace Ong / LINA A2
Functional Unit	Applicability/Coverage
Sprout bar stool with the weight of 9kg. Service life 10 years.	Other (please specify). Product specific
EPD Type	Background database
Cradle to Grave	Ecoinvent 3.8
Demonstration of Verification	
CEN standard EN 15804 serves as the core PCR ^a	
Independent verification of the declaration and data according to EN ISO 14025:2010 ☒ Internal ☐ External	
(Where appropriate ^b) Third party verifier: Kim Allbury	
a: Product category rules b: Optional for business-to-business communication; mandatory for business-to-consumer communication (see EN ISO 14025:2010, 9.4)	
Comparability	
Environmental product declarations from different programmes may not be comparable if not compliant with EN 15804:2012+A2:2019. Comparability is further dependent on the specific product category rules, system boundaries and allocations, and background data sources. See Clause 5.3 of EN 15804:2012+A2:2019 for further guidance	



Information modules covered

Product			Construction		Use stage							End-of-life				Benefits and loads beyond the system boundary
					Related to the building fabric					Related to the building						
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw materials supply	Transport	Manufacturing	Transport to site	Construction – Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse, Recovery and/or Recycling potential
☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒

Note: Ticks indicate the Information Modules declared.

Manufacturing site(s)

Teknion Furniture Systems (M) Sdn Bhd,
Lot 761, Jalan Haji Sirat, Off Jalan Meru,
42100 Klang, Selangor,
Malaysia

Construction Product:

Product Description

Sprout Stools are portable and casual, making them ideal for use in workplaces, offices, phone booths, cafeterias, retail, and educational settings. They are available in two heights, which is task height (overall height: 444mm) and bar height (overall height: 762mm). Sprout's sturdily constructed metal trumpet base and support can be finished in any Teknion paint colour, allowing coordination with Sprout Tables & LUUM upholstery. The products have been tested to ANSI/BIFMA standards, and the stools have a 300-pound (136kg) weight capacity.

The product covered by this EPD is a bar height sprout stool includes footrest and single upholstered seat. Here is the product information.

	Sprout Stool
Product Code	KLNSPS B
Weight	9kg
User weight range	tested for users up to 136kg
Packaging Weight (Cardboard & plastic)	1.5 kg

** Product code can be found in brochure and price guide, please reach out to Teknion technical team for more information.

For more information: [Sprout Stool](#)



Technical Information

Key technical properties and certifications are shown in the table below. The Reference Service Life (RSL) for these products included in the EPD is 10 years.

Technical Properties (Tests)	All Configuration Value
American National Standard for Office and Institutional Furnishings: General-Purpose Office Chairs ANSI/BIFMA X5.1-017(R2022)	Pass
ANSI/BIFMA Furniture Emissions Standard (M7.1/X7.1-2011 R2021) Indoor Advantage™ Gold - Registration # SCS-IAQ-05327	Pass
Test Procedure and Apparatus for Testing the Flame retardants of Resilient Filling Materials used in Upholstered Furniture. California Technical Bulletin 117	Pass
Voluntary Performance Guidelines for Upholstery Association for Contract Textiles (ACT)	Pass

Notes: The above listed technical properties are from the Certificate of Compliance (CoC), and it's an internal document which will be available upon request. Please contact the technical team for more information.



Main Product Contents

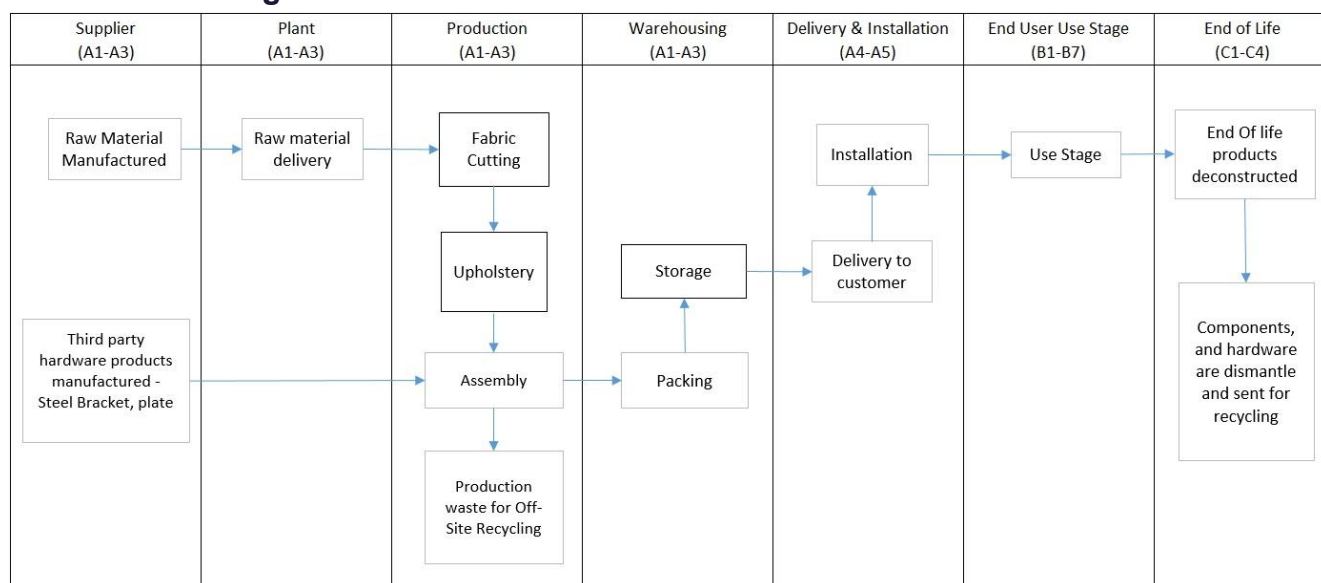
Like many commercial furniture products, Sprout stool is available in few configurations. For this particular study, a representative configuration was selected. The composition of this configuration is detailed in the table below.

Sprout stool	
Weight	9kg
Dimension (seat)	311mm x 406mm
Overall height:	762mm
Base diameter	394mm
Material/Chemical Input	%
Aluminium	45.47%
Steel	38.64%
Plastic	13.35%
Fabric	0.88%
Others	1.67%

Manufacturing Process

Components including the base, mechanisms, seat and assemblies' component are sourced from the supply chain, while seat cushions are upholstered in-house. The stool is then fully assembled, packed, and dispatched from the manufacturing plant to the client.

Process flow diagram





Construction Installation

The product is installed manually using basic hand tools, requiring minimal energy input.

Use Information

No specific maintenance is required, Sprout stool are expected to outlast their intended lifespan, provided they are maintained according to the recommended care procedures.

End of Life

At the end of the product's life, the chair is dismantled, and materials are separated. Energy consumption is minimal due to manual dismantling with no involvement of machinery or power. It is assumed that 100% of the product is recovered at the demolition and sent to the waste processing facility for waste treatment.



Life Cycle Assessment Calculation Rules

Functional unit description

Sprout bar stool with the weight of 9kg. Service life 10 years.

System boundary

This is a Cradle-to-Grave EPD, reporting the upstream processing stages A1 to A3, construction and Installation (A4-A5), use stages (B1 to B7), end-of-life stages (C1 to C4) and Module D in accordance with EN15804:2012+A2:2019 and BRE 2025 Product Category Rules (PN 514 Rev 3.2). Study period use for the LCA analysis is 10 years.

Data sources, quality and allocation

For the Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD), Teknion utilised specific primary data extracted from its production operations at Teknion Malaysia factory, modelled using the LINA A2 LCA and the Ecoinvent 3.8 database. In accordance with the requirements of EN15804:2012 + A2:2019, the most current available data has been used. Manufacturer-specific data has been used for the LCA analysis.

The data represents one unit of the Sprout bar stool, based on production period between 01/12/2023 and 30/11/2024 from Teknion Malaysia's factory. A production quantity of one unit was used, as the data was sourced directly from the ERP system.

The primary production figures are taken from the manufacturers ERP system, and the secondary datasets are derived from Ecoinvent v3.8, and the LCA tool used was BRE LINA A2. The LCA analysis is conducted for Sprout bar stool with the weight of 9kg. Service life 10 years. For the production process, the facility uses the national grid consumption mix for the production.

In addition to the Sprout bar stool, other products are manufactured in the factory. Therefore, the allocation of electricity, fuel, water consumption, and discharge are required. There are multiple configurations and combinations of products produced on the production line (in terms of accessories, finishes etc.). Therefore, allocating energy consumption, water, other waste, and wastewater based on mass would assign higher values to certain products. Instead, using the sales revenue of the product line relative to the total revenue is more accurate. Therefore, energy, water, other waste, and wastewater leaving the factory has been allocated based on the % revenue of the product line over the total revenue. Actual usage figures were employed for raw materials, packaging, and production waste are taken from ERP system.

Upon data review, it was noted that the mass balance is within the acceptable range, and no data uplift has been performed. In addition, no proxy dataset was used for the LCA modelling.

Secondary data has been obtained for all other upstream and downstream processes that are beyond the control of the manufacturer (i.e. raw material production) from the Ecoinvent 3.8 database. All ecoinvent datasets are complete within the context used and conform to the system boundary and the criteria for the exclusion of inputs and outputs, according to the requirements specified in EN15804+A2:2019. BRE LINA+A2 uses the characterisation factors that are specified in annex C of the 15804 A2 standard.

ISO14044 guidance. Quality Level	Geographical representativeness	Technical representativeness	Time representativeness
Very Good	Data from area under study.	Data from processes and products under study. Same state of technology applied as defined in goal and scope (i.e., identical technology).	There is approximately less than 3 years between the Ecoinvent LCI reference year, and the time period for which the LCA was undertaken.

The data quality assessment presented above has been carried out in accordance with Table E.1 in the Annex section of the BRE PCR EN 15804+A2 V3.2. Manufacturer country specific datasets have been selected from the Ecoinvent LCI for this LCA, utilizing the allocation, cut-off, EN15804 system model to maintain methodological consistency across all generic upstream and downstream processes. Teknion Malaysia uses national grid electricity and natural gas for production, therefore, location-based modelling has been followed the LCA analysis following the BRE PCR. The GWP carbon footprint for using 1 kWh of electricity, Malaysia is 0.840 kgCO₂e/kWh. The GWP carbon footprint for using 1 kWh of Natural gas (RoW) is 0.256 kgCO₂e/kWh.

The quality level of time representativeness is also Very Good as the background LCI datasets are based on Ecoinvent v3.8 which was compiled in 2021. Therefore, there is less than 5 years between the Ecoinvent LCI reference year and the time period for which the LCA was undertaken.

Cut-off criteria

The cut-off in accordance EN 15804+A2 with In both manufacturing site, all raw materials and energy inputs to the manufacturing process have been included, except the ancillary materials and direct emissions to air, water, and soil, which are not measured at the manufacturing facility.

In the Teknion Malaysia LCA inventory process, all data related to raw materials, and packaging materials are included in the modelling, whereas non-production waste and consumables are not included in the analysis.



LCA Results

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts			GWP-total	GWP-fossil	GWP-biogenic	GWP-luluc	ODP	AP	EP-freshwater
			kg CO ₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CO ₂ eq	kg CFC11 eq	mol H ⁺ eq	kg (PO ₄) ³⁻ eq
Product stage	Raw material supply	A1	4.55E+01	4.54E+01	2.81E-02	8.53E-02	3.23E-06	2.59E-01	1.66E-02
	Transport	A2	1.72E+00	1.72E+00	2.68E-05	1.21E-03	3.42E-07	4.49E-02	8.19E-05
	Manufacturing	A3	1.26E+00	1.69E+00	-4.54E-01	8.93E-03	2.08E-07	8.25E-03	8.14E-04
	Total (Consumption grid)	A1-3	4.85E+01	4.88E+01	-4.26E-01	9.54E-02	3.78E-06	3.12E-01	1.75E-02
Construction process stage	Transport	A4	1.56E-01	1.56E-01	8.29E-05	6.37E-05	3.45E-08	6.47E-04	1.17E-05
	Construction	A5	2.80E-01	2.80E-01	4.38E-05	9.76E-06	1.18E-08	3.58E-04	2.18E-06
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	4.90E-01	4.89E-01	2.42E-04	3.02E-04	9.95E-08	1.96E-03	4.93E-05
	Waste processing	C3	4.38E+00	4.37E+00	7.56E-03	1.57E-03	1.37E-07	7.77E-03	3.35E-04
	Disposal	C4	9.17E-03	9.08E-03	7.46E-05	9.99E-06	1.27E-09	6.29E-05	2.49E-06
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-7.10E+01	-7.11E+01	1.90E-01	-9.05E-02	-2.18E-06	-4.44E-01	-2.19E-02

GWP-total = Global warming potential, total;
 GWP-fossil = Global warming potential, fossil;
 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; and
 EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts			EP-marine	EP-terrestrial	POCP	ADP-mineral&metals	ADP-fossil	WDP	PM
			kg N eq	mol N eq	kg NMVOC eq	kg Sb eq	MJ, net calorific value	m ³ world eq deprived	disease incidence
Product stage	Raw material supply	A1	4.70E-02	4.79E-01	1.60E-01	5.24E-04	5.41E+02	1.58E+01	5.60E-06
	Transport	A2	1.11E-02	1.23E-01	3.21E-02	4.08E-06	2.25E+01	7.07E-02	6.58E-08
	Manufacturing	A3	5.47E-03	2.42E-02	5.72E-03	8.34E-06	2.69E+01	-2.33E+00	1.22E-07
	Total (Consumption grid)	A1-3	6.36E-02	6.26E-01	1.98E-01	5.36E-04	5.90E+02	1.35E+01	5.79E-06
Construction process stage	Transport	A4	1.91E-04	2.08E-03	6.34E-04	5.32E-07	2.30E+00	1.05E-02	1.33E-08
	Construction	A5	1.50E-04	1.59E-03	5.33E-04	7.89E-08	6.89E-01	5.76E-03	7.08E-09
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	5.24E-04	5.71E-03	1.77E-03	2.90E-06	6.99E+00	3.92E-02	3.12E-08
	Waste processing	C3	2.16E-03	2.29E-02	6.32E-03	4.94E-05	1.20E+01	2.68E-01	1.37E-07
	Disposal	C4	1.64E-05	1.77E-04	5.25E-05	2.02E-08	1.42E-01	4.86E-03	9.86E-10
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-7.50E-02	-7.83E-01	-2.34E-01	-6.07E-05	-6.51E+02	-8.62E+00	-5.76E-06

EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment;
 EP-terrestrial = Eutrophication potential, accumulated exceedance;
 POCP = Formation potential of tropospheric ozone;
 ADP-mineral&metals = Abiotic depletion potential for non-fossil resources;

ADP-fossil = Depletion potential of the stratospheric ozone layer;
 WDP = Water (user) deprivation potential, deprivation-weighted water consumption; and
 PM = Particulate matter.

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing environmental impacts			IRP	ETP-fw	HTP-c	HTP-nc	SQP
			kBq U ²³⁵ eq	CTUe	CTUh	CTUh	dimensionless
Product stage	Raw material supply	A1	2.54E+00	1.23E+03	1.35E-07	1.11E-06	1.22E+02
	Transport	A2	1.02E-01	1.59E+01	1.01E-09	1.16E-08	4.92E+00
	Manufacturing	A3	1.76E-01	6.26E+01	1.22E-09	2.66E-08	5.95E+01
	Total (Consumption grid)	A1-3	2.82E+00	1.31E+03	1.38E-07	1.14E-06	1.86E+02
Construction process stage	Transport	A4	1.05E-02	2.00E+00	5.88E-11	1.92E-09	1.57E+00
	Construction	A5	3.25E-03	9.88E-01	5.29E-11	6.79E-10	1.26E-01
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	3.19E-02	7.02E+00	2.59E-10	6.24E-09	3.38E+00
	Waste processing	C3	1.00E-01	3.48E+01	1.44E-09	3.89E-08	8.64E+00
Potential benefits and loads beyond the system boundaries	Disposal	C4	7.92E-04	1.29E+02	7.98E-12	2.11E-10	2.03E-01
	Reuse, recovery, recycling potential	D	-1.16E+00	-1.83E+03	-8.89E-08	-1.54E-06	-1.36E+02

IRP = Potential human exposure efficiency relative to U235;
ETP-fw = Potential comparative toxic unit for ecosystems;
HTP-c = Potential comparative toxic unit for humans;

HTP-nc = Potential comparative toxic unit for humans; and
SQP = Potential soil quality index.

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, primary energy			PERE	PERM	PERT	PENRE	PENRM	PENRT
			MJ	MJ	MJ	MJ	MJ	MJ
Product stage	Raw material supply	A1	4.43E+01	0.00E+00	4.43E+01	4.43E+02	5.44E+00	4.48E+02
	Transport	A2	1.15E-01	0.00E+00	1.15E-01	1.68E+01	0.00E+00	1.68E+01
	Manufacturing	A3	-4.93E+00	1.79E+01	1.30E+01	2.06E+01	5.10E+00	2.57E+01
	Total (Consumption grid)	A1-3	3.95E+01	1.79E+01	5.74E+01	4.80E+02	1.05E+01	4.91E+02
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	-1.97E+01	1.98E+01	3.25E-02	8.67E-01	0.00E+00	8.67E-01
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	7.58E-01	0.00E+00	7.58E-01	7.72E+00	0.00E+00	7.72E+00
Potential benefits and loads beyond the system boundaries	Disposal	C4	7.71E-03	0.00E+00	7.71E-03	1.40E-01	0.00E+00	1.40E-01
	Reuse, recovery, recycling potential	D	-3.98E+01	0.00E+00	-3.98E+01	-6.47E+02	0.00E+00	-6.47E+02

PERE = Use of renewable primary energy excluding renewable primary energy 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 resource

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Parameters describing resource use, secondary materials and fuels, use of water						
			SM	RSF	NRSF	FW
			kg	MJ net calorific value	MJ net calorific value	m ³
Product stage	Raw material supply	A1	2.14E+00	0.00E+00	0.00E+00	3.97E-01
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	1.75E-03
	Manufacturing	A3	1.38E+00	0.00E+00	0.00E+00	-5.37E-02
	Total (Consumption grid)	A1-3	3.52E+00	0.00E+00	0.00E+00	3.45E-01
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	2.57E-04
	Construction	A5	0.00E+00	0.00E+00	0.00E+00	1.38E-04
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	9.69E-04
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	6.55E-03
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	1.17E-04
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	5.19E+00	0.00E+00	0.00E+00	-2.30E-01

SM = Use of secondary material;
RSF = Use of renewable secondary fuels;

NRSF = Use of non-renewable secondary fuels;
FW = Net use of fresh water

LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing waste categories					
			HWD	NHWD	RWD
			kg	kg	kg
Product stage	Raw material supply	A1	8.95E+00	6.62E+01	8.49E-04
	Transport	A2	2.29E-02	1.86E-01	1.19E-04
	Manufacturing	A3	8.49E-02	2.38E+00	6.23E-05
	Total (Consumption grid)	A1-3	9.06E+00	6.88E+01	1.03E-03
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	3.81E-03	7.82E-02	5.66E-06
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	8.36E-02	1.87E+00	3.88E-05
	Disposal	C4	3.20E-03	2.28E-01	6.30E-07
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	-1.35E+01	-9.31E+01	-8.11E-04

HWD = Hazardous waste disposed;
 NHWD = Non-hazardous waste disposed;
 RWD = Radioactive waste disposed



LCA Results (continued)

(MND = module not declared; MNR = module not relevant; INA = indicator not assessed; AGG = aggregated)

Other environmental information describing output flows – at end of life						
			CRU	MFR	MER	EE
			kg	kg	kg	MJ per energy carrier
Product stage	Raw material supply	A1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	A2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Manufacturing	A3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Total (Consumption grid)	A1-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Construction process stage	Transport	A4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Construction	A5	0.00E+00	2.74E+00	4.67E-08	0.00E+00
Use stage	Use	B1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Maintenance	B2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Repair	B3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Replacement	B4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Refurbishment	B5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational energy use	B6	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Operational water use	B7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
End of life	Deconstruction, demolition	C1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Transport	C2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Waste processing	C3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	Disposal	C4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Potential benefits and loads beyond the system boundaries	Reuse, recovery, recycling potential	D	0.00E+00	0.00E+00	0.00E+00	0.00E+00

CRU = Components for reuse;
MFR = Materials for recycling

MER = Materials for energy recovery;
EE = Exported Energy

Information on biogenic carbon content

Information on biogenic carbon content		
Biogenic Carbon Content	Units	Results
Biogenic carbon (product)	kg C	0.00E+00
Biogenic carbon (packaging)	kg C	9.66E-01

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

Scenarios and additional technical information

Scenarios and additional technical information			
Scenario	Parameter	Units	Results
A4 – Transport to the building site	Products manufactured in Malaysia are distributed both domestically within Malaysia and internationally across the Asia region, Australia, and the Middle East.		
	In this LCA analysis, 100km by road has been modelled for module A4 as a typical distance from the Teknion site to the construction unit. However, end-users of the EPD can use this information to calculate the impacts of a bespoke transport distance for module A4 if required.		
Transport 1	Road transport –16-32 metric ton lorry	km	100
	Fuel consumption	l/km	0.227
	Capacity utilisation (incl. empty returns)	%	26
A5 – Installation in the building	The product is installed manually using basic hand tools, requiring minimal energy input. Therefore, no product waste is generated during installation, and only packaging waste is produced		
	Installation wastage rate	%	0
	Packaging waste – Cardboard waste to recycling	kg	1.40
	Packaging waste – Plastic waste to incineration	kg	0.10
B1 – Use stage	Once installed, no emission to air, water, and soil throughout the service life of the product.		
B2 – Maintenance	Once installed, the product is ready for use. Throughout its 10-years reference service life, this product requires no maintenance, repair, replacement, refurbishment. It is a non-powered system, therefore, no operational energy, and operational water are required.		
B3 – Repair			
B4 – Replacement			
B5 – Refurbishment			
B6 - Operational energy use			
B7 - Operational water use			

Scenarios and additional technical information

Scenario	Parameter	Units	Results
Reference service life	10 Years		
Study period of the LCA	10 Years		
Design Application Parameters	Use as indicated in product brochure, user instruction and warranty		
C1 – Deconstruction	At the end of the product's life, the chair is dismantled, and materials are separated. Energy consumption is minimal due to manual dismantling with no involvement of machinery or power. It is assumed that 100% of the product is recovered at the demolition and sent to the waste processing facility for waste treatment.		
C2 - Transportation	Distance from the dismantling site to a disposal site will be no more than 100km. The transport mode is a 3.5-7.5-ton truck.		
	Road transport by Lorry 3.5 -7.5 metric ton	km	100
C3 – waste processing	Sprout stool is made up of 45% of Aluminium, 38% of steel, and remaining percentage of mixed plastic. According to the BRE PCR EN15804+A2, the following end of life scenarios will be applied to the materials such as, • Metal components such as steel and aluminium will be 95% recycled and reused while 5% may end up in landfill. Steel recycling will involve a process of collecting and separating from other wastes. The powder coating cannot be separated out from the final waste so it will be assumed that they will be ended up in landfill. • Mixed plastic components will be incinerated for energy recovery (e.g. heat, electricity.)		
	Steel waste to recycle - 95%	kg	3.37
	Aluminum waste to recycle - 95%	kg	3.97
	Plastic waste to incineration – 100%	kg	1.28
C4 – Disposal	Some materials cannot be recovered during waste processing process and may end up in landfill.		
	Steel waste to landfill – 5%	kg	0.18
	Aluminum waste to landfill – 5%	kg	0.21



Scenarios and additional technical information

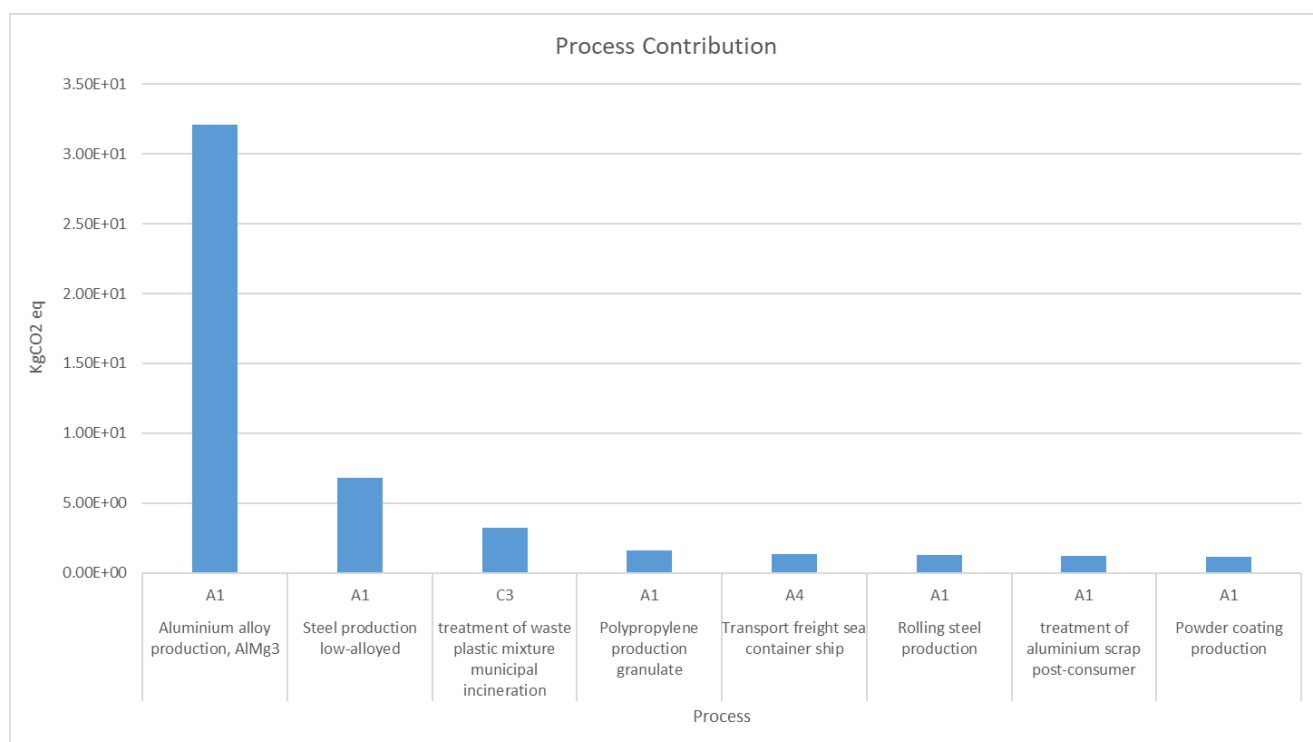
Scenario	Parameter	Units	Results
Module D	Sprout stool is made up of post-consumer and virgin materials. When calculating the benefits of recycling steel and aluminium, the pre-existing recycled content has been removed, and the benefits have been calculated only for virgin steel and aluminium. The pre-existing recycled content in the Ecoinvent 3.8 Steel dataset is 36.4%; therefore, the benefits have been calculated by excluding the recycled content. That is, the benefits are calculated based solely on the virgin steel content. Pre - existing recycled content (Post-consumer waste) = 1.11 kg Benefits due to recycling of virgin steel = 2.26 kg The pre-existing recycled content in the Ecoinvent 3.8 aluminium alloy dataset is 25.9%; therefore, the benefits have been calculated by excluding the recycled content. That is, the benefits are calculated based solely on the virgin aluminium content. Pre - existing recycled content (Post-consumer waste) = 1.03 kg Benefits due to recycling of virgin aluminium = 2.94kg Benefits due to incineration of plastic mixture = 1.28 kg		

Interpretation:

The bulk of the environmental impacts and primary energy demand are attributed to the manufacturing phase, covered by information modules A1-A3 of EN15804:2012+A2:2019.

The chart illustrates the process contribution to carbon emissions (kgCO₂eq), the analysis highlights that the aluminium alloy production (AlMg3) at stage A1 is by far the largest source of emissions, contributes approximately 60% of the total carbon footprint shown. The Steel production (low-alloyed) at stage A1 is the second-largest contributor, though at a much lower level, contributing approximately 12% and followed by the treatment of waste plastic mixture (C3) which contributes around 5%. Processes like plastics production (A1), sea freight (A2 & A4) have much lower comparative impacts.

These findings indicate that the sourcing and processing of raw materials, particularly aluminium and steel, as well as the waste treatment of mixed plastics are the most significant contributors to the product's carbon footprint and should be the primary focus for emissions reduction strategies.





References

BSI. Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. BS EN 15804:2012+A2:2019. London, BSI, 2019.

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Indoor Advantage™ Gold - certifies products for low emissions and good indoor air quality

BRE Environmental Profiles 2025 Product Category Rules for Type III environmental product declaration of construction products to EN 15804+A2 PN 514 Rev 3.2