Humanscale

Freedom Task North America

Environmental Product Declaration (EPD)



Freedom Task North America

Piscataway, NJ, USA

Environmental Product Declaration (EPD):

In accordance with –
ISO 14040/44, ISO 21930:2017
BIFMA PCR for Seating UNCPC 3611, Version 4

SMART EPD
CERTIFIED
ENVIRONMENTAL PRODUCT DECLARATION

Program Operator:
Smart EPD® ▪ www.smartepd.com

Refer to the EPD Library at www.smartepd.com for the latest EPD listing information.

General Information



Humanscale

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Product Name:	Freedom Task
Functional Unit:	1 Unit of seating
Declaration Number:	SmartEPD-2026-082-1126-01
Date of Issue:	November 02, 2026
Expiration:	November 02, 2031
Last updated:	November 02, 2026
EPD Scope:	Cradle to gate with other options A1 - A3, A4, A5, B1, B4, C1 - C4
Market(s) of Applicability:	North America

General Organization Information

Humanscale was founded in 1983 by CEO Bob King with a focus on high-performance tools that support a healthy, more active way of working. Humanscale is now a global ergonomics and furniture leader with a reputation for designing intuitive products which improve the comfort and health of office workers. Humanscale's global headquarters is located in New York, NY and the company has offices and manufacturing throughout North America, Latin America & The Caribbean, Europe, Asia Pacific, Oceania, The Middle East and Africa.

Company: Humanscale
Address: 1114 Avenue of the Americas,, 15th Floor, New York, NY, 10036, USA
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Further information can be found at: https://www.humanscale.com/

Limitations, Liability and Ownership

In conducting a comprehensive Life Cycle Assessment (LCA) for the assessed product/system, it is imperative to recognize and acknowledge certain inherent assumptions and limitations that shape the scope, boundaries, and precision of this environmental evaluation. As such, the following assumptions and limitations are fundamental to the modeling and interpretation of results, providing necessary context for stakeholders and decision-makers:

- The results and conclusions presented in this report are valid only within the defined scope of the study. The study was conducted in October 2026, using data representative of the annual period of 2025.
- LCA is a method used to assess potential rather than actual impacts. Consistent with our goal and scope, we obtained primary data for the final manufacturing step, and used secondary data for the background processes including the supply chain processes.
- Due to the assumptions and value choices listed above, these do not reflect real-life scenarios and hence they cannot assess actual and exact impacts, but only potential environmental impacts.
- As stated in ISO 14044, it should be noted that LCA shall not be the sole basis for making comparative assertions. Other social, economic and environmental aspects should also be considered.

- The PCR this EPD was based on was written to determine the potential environmental impacts of a seating furniture product from cradle-to-gate with options. It was not written to support comparative assertions. EPDs based on different PCRs, or different calculation models, may not be comparable. When attempting to compare EPDs or life cycle impacts of products from different companies, the user should be aware of the uncertainty in the final results, due to and not limited to, the practitioner's assumptions, the functional unit, the source of the data used in the study, and the specifics of the product modeled.
- Comparability of EPDs is limited to those applying a functional unit.

Reference Standards

Standard(s):	ISO 14025:2006 and ISO 21930:2017
Core PCR:	NSF BIFMA PCR for Seating: UNCPC 3811 v4 Date of issue: March 01, 2025 Valid until: January 31, 2030
Sub-category PCR review panel:	Contact Smart EPD for more information.
General Program Instructions:	Smart EPD General Program Instructions v.2.0, March 2025

Verification Information

LCA Author/Creator:	David Rodrigues CarbonBright david.rodrigues@carbonbright.co
EPD Program Operator:	Smart EPD info@smartepd.com www.smartepd.com 585 Grove St., Ste. 145, Herndon, VA 20170, USA
Verification:	Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071: External Jack Geibig | Ecoform, LLC | jgeibig@ecoform.com Independent external verification of EPD, according to ISO 14025 and reference PCR(s): External Jack Geibig | Ecoform, LLC | jgeibig@ecoform.com

Product Information

Functional Unit:	1 Unit of seating
Mass:	15.66 kg
Reference Service Life:	10 Years
Product Specificity:	✗ Product Average ✓ Product Specific

Product Description

The Freedom task chair revolutionizes the way people sit. With its weight-sensitive recline and synchronously adjustable armrests, it set new standards for task chair performance and functionality. With a sculpted foam backrest to match the contours of the human body and thick cushions for long lasting comfort, it provides a custom ergonomic fit for every user. The configuration modeled in this study is representative of a typical Freedom Task Chair with standard features, including a five-star plastic base with casters, standard cylinder, and armrests with foam padding. This configuration reflects the most common options specified by customers. The functional unit of the product is one unit of seating to seat a single occupant, maintained for a 10-yr period. The number of chairs required per functional unit is 1. In accordance with the PCR, the product has been certified to the ANSI/BIFMA X5.1 standard and therefore is deemed to meet the 10-yr service life. The category of the product is a Swivel/Task Chair intended for seating and mobile use within an office or workspace environment, with casters/rollers for movement per Option B of the PCR.

Product Specifications

Product SKU(s): F111GCF10XFSHNSC

Product Classification Codes: UNCPC - 3811

EC3 - Furnishings -> Chairs

Options:

✓ Swivel/task chair (single occupant)

Material Composition

Material/Component Category	Origin	Mass (kg)	Percent of Product	Post-consumer %	Post-consumer weight (kg)	Pre-consumer %	Pre-consumer weight (kg)
ALUMINUM	Various	4.686	29.92	0.0	0.00	81.6	3.82
STEEL - (LOW-ALLOYED)	Various	3.704	23.65	5.1	0.19	32.2	1.19
POLYPROPYLENE	Various	2.510	16.03	0.0	0.00	0.0	0.00
NYLON 6, GLASS-FILLED	Various	1.738	11.10	49.3	0.86	0.0	0.00
POLYMERIC MATERIAL (POLYSTYRENE (PS))	Various	0.717	4.58	0.0	0.00	0.0	0.00
NYLON 6	Various	0.669	4.27	47.7	0.32	0.0	0.00
POLYURETHANE, FLEXIBLE FOAM, MDI-BASED	Various	0.665	4.25	0.0	0.00	0.0	0.00
POLYURETHANE FLEXIBLE FOAM	Various	0.479	3.06	0.0	0.00	0.0	0.00

Material/Component Category	Origin	Mass (kg)	Percent of Product	Post-consumer %	Post-consumer weight (kg)	Pre-consumer %	Pre-consumer weight (kg)
POWDER COATING (ZINC PLATING)	Various	0.115	0.73	0.0	0.00	0.0	0.00
POLYOXYMETHYLENE (POM)	Various	0.112	0.72	0.0	0.00	0.0	0.00
ACRYLONITRILE BUTADIENE STYRENE (ABS)	Various	0.086	0.55	0.0	0.00	0.0	0.00
NYLON 6-6	Various	0.072	0.46	0.0	0.00	0.0	0.00
BRONZE	Various	0.063	0.40	89.1	0.06	0.0	0.00
THERMOPLASTIC VULCANIZATES (TPV)	Various	0.026	0.17	0.0	0.00	0.0	0.00
NITRILE BUTADIENE RUBBER (NBR)	Various	0.008	0.05	0.0	0.00	0.0	0.00
LUBRICATING OIL	Various	0.004	0.02	0.0	0.00	0.0	0.00
POLYETHYLENE TEREPHTHALATE (PET)	Various	0.004	0.02	0.0	0.00	0.0	0.00
PHENOLIC RESIN	Various	0.003	0.02	0.0	0.00	0.0	0.00
Total	None	15.661	100.00	9.1	1.42	32.0	5.02

Packaging Material	Origin	kg Mass
FOLDING BOXBOARD CARTON	New Jersey, United States	2.8
POLYETHYLENE (PE)	New Jersey, United States	0.0091
PACKAGING FILM, LOW DENSITY POLYETHYLENE	New Jersey, United States	0

Biogenic Carbon Content	kg C per Unit
Biogenic carbon content in product	0
Biogenic carbon content in accompanying packaging	1.23

Hazardous Materials
This product contains no substances required to be reported as hazardous to human health or the environment.

EPD Data Specificity

Primary Data Year: 2025

Manufacturing Specificity:

- ✗ Industry Average
- ✗ Manufacturer Average
- ✓ Facility Specific

Averaging:

Averaging was not conducted for this EPD. This EPD is product specific.

System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	✓
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	✓
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓

Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	ND

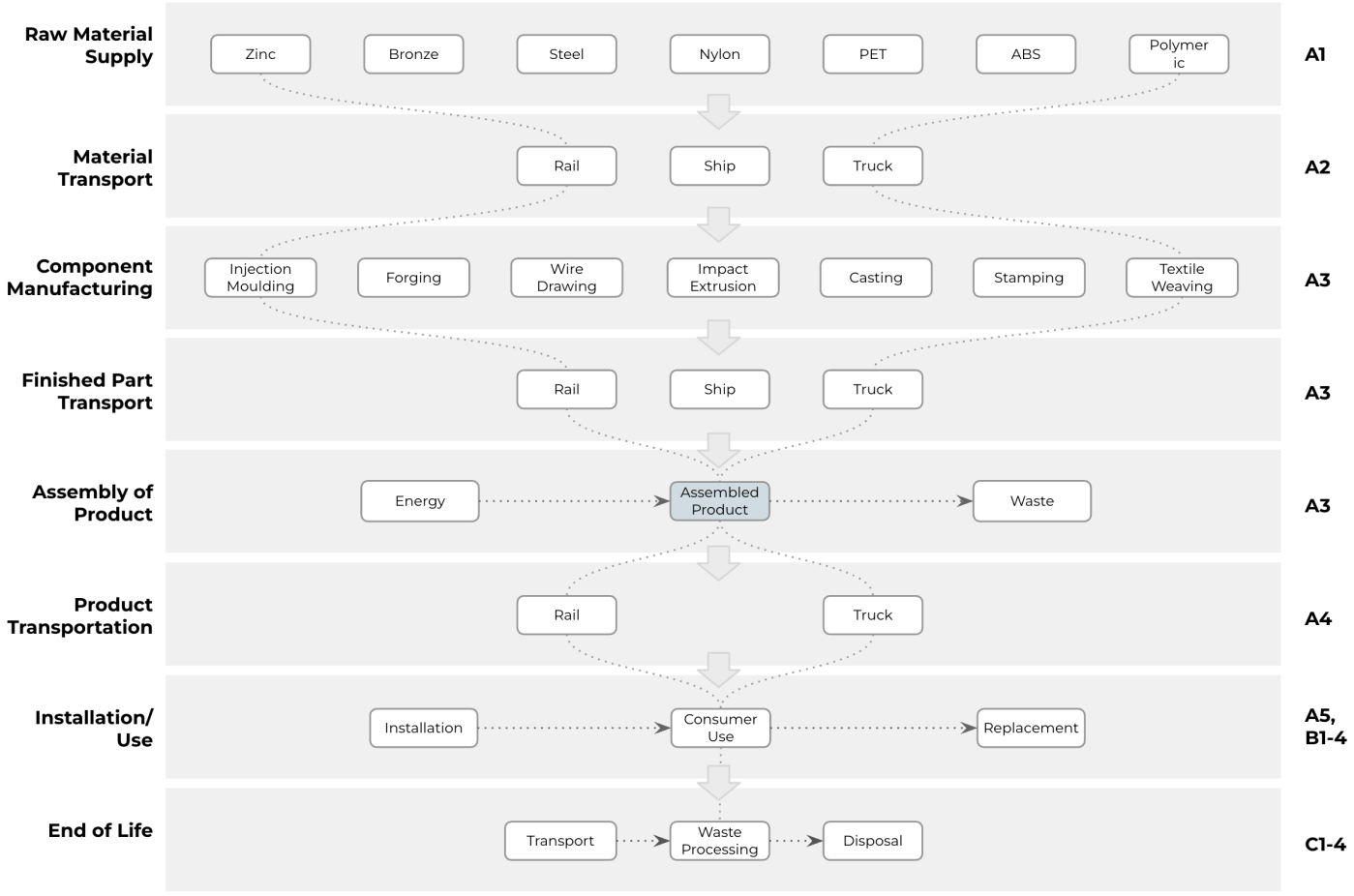
Note:

ND = Module not declared

Plants

Humanscale Piscataway 220 Circle Drive North, Piscataway, NJ, USA

Product Flow Diagram



The following is a description of the typical scenario. For additional detail on the processes taking place during each reported information module, please see Module Descriptions:

- The Freedom Task is produced from a combination of materials specified in the materials declaration (Section 4.2). Both virgin and recycled materials are used.
- These raw and semi-finished materials are transported by land and sea to supplier manufacturing sites. At the supplier facilities, components are shaped, molded, welded, cut, and assembled into subassemblies including components such as the frame, seat, back, and armrests.

- These components are then shipped to the final manufacturer assembly facility in Piscataway, Middlesex County, United States, via multiple modes of transportation, where they are assembled into the final product and prepared for shipping. Final assembly includes finishing, quality inspection, and packaging with cardboard and protective wrap.
- From this location, the product is distributed directly to customers, primarily in United States, by truck and installed with minimal effort, generating primarily packaging waste which is disposed of by the consumer using conventional disposal practices.
- During its 10 year service life, Freedom Task requires no energy inputs, as it contains no electrical components, and is designed for long-term use consistent with commercial office furniture.
- At end-of-life, Freedom Task is typically disassembled and disposed of in landfill, recycled or incinerated.

Software And Database

LCA Software:	Carbon Bright v. 1.2.2	
LCI Foreground Database(s):	Ecoinvent v. 3.11	Allocation, cut-off, EN15804
LCI Background Database(s):	Ecoinvent v. 3.11	Allocation, cut-off, EN15804

A foreground LCI database is the database used to model the primary, site-specific data collected for this EPD. A background LCI database is the database used to model generic or non-specific data.

Data Quality

The data used to create the inventory model is intended to be as precise, complete, consistent, and representative as possible with regards to the goal and scope of the study under given time and budget constraints.

Geographical Coverage

From a geographical perspective, an individual model has been developed to accurately represent the environmental impacts associated with material sourcing, supply chain logistics and final assembly. The study considers regional energy grids, transportation modes/distances, and primary data relevant to assembly location energy use. Overall, the geographical representativeness is considered to be of good quality.

Time Coverage

The study reflects the current conditions, using primary data from 2025, the reporting year supplied for this EPD data package. All secondary data are derived from sources developed within the last 10 years, as required by the PCR. Overall the time coverage of the data for this EPD is considered good.

Technical Coverage

From a technical perspective, primary data is being used from the Manufacturer's BOM to reflect material sourcing characteristics, including production processes relevant to various components. Primary data is from the calendar year (2025), is site-specific and considered of good quality. For secondary data, we use the Ecoinvent database, v3.11. released on 20 November 2024. Proxy data was used only when secondary data was not available and was used for less than 1% of materials. Secondary data quality is considered good.

Overall, the data quality for this study is considered high, reliable, and fit for purpose. It is also deemed sufficient to meet the requirements of the applicable PCR and ISO 21930, ensuring representativeness and robustness for EPD verification.

Life Cycle Module Description

A1: Raw Material Extraction

This stage covers raw material extraction and initial processing, including processing of secondary materials such as recycled inputs. All source data analyzed in this section comes from primary data reported in the Manufacturer's Bill of Materials. Emission factors were inventoried and allocated to account for the production of these materials. Where specific emission factors were unavailable, suitable substitutes from recognized databases were applied, with all sources referenced.

A2: Transport to Manufacturer

This stage covers the transportation of all secondary materials or components from their respective processing sites to the supplier manufacturing facility. Transport modes (e.g., truck, rail, ship), distances, and fuel types are modeled using primary supplier source locations. The model accounts for both inbound

delivery and empty return trips in order to capture the full environmental burden of logistics.

A3: Manufacturing, Assembly & Packaging

This stage covers all manufacturing and assembly processes, including shaping, forming, machining, joining, finishing, and packaging of the product. On-site energy consumption and emissions associated with production activities at the primary manufacturer facility are included. Waste and scrap generated at the manufacturer's facilities is based on primary data, while waste treatment and destination parameters not available from primary sources are represented through secondary datasets. No co-products are modeled in this stage.

A4: Transport to Site

This stage accounts for the transportation of the finished product from the manufacturing facility to the point of installation or customer location. The distribution of product from the manufacturing gate to the construction site is assumed as 1,250 km by a single unit truck with an empty backhaul, as required by the Product Category Rule.

A5: Installation

This stage includes the activities required to install or set up the product in its place of use. It covers any energy use during installation and the management of waste generated, including the treatment or disposal of packaging materials.

B1: Use

This stage covers direct environmental impacts associated with the product during its in-use phase. For durable, non-consumptive furniture products—such as seating, tables, and similar items—there is typically no operational energy or water use, and no significant emissions during the service life. As a result, impacts in this stage are generally negligible, and not applicable in this study.

B4: Replacement

This stage accounts for the impacts associated with replacing the product or major components during the reference service life. For durable furniture products—such as seating, tables, and similar items—replacement is generally not required within the defined service life unless damage or exceptional wear occurs. In accordance with the PCR, the product has been certified to the ANSI/BIFMA X5.1 standard and therefore is deemed to meet the 10-yr service life.

C1: Deconstruction

This stage typically includes activities to remove the product from service at end-of-life, such as manual or mechanical disassembly, without significant changes to the product structure. For this study, the Deconstruction phase was not included or was not deemed applicable to the product category.

C2: Transport to Waste Processing

This stage accounts for transportation of the product or its components from the site of deconstruction to a waste processing, recycling, recovery, or disposal facility. Transport distances follow the current version of the US EPA WARM Model 9, where the default distance of 20 mi (32 km) is used, in accordance with the PCR.

C3: Waste Processing for Recovery/Recycling

This stage covers processing activities that prepare product components for reuse, recycling, or energy recovery. It includes shredding, sorting, cleaning, and other treatment processes. The amount of each material in the product that is assumed to be recycled, is determined by multiplying the EPA MSW (2018) ratio within North America, by the amount of each homogenous material type that is able to be disassembled. Energy recovery benefits are not accounted for in this module.

C4: Disposal

This stage accounts for final disposal of product components that are not reused, recycled, or recovered. It includes landfilling, incineration without energy recovery, and associated emissions. The materials that are not recycled, are modeled for end-of-life, using the ratio of 80% landfill and 20% incineration (per the guidelines established by US EPA in the "Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks") and is deemed to be an acceptable disposition rate of final materials.

LCA Discussion

Allocation Procedure

The product system as described contained several multi-product processes, which required an allocation of resources and emissions.

- For primary data, mass allocation was used to model waste and energy inputs. The annual energy and waste totals were divided by the total weight of all products produced in the Piscataway, New Jersey facility during the most recent calendar year to proportionately allocate waste and energy. For

background processes the Ecoinvent database, v3.11 was used, which implements an attributional modeling approach.

- Output flows from A3 that are sent for recovery are reported as materials for recycling (MFR), materials for energy recovery (MER), or recovered energy (RE), as applicable. Consistent with ISO 21930, these recovery outputs are treated as waste with no allocation of burdens to downstream recycling, secondary fuels, or recovered energy. Potential benefits/loads beyond the system boundary (Module D) are not declared in this study.
- The process model reflects a single product system and does not generate co-products; therefore, co-product allocation is not applicable. Energy and utility inputs are allocated on a mass basis across the relevant unit processes, consistent with PCR and ISO guidance.
- End-of-life is modeled using the Cut-Off (Recycled Content) Method per the BIFMA PCR. Recycled inputs to production bear their associated recycling burdens; materials leaving the system for recycling at end-of-life are burden-free within the product system (no credits carried into the system).

Cut-off Procedure

Cut-off Procedure
This LCA follows the cut-off rules specified in the BIFMA PCR for Office Chairs (NSF 1103-25: BIFMA Product Category Rule for Seating, UNCPC 3811, Version 4). All known mass and energy flows have been included to the extent possible. Flows may only be omitted if they collectively account for no more than 5% of the total mass, energy, or environmental impact of the system, and any single flow does not exceed 1% of total mass input or 1% of total renewable or non-renewable primary energy use. In this study, Humanscale has attempted to include all relevant inputs; where data gaps existed, they were due to data quality limitations, and their exclusion is within the allowable PCR thresholds.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:	✕ No

Scenarios

Transport to the building/construction site (A4)

A4 Module

Fuel Type:	Diesel
Vehicle Type:	Fleet Average Lorry Class
Transport Distance:	1250 km
Weight of products transported:	18.47 kg
Assumptions for scenario development:	The distribution of product from the manufacturing gate to the construction site is assumed as 1,250 km by a single unit truck with an empty backhaul, as required by the Product Category Rule.

Installation in to the building/construction site (A5)

A5 Module

Installation Scrap Rate Assumed:	0 %
Electricity Consumption:	0.625 kWh
Mass of Packaging Waste Specified by Type:	2.8 FOLDING BOXBOARD CARTON, 0.0091 POLYETHYLENE (PE) kg
Biogenic Carbon Contained in Packaging (kg C):	1.23 kg

Assumptions for scenario development:	Electricity use during installation is assumed to be 0.625 kWh as specified in PCR.

Use (B1)

B1 Module

Indoor Environment:
The product is certified with SCS Indoor Advantage™ Gold standard for low VOC emissions.
Use Conditions:
For durable, non-consumptive furniture products—such as seating, tables, and similar items—there is typically no operational energy or water use, and no significant emissions during the service life. As a result, impacts in this stage are generally negligible, and not applicable in this study.

Replacement (B4)

B4 Module

Reference Service Life:	10 Years
Further assumptions for scenario development:	The Freedom Task chair has been tested to BIFMA X5.1 and has been determined to meet a 10-year service life in accordance with the BIFMA standard. Products meeting this standard do not require replacement during the 10 year functional unit as per the BIFMA PCR. Therefore no replacements are evaluated in this EPD.

End of Life (C1 - C4)

C1 - C4 Modules

Recovery

Recycling:	5.36 kg
Landfill:	8.24 kg
Incineration with Energy Recovery:	2.06 kg

Assumptions for scenario development:
In module C2, transport distances follow the current version of the US EPA WARM Model 9, using its default distance of 20 mi (32 km), in accordance with the PCR. The amount of each material in the product assumed to be recycled, incinerated with energy recovery, or landfilled is determined by multiplying typical waste-treatment ratios within North America by the amount of each homogeneous material type that can be disassembled. This is based on EPA MSW (2018). Benefits of energy recovery are not accounted for in these modules.

Results

Environmental Impact Assessment Results

IPCC AR6 GWP 100, EN15804+A2 - Core impact categories and indicators, TRACI v2.1

per 1 Unit of product of seating.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Unit	Method	A1 - A3	A4	A5	B1	B4	C1	C2	C3	C4
climate change: total (EF v3.1 - IPCC 2021)	kg CO2-Eq	IPCC AR6 GWP 100	8.66e+1	3.72e+0	5.86e+0	0	0	0	8.08e-2	3.85e+0	5.46e-1
climate change: biogenic (EF v3.1 - IPCC 2021)	kg CO2-Eq	IPCC AR6 GWP 100	-4.52e+0	0	4.52e+0	0	0	0	0	0	0
climate change: total excluding biogenic (EF v3.1 - IPCC 2021)	kg CO2 eq	IPCC AR6 GWP 100	9.11e+1	3.72e+0	1.34e+0	0	0	0	8.08e-2	3.85e+0	5.46e-1
ADP-fossil	MJ, net calorific value	EN15804+A2 - Core impact categories and indicators	1.30e+3	5.23e+1	6.15e+0	0	0	0	1.13e+0	6.27e+0	2.13e+0
acidification	kg SO2-Eq	TRACI v2.1	5.56e-1	1.55e-2	1.26e-3	0	0	0	3.37e-4	3.63e-3	7.82e-4
eutrophication	kg N-Eq	TRACI v2.1	5.90e-1	5.74e-3	1.33e-2	0	0	0	1.25e-4	5.78e-3	2.53e-1
ozone depletion	kg CFC-11-Eq	TRACI v2.1	1.22e-6	5.21e-8	2.13e-9	0	0	0	1.13e-9	7.68e-9	2.50e-9
photochemical oxidant formation	kg O3-Eq	TRACI v2.1	6.88e+0	4.19e-1	1.60e-2	0	0	0	9.10e-3	1.05e-1	1.69e-2

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicator

per 1 Unit of product of seating.

Indicator	Unit	A1 - A3	A4	A5	B1	B4	C1	C2	C3	C4
PENRT	MJ	1.31e+3	5.23e+1	6.15e+0	0	0	0	1.13e+0	6.27e+0	2.13e+0
PERT	MJ	9.20e+1	7.49e-1	7.94e-1	0	0	0	1.63e-2	6.44e-1	3.67e-2
PENRE	MJ	1.06e+3	5.23e+1	5.79e+0	0	0	0	1.13e+0	-7.69e+1	-1.80e+2
PENRM	MJ	2.50e+2	0	3.60e-1	0	0	0	0	8.32e+1	1.82e+2
NRSF	MJ	0	0	0	0	0	0	0	0	0
PERE	MJ	5.12e+1	7.49e-1	0	0	0	0	1.63e-2	6.44e-1	3.67e-2
PERM	MJ	4.08e+1	0	4.56e+1	0	0	0	0	0	0
SM	kg	8.52e+0	0	0	0	0	0	0	0	0
RSF	MJ	4.50e-1	2.95e-4	1.20e-5	0	0	0	6.41e-6	4.35e-5	1.39e-5
FW	m3	5.98e-1	7.39e-3	4.23e-4	0	0	0	1.60e-4	4.57e-3	-2.75e-2
RE	MJ	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Waste and Output Flow Indicators

per 1 Unit of product of seating.

Indicator	Unit	A1 - A3	A4	A5	B1	B4	C1	C2	C3	C4
EEE	MJ	0	0	6.26e-6	0	0	0	0	3.48e-1	0
EET	MJ	0	0	1.02e-5	0	0	0	0	2.57e-1	0
MER	kg	0	0	1.09e-1	0	0	0	0	2.06e+0	0
MFR	kg	3.70e-2	0	2.27e+0	0	0	0	0	5.36e+0	0
MNER	kg	0	0	0	0	0	0	0	0	0
HWD	kg	0	0	0	0	0	0	0	0	0
HLRW	kg	3.17e-4	3.17e-6	5.46e-6	0	0	0	6.89e-8	3.67e-6	1.64e-7
ILLRW	kg	8.80e-4	7.66e-6	1.95e-5	0	0	0	1.66e-7	1.25e-5	4.13e-7
NHWD	kg	0	0	4.35e-1	0	0	0	0	0	8.24e+0
RWD	kg	1.20e-3	1.08e-5	2.49e-5	0	0	0	2.35e-7	1.62e-5	5.77e-7
CRU	kg	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Carbon Emissions and Removals

per 1 Unit of product of seating.

Indicator	Unit	A1 - A3	A4	A5	B1	B4	C1	C2	C3	C4
BCRK	kg CO2	-4.52e+0	0	0	0	0	0	0	0	0
BCEK	kg CO2	0	0	4.52e+0	0	0	0	0	0	0
Biogenic CO2, products	kg CO2	0	0	0	0	0	0	0	0	0
CO2 from calcination and carbonation	kg CO2	0	0	0	0	0	0	0	0	0
Biogenic Carbon, renewable waste combustion	kg CO2	0	0	0	0	0	0	0	0	0
CO2 from non-renewable waste combustion	kg CO2	0	0	0	0	0	0	0	0	0

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

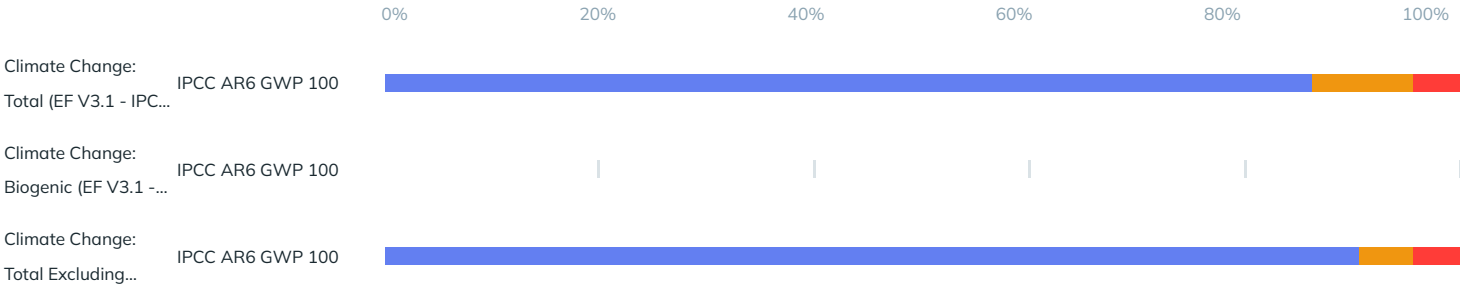
Abbreviations:

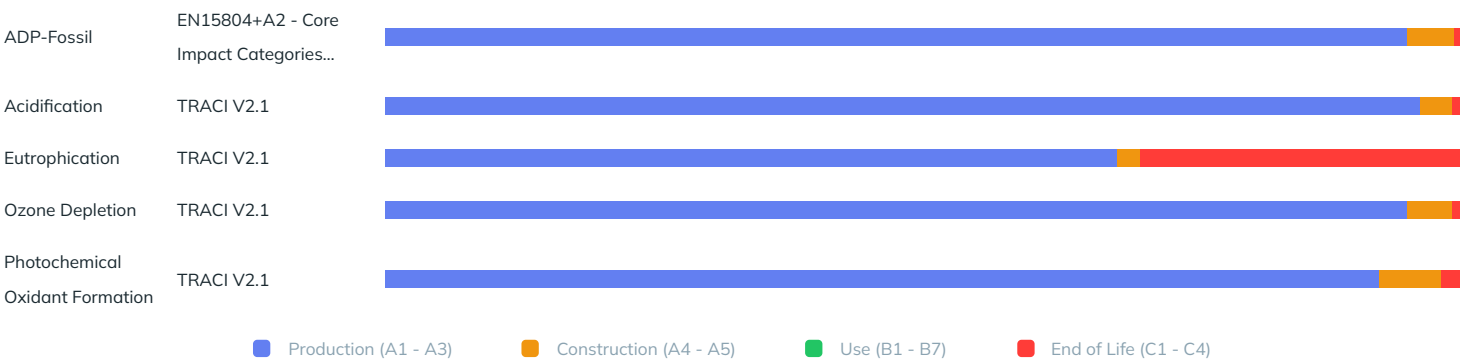
BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

Interpretation

The Life Cycle Impact Assessment of Freedom Task offers a rigorous evaluation of its environmental footprint across key indicators—greenhouse gas emissions, energy use, and water depletion. The analysis reflects decisions already made during the design and development process to prioritize materials and manufacturing methods that align with sustainability objectives—balancing product performance with environmental responsibility.
Key Contributors to the environmental impact include the following:

- Carbon Footprint: The top 3 activities contributing to carbon footprint (GWP total, IPCC AR6 GWP 100) are aluminium production, primary, ingot (18.0%), polypropylene production, granulate (7.1%), nylon 6 production, glass-filled (6.5%).
- ADP-fossil: The top 3 activities contributing to fossil-resource depletion are polypropylene production, granulate (13.9%), aluminium production, primary, ingot (13.4%), injection moulding (7.5%).
- Water Use: The top 3 activities contributing to fresh water use are nylon 6 production, glass-filled (17.1%), treatment of aluminium scrap, new, at remelter (10.1%), injection moulding (8.6%).





Environmental Activities and Certifications

Certification
Humanscale BEAM (decommissioning) Program
BIFMA LEVEL 3
SCS Indoor Advantage Gold
ANSI/BIFMA X5.1 Compliant
Declare LBC Red List Approved

References

- NSF International. (2025). NSF 1103-25: BIFMA Product Category Rule for Environmental Product Declarations, Seating (UNCPC 3811, Version 4). National Center for Sustainability Standards. Valid through January 31, 2030.
- ACLCA. (2019). ACLCA Guidance to Calculating Non-LCIA Inventory Metrics in Accordance with ISO 21930:2017. ACLCA.
- Edelen, A. AND W. Ingwersen. Guidance on Data Quality Assessment for Life Cycle Inventory Data. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-16/096, 2016.
- ISO 14040. (2006). ISO14040:2006/Amd 1:2020 -- Environmental management -- Life cycle assessment -- Principles and framework. International Organization for Standardization.
- GHG Protocol, WRI and WBCSD (2011) The greenhouse gas protocol: product life cycle accounting and reporting standard. World Resources Institute and World Business Council for Sustainable Development, www.ghgprotocol.org, 2014
- Goedkoop M, Heijungs R, Huijbregts M, De Schryver A, Struijs J, Van Zelm R (2009) ReCiPe 2008. A life cycle impact assessment method which comprises harmonized category indicators at the midpoint and the endpoint level. VROM, The Hague
- Frischknecht R, Jungbluth N et al (2000) Implementation of life cycle impact assessment methods. Final report. Ecoinvent 2000. Swiss Centre for LCI. CH, Duebendorf
- ecoinvent Association. (2024). ecoinvent database version 3.11 — Allocation, cut-off, EN 15804 system model. ecoinvent Association, Zürich, Switzerland.
- Wernet G, Bauer C, Steubing B, Reinhard J, Moreno-Ruiz E, Weidema B (2016). The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, 21(9), 1218–1230.
- Guinée JB, Gorrée M, Heijungs R, Huppes G, Kleijn R, de Koning, A, van Oers L, Wegener Sleeswijk A, Suh S, Udo de Haes HA, de Bruijn H, van Duin R, MAJ Huijbregts (2002) Handbook on life cycle assessment. Operational guide to the ISO standards. I: LCA in perspective. IIa: Guide. IIb: Operational annex. III: Scientific background. Kluwer Academic Publishers, Dordrecht, ISBN 1-4020-0228-9, 2002, 692 p