

Fern Task Seating



Environmental Product Declaration

Date of Issue: 4/25/2024
Date of Expiration: 4/25/2029

Product Category Rule

BIFMA PCR for Seating, UNCPC 3811
EN 15804+A2



Functional Unit

1 Fern Task seat with an aluminum base, maintained for a period of 10 years produced in North America.



Certified
Environmental
Product Declaration
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This EPD 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 source of the data used in the study and the software tool used to conduct the study.

| | |
|--|--|
| Program Operator | NSF Certification, LLC 789 N. Dixboro, Ann Arbor, MI 48105 sustainability@nsf.org |
| Manufacturer Name and Address | Haworth, Inc. One Haworth Center Holland, MI 49423 sustainability@haworth.com |
| Declaration Number | EPD 10946 |
| Declared Product and Functional Unit | 1 Fern Task seat with an aluminum base, maintained for a 10-year period produced in North America |
| Reference PCR and Version Number | BIFMA PCR for Seating: UNCPC 3811, Version 3 |
| Product's intended Application and Use | Commercial Furniture |
| Product RSL | 10 years |
| Markets of Applicability | North America |
| Date of Issue | 4/25/2024 |
| Period of Validity | 5 years from date of issue |
| EPD Type | Product Specific |
| Intended Audience | Business-to-Business, Business-to-Consumer |
| Range of Dataset Variability | N/A |
| EPD Scope | Cradle to Grave |
| Year of reported manufacturer primary data | 2022 |
| LCA Software and Version Number | Sphera LCA FE (GaBi) 10.7 |
| LCI Database and Version Number | Sphera MLC (GaBi) 2023.1 |
| LCIA Methodology and Version Number | IPCC AR6 + TRACI 2.1 |
| The sub-category PCR review was conducted by: | Thomas Gloria, PhD (chair) Jack Geibig, P.E. Michael Overcash, PhD |
| This declaration was independently verified in accordance with ISO 14040 (2006), ISO 14025 (2006), 14025 (2006), EN 15804+A2, and BIFMA PCR for Seating: UNCPC 3811 V3, which serves as the core PCR. <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External | External review conducted by: Thomas Gloria, Industrial Ecology Consultants  This declaration and its Life Cycle Assessment was independently verified in accordance with ISO standards 14040 (2006) and 14025 (2006), and BIFMA PCR for Seating UNCPC 3811 (2020). |
| This life cycle assessment was conducted in accordance with ISO 14044, EN 15804+A2, and the reference PCR by: | WAP Sustainability Consulting |
| This life cycle assessment was independently verified in accordance with ISO 14044, EN 15804+A2, and the reference PCR by: | Thomas Gloria, Industrial Ecology Consultants  The product Life Cycle Assessment was conducted in accordance with ISO 14044 and the reference PCR. |
| <p>Limitations: Environmental declarations from different programs (ISO 14025) may not be comparable. The PCR this EPD was based on was written to determine the potential environmental impacts of a furniture workspace product from cradle-to-grave. 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 source of the data used in the study, and the specifics of the product modeled. Additional information on the life cycle assessment can be found by contacting Haworth directly.</p> | |

Company Description

Haworth strives to be a sustainable corporation. We believe operating a sustainable corporation will allow us to help people do great things for generations to come. We are on a journey—one that promotes longevity and delivers value to the people, communities, and planet that we serve. At our core, we are a family—and we weather challenges together. Haworth is built upon a culture that empowers members and all stakeholders to make positive changes. We strengthen existing partnerships and build new ones, while empowering our members and leveraging our global reach, as we continue our drive toward making positive changes for the people and communities, we serve all over the world.

Product Description

Fern is the world’s first office chair designed with edgeless comfort. Inspired by nature, Fern puts the person at the center of work with new levels of balance, flexibility, and performance. Fern's ability to move intuitively with the user brings unparalleled support throughout the day, placing it among the best ergonomic office chairs. Inside the Fern office chair is a high level of science, engineering, and innovation that enables high performance. Fern is unlike other ergonomic office chairs because it moves with you, not against you, with its unique Wave Suspension system as the key to its comfort and flexibility. Fern's state of the art design, based in science and inspired by nature, makes it one of the best ergonomic office chairs. Fern task is manufactured at Haworth’s facility in Bruce, MS – an ISO 14001 certified manufacturing facility. This product can be easily disassembled at the end of its useful life. Components are identified with ISO recycling symbols and material information to assist in the recycling effort, where practical. Haworth will take back Fern task chairs after their useful life and recycle the components.

Results were calculated for a single configuration of the seating product. The office chair configuration reviewed (SFT-UO-7S14AA, TRIM Color TR-F Black) consists of a mesh back, black trim, backstop forward tilt with adjustable seat depth, lumbar support, 4D arms and a polished aluminum base and was determined to have the highest potential impacts of all Fern task model configurations produced in North America, making the results in this EPD conservative and thus representative of all products listed. Product codes within the variation allowance include those beginning with SFT-U.

This product falls under UN CPC 3811.

The composition of the chair reviewed is provided below, with a total product weight of 22.6 kg. Material composition is reported per unit of product.

| Material | [kg] | [%] | Recycled Content [%] | Resource Type |
|----------------------------|-------|-----|----------------------|--------------------------------|
| Aluminum | 7.81 | 35% | 93% | Recycled, Virgin Non-renewable |
| Steel | 4.62 | 20% | 27% | Recycled, Virgin Non-renewable |
| Polyoxymethylene | 3.92 | 17% | 0% | Virgin Non-renewable |
| Thermoplastic Polyurethane | 1.65 | 7% | 16% | Recycled, Virgin Non-renewable |
| Nylon PA6 | 1.43 | 6% | 48% | Recycled, Virgin Non-renewable |
| Polyurethane | 1.07 | 5% | 11% | Recycled, Virgin Non-renewable |
| Polypropylene | 0.830 | 4% | 49% | Recycled, Virgin Non-renewable |
| Other | 1.33 | 6% | 4% | Recycled, Virgin non-renewable |

Additional Environmental Information

The product under review is manufactured at a zero waste-to-landfill facility that is ISO 14001- and ISO 9001- certified facility. In addition, this product has the following certifications:

- [GREENGUARD Gold Certified](#)
- [BIFMA LEVEL 3 Certified](#)
- [Interior Design's HiP at NeoCon Award Winner](#)
- [Interior Design's Best of Year Award](#)
- [International Design Excellence Awards - Bronze](#)
- [Core77 Design Award](#)
- [Architizer A+ Award](#)
- [Red Dot Award](#)
- [Interior Design's HiP at NeoCon Award Honoree](#)

Functional Unit

The functional unit according to the PCR is one unit of seating to seat one individual, maintained for a 10-year period. The product under study has a 10-year service life under ANSI/BIFMA X5.5 and therefore does not require replacements to meet the functional unit.

LCA Stages



Materials Acquisition & Pre-Processing | Includes raw material extraction, pre-processing of materials, and transport to production. Excludes capital goods.

Production | Includes component and final assembly manufacturing operations, both by Haworth and upstream suppliers, as well as intermediate transport and packaging requirements.

Distribution, Storage, and Use | Includes an average distribution to customers. No additional storage is required. There are no impacts associated with use of the product.

End-of-Life | Includes transport to and disposal of product and packaging based on average US recycling rates.

LCA Information

General principles of allocation were based on ISO 14040/44. Where possible, allocation was avoided. At the part supplier production facilities, manufacturing inputs and outputs are allocated to co-products by mass because of the use of secondary datasets and no primary data available for part suppliers. At Haworth assembly facilities, manufacturing inputs and outputs are allocated to co-products based on economic value. This choice was deemed the most appropriate at Haworth facilities due to the availability of data on economic value. As a default, Sphera Managed LCA Content datasets use a physical mass basis for allocation.

Throughout the study recycled materials were accounted for via the cut-off method. Under this method, impacts and benefits associated with the previous life of a raw material from recycled stock are excluded from the system boundary and includes the impacts associated with reprocessing and preparation of recycled materials. Additionally, impacts and benefits associated with secondary functions of materials at end of life are also excluded.

Production of capital goods, infrastructure, and personnel-related activities are excluded, as required by the BIFMA PCR for seating.

LCA Results

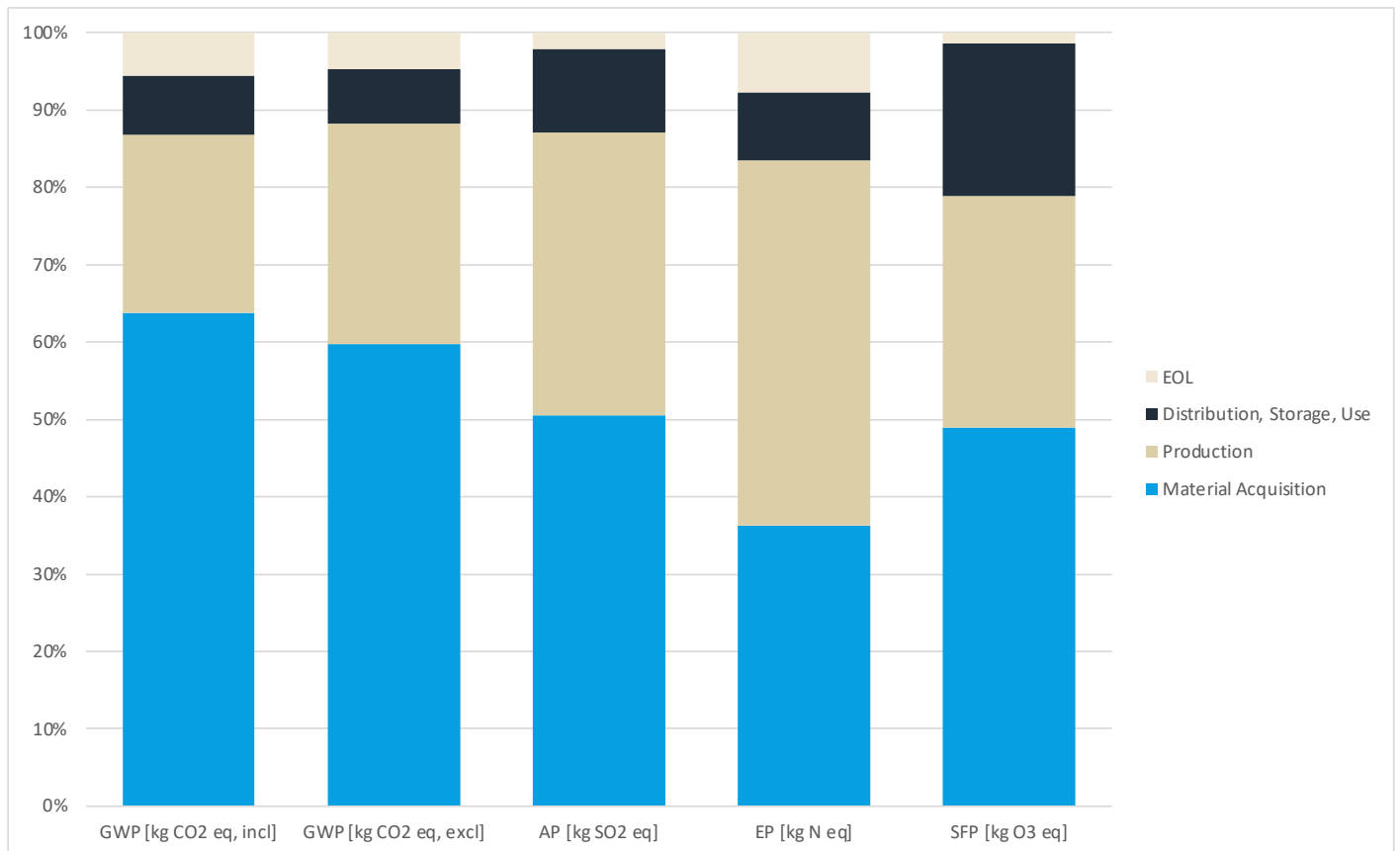
All results are given per functional unit, which is one unit of seating to seat one individual, maintained for a 10-year period. Results are reported separately by life cycle stage per the BIFMA PCR for seating. It is discouraged to use of results for Material Acquisition and Production without considering the results for End of Life.

| Impact Category | Material Acquisition | Production | Distribution, Storage, Use | EOL | Total |
|---|----------------------|------------|----------------------------|----------|-----------------|
| <i>IPCC AR6 LCIA Impacts</i> | | | | | |
| Global Warming Potential, incl biogenic [kg CO ₂ eq] | 6.42E+01 | 2.32E+01 | 7.70E+00 | 5.59E+00 | 1.01E+02 |

| Impact Category | Material Acquisition | Production | Distribution, Storage, Use | EOL | Total |
|---|----------------------|------------|----------------------------|----------|-----------------|
| Global Warming Potential, excl biogenic [kg CO ₂ eq] | 6.42E+01 | 3.05E+01 | 7.70E+00 | 5.03E+00 | 1.07E+02 |
| <i>TRACI 2.1 LCIA Impacts (North America)</i> | | | | | |
| Acidification Potential [kg SO ₂ eq] | 1.39E-01 | 1.01E-01 | 3.00E-02 | 5.87E-03 | 2.76E-01 |
| Eutrophication Potential [kg N eq] | 8.80E-03 | 1.15E-02 | 2.14E-03 | 1.87E-03 | 2.43E-02 |
| Ozone Depletion Potential [kg CFC 11 eq] | 1.13E-12 | 7.51E-10 | 1.58E-14 | 3.21E-14 | 7.52E-10 |
| Smog Formation Potential [kg O ₃ eq] | 2.14E+00 | 1.31E+00 | 8.65E-01 | 6.10E-02 | 4.37E+00 |
| <i>Resource Use Indicators</i> | | | | | |
| Renewable primary resources used as energy carrier [MJ] | 7.76E+01 | 5.15E+01 | 1.89E+00 | 1.14E+00 | 1.32E+02 |
| Renewable primary resources with energy content used as material [MJ] | 0.00E+00 | 5.08E+01 | 0.00E+00 | 0.00E+00 | 5.08E+01 |
| Renewable primary resources, total [MJ] | 7.76E+01 | 1.02E+02 | 1.89E+00 | 1.14E+00 | 1.83E+02 |
| Non-renewable primary resources used as energy carrier [MJ] | 8.71E+02 | 2.50E+02 | 1.09E+02 | 1.14E+01 | 1.24E+03 |
| Non-renewable primary resources with energy content used as a material [MJ] | 8.71E+02 | 2.50E+02 | 1.09E+02 | 1.14E+01 | 1.24E+03 |
| Non-renewable primary resources, total [MJ] | 1.74E+03 | 4.99E+02 | 2.18E+02 | 2.28E+01 | 2.48E+03 |
| Recovered energy [MJ] | 0.00E+00 | 3.05E+00 | 0.00E+00 | 1.32E+01 | 1.63E+01 |
| Net fresh water usage [kg]* | 4.26E-01 | 2.63E-01 | 5.84E-03 | 1.20E-02 | 7.07E-01 |

*Water usage from electricity generation is included

The chart below presents the relative contribution of each life cycle stage to the TRACI 2.1 and IPCC environmental impact categories by life cycle stage per the BIFMA PCR for seating.



Additionally, results have been calculated using LCIA methodologies for core environmental impact categories specified in EN 15804+A2, as well as LCI indicators required by EN15804+A2. Results are reported per functional unit. For this product, 1 unit of product is required to meet the functional unit. The results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks. It is discouraged to use of results for A1-A3 without considering the results for C1-C4.

| | Product Stage | Construction Stage | | | Use Stage | | | | | | | End of Life | | | Benefits and Loads Beyond the System Boundary | |
|--|---------------|--------------------|----------|----|-----------|----|----|----|----|----|----|-------------|-----------|----------|---|--|
| | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | |
| Climate Change - total [kg CO2 eq.] | 9.47E+01 | 7.71E+00 | 6.60E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.83E-02 | 3.98E+00 | 3.32E-01 | -6.65E+00 | |
| Climate Change, fossil [kg CO2 eq.] | 9.44E+01 | 7.70E+00 | 1.35E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.82E-02 | 3.98E+00 | 3.31E-01 | -6.54E+00 | |
| Climate Change, biogenic [kg CO2 eq.] | 3.36E-01 | 1.89E-03 | 5.25E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.01E-05 | 2.47E-04 | 6.04E-04 | -1.03E-01 | |
| Climate Change, land use and land use change [kg CO2 eq.] | 1.91E-02 | 3.16E-03 | 2.43E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.63E-05 | -1.05E-04 | 1.24E-04 | -9.68E-04 | |
| Ozone depletion [kg CFC-11 eq.] | 5.88E-10 | 7.51E-13 | 8.42E-14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.15E-15 | 6.80E-13 | 7.63E-13 | -4.96E-12 | |
| Acidification [Mole of H+ eq.] | 2.65E-01 | 3.22E-02 | 1.86E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.75E-04 | 9.77E-04 | 2.02E-03 | -2.19E-02 | |
| Eutrophication, freshwater [kg P eq.] | 7.94E-04 | 1.34E-05 | 1.51E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.87E-07 | -5.25E-07 | 1.92E-04 | -2.28E-04 | |
| Eutrophication, marine [kg N eq.] | 6.12E-02 | 1.56E-02 | 3.85E-04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8.62E-05 | 2.45E-04 | 5.97E-04 | -4.24E-03 | |
| Eutrophication, terrestrial [Mole of N eq.] | 6.44E-01 | 1.71E-01 | 8.20E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.52E-04 | 4.06E-03 | 5.53E-03 | -4.03E-02 | |
| Photochemical ozone formation, human health [kg NMVOC eq.] | 1.85E-01 | 3.91E-02 | 9.63E-04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.71E-04 | 6.43E-04 | 1.53E-03 | -1.27E-02 | |
| Resource use, mineral and metals [kg Sb eq.]* | 9.05E-05 | 4.83E-07 | 2.45E-09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.82E-09 | -3.54E-08 | 1.89E-08 | -5.35E-06 | |
| Resource use, fossils [MJ]* | 1.67E+03 | 1.01E+02 | 6.35E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.65E-01 | 4.75E+00 | 5.14E+00 | -1.09E+02 | |
| Water use [m ³ world equiv.]* | 2.23E+01 | 1.69E-01 | 4.26E-02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.40E-03 | 4.43E-01 | 1.75E-02 | -1.49E+00 | |
| Use of renewable primary energy (PERE) [MJ] | 1.80E+02 | 1.89E+00 | 6.70E-02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.27E-02 | 4.27E-01 | 6.12E-01 | -4.56E+01 | |
| Primary energy resources used as raw materials (PERM) [MJ] | 5.08E+01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| | Product Stage | Construction Stage | | | Use Stage | | | | | | | End of Life | Benefits and Loads Beyond the System Boundary | | |
|--|---------------|--------------------|----------|----|-----------|----|----|----|----|----|----|-------------|---|----------|-----------|
| | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Total use of renewable primary energy resources (PERT) [MJ] | 2.31E+02 | 1.89E+00 | 6.70E-02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.27E-02 | 4.27E-01 | 6.12E-01 | -4.56E+01 |
| Use of non-renewable primary energy (PENRE) [MJ] | 1.40E+03 | 1.09E+02 | 6.50E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8.21E-01 | 4.70E+00 | 5.23E+00 | -1.10E+02 |
| Non-renewable primary energy resources used as raw materials (PENRM) [MJ] | 2.82E+02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total use of non-renewable primary energy resources (PENRT) [MJ] | 1.69E+03 | 1.09E+02 | 6.50E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8.21E-01 | 4.70E+00 | 5.23E+00 | -1.10E+02 |
| Input of secondary material (SM) [kg] | 1.47E+01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Use of renewable secondary fuels (RSF) [MJ] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Use of non renewable secondary fuels (NRSF) [MJ] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Use of net fresh water (FW) [m3] | 6.89E-01 | 5.84E-03 | 1.02E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.12E-04 | 1.03E-02 | 6.48E-04 | -5.02E-02 |
| Hazardous waste disposed (HWD) [kg] | 1.44E-05 | 2.53E-10 | 1.54E-11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.36E-12 | 2.31E-10 | 1.30E-10 | -3.87E-08 |
| Non-hazardous waste disposed (NHWD) [kg] | 7.94E+00 | 6.50E-03 | 7.74E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7.14E-05 | 6.23E-01 | 1.56E+01 | -1.76E-01 |
| Radioactive waste disposed (RWD) [kg] | 4.06E-02 | 2.51E-04 | 9.75E-06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.35E-06 | 1.87E-04 | 5.79E-05 | -1.92E-03 |
| High-level radioactive waste, conditioned, to final repository (HLRW) [kg] | 4.78E-05 | 2.98E-07 | 1.08E-08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.79E-09 | 2.22E-07 | 6.47E-08 | -2.52E-06 |
| Intermediate- and low-level radioactive waste, conditioned, to final repository (ILLRW) [kg] | 4.06E-02 | 2.50E-04 | 9.74E-06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.35E-06 | 1.87E-04 | 5.78E-05 | -1.92E-03 |
| Components for re-use (CRU) [kg] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Materials for Recycling (MFR) [kg] | 7.81E-01 | 0 | 2.75E+00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.72E+00 | 0 | 0 |
| Material for Energy Recovery (MER) [kg] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total recovered energy exported from the product system (EEE and EET) [MJ] | 3.05E+00 | 0 | 1.44E+00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.18E+01 | 0 | 0 |

| | Product Stage | Construction Stage | | | Use Stage | | | | | | | End of Life | Benefits and Loads Beyond the System Boundary | | |
|---|---------------|--------------------|----------|----|-----------|----|----|----|----|----|----|-------------|---|----------|-----------|
| | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Particulate matter [Disease incidences] | 4.29E-06 | 1.89E-07 | 1.40E-08 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.89E-09 | 1.39E-08 | 2.27E-08 | -2.59E-07 |
| Ionizing radiation, human health [kBq U235 eq.]** | 3.60E+00 | 2.10E-02 | 9.70E-04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.99E-04 | 1.57E-02 | 5.59E-03 | -7.10E-02 |
| Ecotoxicity, freshwater [CTUe]* | 5.67E+02 | 8.47E+01 | 5.66E+00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.34E-01 | 2.08E+00 | 1.34E+01 | -4.14E+01 |
| Human toxicity, cancer [CTUh]* | 5.25E-07 | 1.53E-09 | 8.08E-11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.17E-11 | 1.06E-10 | 3.76E-10 | -4.44E-09 |
| Human toxicity, non-cancer [CTUh]* | 1.23E-06 | 5.76E-08 | 2.75E-09 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3.74E-10 | 1.06E-08 | 3.77E-08 | -7.69E-08 |
| Land Use [Pt]* | 2.53E+02 | 6.68E+00 | 8.14E-02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.44E-01 | 2.60E-01 | 4.38E-01 | -7.57E+01 |

The life cycle modules are defined by EN 15804 as follows: Product Stage – raw material supply, transport, and manufacturing; Construction Stage – distribution and installation; Use Stage – use of installed product, maintenance, repair, replacement, refurbishment, operational energy use, and operational water use; End of Life - deconstruction, transport of waste, waste processing, and disposal; Benefits and Loads Beyond the System Boundary - credits from energy and material capture.

*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 experience with the indicator.

**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.

| Functional Unit | |
|---------------------------------|---|
| Parameter | Value |
| Declared unit | 1 seat for 1 individual maintained for a 10-year period |
| Number of occupants | 1 |
| Reference service life required | 10 years |
| Biogenic carbon in product | 0 kg C |
| Biogenic carbon in packaging | 1.60 kg C |

| A4: Transport to the building site | | |
|------------------------------------|---------------------------|---------------------------|
| Parameter | Value per functional unit | Value per functional unit |
| Transportation type | Truck | Air |
| Fuel consumption (l/km) | 0.42 diesel | 4,240 kerosene |
| Distance | 466 km | 0.0146 km |
| Capacity utilization | 67% | 66% |
| Capacity utilization volume factor | =1 | =1 |
| Weight of product (kg) | | 22.645 |
| Volume (m ³) | | 0.39 |

| A5: Installation in the building | |
|----------------------------------|--|
| Parameter | Value per functional unit |
| Packaging waste produced | 3.973 kg |
| Installation Assumptions | No product waste, Installed with hand tools. |

| B2: Maintenance | |
|--|---|
| Parameter | Value per functional unit |
| Maintenance Process | No maintenance is expected for this product |
| Maintenance cycle | 0 |
| Ancillary Materials for maintenance (kg/cycle) | 0 |
| Waste materials resulting from maintenance (kg) | 0 |
| Net fresh water consumption during maintenance (m ³) | 0 |
| Energy input during maintenance (kWh) | 0 |

| Reference service life (RSL) | |
|-------------------------------|---|
| Parameter | Value per functional unit |
| Reference service life | 10 years |
| Design application parameters | Use as indicated in product brochure and warranty |
| Declared product properties | Properties given in product description on page 3 |
| Indoor environment | Typical office and home environment |
| Use conditions | Typical office and home use |

| B3: Repair | |
|--|--|
| Parameter | Value per functional unit |
| Repair process | No repairs are expected for this product |
| Inspection process | No repairs are expected for this product |
| Repair cycle (#/RSL) | 0 |
| Ancillary materials (kg) | 0 |
| Waste materials from repair (kg) | 0 |
| Net freshwater consumption during repair (m ³) | 0 |
| Energy input during repair (kWh) | 0 |

| B4: Replacement | |
|--|---------------------------|
| Parameter | Value per functional unit |
| Replacement cycle (#/RSL) | 0 |
| Energy input during replacement (kWh) | 0 |
| Exchange of worn parts during the products life cycle (kg) | 0 |

| B5: Refurbishment | |
|--|---|
| Parameter | Value per functional unit |
| Refurbishment process | No refurbishment is expected for this product |
| Refurbishment cycle (#/RSL) | 0 |
| Energy input during refurbishment (kWh) | 0 |
| Material input for refurbishment (kg) | 0 |
| Waste material resulting from refurbishment (kg) | 0 |

| B6 and B7: Use of energy and Use of Water | |
|--|---------------------------|
| Parameter | Value per functional unit |
| Ancillary materials (kg) | 0 |
| Net freshwater consumption (m ³) | 0 |
| Power output of equipment (kW) | 0 |
| Characteristic performance | n/a |

| C1-C4: End-of-life | |
|-----------------------------|---------------------------|
| Parameter | Value per functional unit |
| Weight of product collected | 22.645 kg |
| Weight to recycling | 3.763 kg |
| Weight to energy recovery | 3.293 kg |
| Weight to landfill | 15.589 kg |
| Distance to recycling | 32.2 km |
| Distance to energy recovery | 32.2 km |
| Distance to landfill | 32.2 km |

References

1. EN 15804:2012+A2.2019/AC:2021, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
2. ISO 14040: 2006/ Amd 1:2020: Environmental Management – Life cycle assessment – Requirements and Guidelines.
3. ISO 14044: 2006/ Amd 1:2017/ Amd 2:2020: Environmental Management – Life cycle assessment – Requirements and Guidelines – Amendment 1.
4. ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures.
5. ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.
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