Trivati Wall System

Environmental Product Declaration

Date of Issue: April 18, 2025
Date of Expiration: April 17, 2030

Product Category Rule

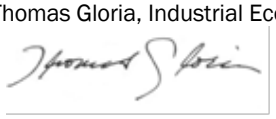
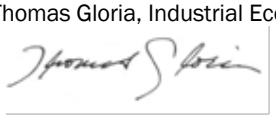
BIFMA PCR for Office Furniture Workspace Products, UNCPC 3814
EN 15804+A2

Functional Unit

1 m^2 of floor space, maintained for a period of 10 years produced in North America.

Certified Environmental Product Declaration
www.nsf.org

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	EPD11034
Declared Product and Functional Unit	1 m^2 of floor space, maintained for a 10-year period produced in North America
Reference PCR and Version Number	BIFMA PCR for Office Furniture Workspace Products: UNCPC 3814
Product's intended Application and Use	Commercial Furniture
Product RSL	10 years
Markets of Applicability	North America
Date of Issue	April 18, 2025
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) 10.9
LCI Database and Version Number	Sphera MLC (GaBi) 2023.2
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 14044 (2006), 14025 (2006), EN 15804+A2, and BIFMA PCR for Office Furniture Workspace Products: UNCPC 3814, which serves as the core PCR. **☐ Internal ☒ External**	External review conducted by: Thomas Gloria, Industrial Ecology Consultants 
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 

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.

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

The Trivati wall system gives you the design flexibility to create a wide variety of individual and team spaces within your floorplan. With the look and feel of permanent construction, Trivati complements existing architecture in a highly customizable solution that transforms your workspace. Tailor applications to meet every space need—from private offices to focus spaces to conference rooms. With Trivati, you can create a truly unique environment that supports your people as well as your culture and brand. Trivati is manufactured at Haworth's facility in Holland, MI – an ISO 14001 and ISO 9001 certified 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 Compose Workspaces after their useful life and recycle the components.

Trivati is a workspace product that falls in the category of Panels for division of space.

Results were calculated for a single configuration of the workspace product (including product numbers: 129-9321, 119-1434, 119-1437, 119-1469, 119-1479, 119-1465, 127-9439, 114-2223, 119-1455, 123-9609, and 120-9719). This is considered to be a high selling, also known as "typical," configuration of the Trivati workspace products. Other styles of Trivati that are represented by the assessed product have the same basic structure and material composition but can exclude certain components or consist of different materials that are believed to have impacts within 10% of this representative configuration.

The configuration assessed is for architectural walls for an individual office setup including a 10' long glass front with aluminum rails, sliding glass door, and associated hardware. This is considered to be a high selling or typical configuration of the Trivati workspaces. For the purposes of this EPD, it was assumed that the total workspace would cover a 10'x10' office space, which is a typical size.

The composition of the workspace product is provided below, with a total product weight of 498 kg, an assumed floorspace area of 9.29 m^2, and total packaging weight of 76.1 kg. To meet the functional unit, 0.108 units of Trivati are required with a reference flow of 53.6 kg. The workspace product has no work surface area or storage volume.

Material	[kg]	[%]	Recycled Content [%]	Resource Type
Product				
Glass	441.6	89%	0%	Virgin Non-renewable
Aluminum	46.3	9%	70%	Recycled, Virgin Non-renewable
Steel	2.6	<1%	34%	Recycled, Virgin Non-renewable
Other	7.5	<2%	0%	Virgin Non-renewable
Packaging				
Wood	58.6	77%	0%	Virgin Renewable
Paper	4.9	6%	0%*	Virgin Renewable
PE	4.1	5%	0%	Virgin Non-renewable
Cardboard	3.5	5%	47%*	Recycled, Virgin Renewable
PP	1.9	3%	0%	Virgin Non-renewable
Steel	1.3	2%	77%*	Recycled, Virgin Non-renewable
LLDPE	1.0	1%	0%	Virgin Non-renewable
Fiberboard	0.8	1%	0%	Virgin Renewable

*Recycled content cardboard, paper, and steel packaging are average values associated with background LCI datasets

Additional Environmental Information

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

- GREENGUARD Gold Certified
- BIFMA LEVEL 3 Certified

At the end of its useful life, manage Haworth products correctly in accordance with all applicable regulations for effective end-of-life management, including recycling, disposal, or incineration. Improper management may result in the release of chemicals that may represent a risk to the environment and human health & safety.

Functional Unit

The functional unit is 1 m^2 of floor space, maintained for a 10-year period. The products under study have a 10-year service life under ANSI/BIFMA X5.6 and therefore do not require replacements to meet the functional unit. The area of each workspace product was calculated in accordance with the method outlined by section 3 of the PCR.

LCA Stages

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

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.

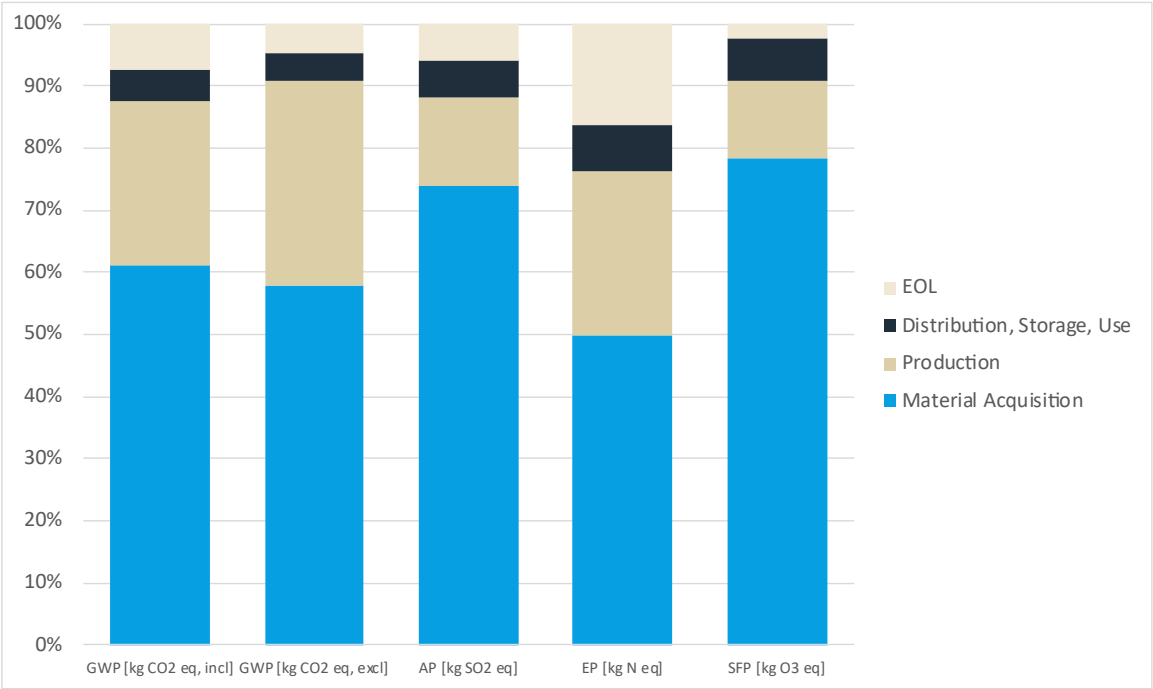
Production of capital goods, infrastructure, and personnel-related activities are excluded, as required by the BIFMA PCR for office furniture workspace products.

LCA Results

All results are given per functional unit, which is 1 m^2 of floor space, maintained for a 10-year period. Results are reported separately by life cycle stage per the BIFMA PCR for Office Furniture Workspace Products. It is discouraged to use results for Material Acquisition and Production without considering the results for End of Life.

Impact Category	Material Acquisition	Production	Distribution, Storage, Use	End of Life	Total
IPCC AR6 LCIA Impacts					
Global Warming Potential, incl biogenic [kg CO_2 eq]	9.10E+01	3.92E+01	7.12E+00	1.11E+01	**1.48E+02**
Global Warming Potential, excl biogenic [kg CO_2 eq]	9.14E+01	5.20E+01	7.12E+00	7.45E+00	**1.58E+02**
TRACI 2.1 LCIA Impacts (North America)					
Acidification Potential [kg SO_2 eq]	4.17E-01	8.09E-02	3.30E-02	3.33E-02	**5.64E-01**
Eutrophication Potential [kg N eq]	1.94E-02	1.04E-02	2.92E-03	6.35E-03	**3.91E-02**
Ozone Depletion Potential [kg CFC 11 eq]	3.70E-11	3.40E-10	1.83E-14	1.39E-13	**3.77E-10**
Smog Formation Potential [kg O_3 eq]	8.93E+00	1.42E+00	7.69E-01	2.58E-01	**1.14E+01**
Resource Use Indicators					
Renewable primary resources used as an energy carrier [MJ]	1.38E+02	1.66E+02	3.98E+00	5.40E+00	**3.13E+02**
Renewable primary resources with energy content used as a material [MJ]	1.05E+00	1.34E+02	0	0	**1.35E+02**
Renewable primary resources, total [MJ]	1.39E+02	3.00E+02	3.98E+00	5.40E+00	**4.49E+02**
Non-renewable primary resources used as an energy carrier [MJ]	1.25E+03	7.54E+02	1.00E+02	4.56E+01	**2.15E+03**
Non-renewable primary resources with energy content used as a material [MJ]	2.57E+01	3.97E+01	0	0	**6.53E+01**
Non-renewable primary resources, total [MJ]	1.28E+03	7.94E+02	1.00E+02	4.56E+01	**2.21E+03**
Recovered energy [MJ]	0	1.27E+00	0	6.84E+00	**8.11E+00**
Net fresh water usage [kg]*	4.95E-01	5.89E-02	1.37E-02	1.37E-01	**7.05E-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 Office Furniture Workspace Products.



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, 0.108 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 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-B7*	*C1*	*C2*	*C3*	*C4*	*D*
Climate Change - total [kg CO2 eq.]	1.30E+02	7.12E+00	1.35E+01	0	0	1.38E-01	1.92E+00	1.07E+00	-3.78E+00
Climate Change, fossil [kg CO2 eq.]	1.43E+02	7.11E+00	4.69E-01	0	0	1.38E-01	1.92E+00	1.07E+00	-3.78E+00
Climate Change, biogenic [kg CO2 eq.]	-1.30E+01	0	1.30E+01	0	0	0	0	0	0
Climate Change, land use and land use change [kg CO2 eq.]	2.59E-02	8.07E-03	7.01E-05	0	0	1.57E-04	8.59E-04	3.65E-04	-1.35E-03
Ozone depletion [kg CFC-11 eq.]	4.49E-10	8.70E-13	3.40E-13	0	0	1.69E-14	3.60E-12	2.62E-12	-3.89E-12
Acidification [Mole of H+ eq.]	5.38E-01	3.53E-02	1.33E-02	0	0	4.15E-04	3.41E-03	5.92E-03	-1.87E-02
Eutrophication, freshwater [kg P eq.]	3.16E-04	3.49E-05	4.39E-05	0	0	6.79E-07	2.91E-06	2.43E-05	-6.97E-05
Eutrophication, marine [kg N eq.]	1.68E-01	1.78E-02	6.13E-03	0	0	2.04E-04	1.20E-03	1.55E-03	-3.07E-03
Eutrophication, terrestrial [Mole of N eq.]	1.83E+00	1.96E-01	6.00E-02	0	0	2.26E-03	1.31E-02	1.64E-02	-3.13E-02
Photochemical ozone formation, human health [kg NMVOC eq.]	4.62E-01	3.64E-02	7.06E-03	0	0	4.05E-04	3.27E-03	4.48E-03	-8.99E-03
Resource use, mineral and metals [kg Sb eq.]*	1.41E-04	4.66E-07	9.90E-09	0	0	9.07E-09	6.73E-08	6.23E-08	-1.84E-05
Resource use, fossils [MJ]*	2.06E+03	9.31E+01	2.74E+00	0	0	1.81E+00	2.37E+01	1.68E+01	-5.02E+01
Water use [m³ world equiv.]*	9.10E+00	4.14E-01	1.89E-01	0	0	8.06E-03	9.05E-01	3.71E+00	-8.84E-01
Use of renewable primary energy (PERE) [MJ]	3.04E+02	3.98E+00	2.78E-01	0	0	7.75E-02	2.93E+00	2.11E+00	-5.38E+01
Primary energy resources used as raw materials (PERM) [MJ]	1.35E+02	0	0	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT) [MJ]	4.39E+02	3.98E+00	2.78E-01	0	0	7.75E-02	2.93E+00	2.11E+00	-5.38E+01
Use of non-renewable primary energy (PENRE) [MJ]	2.00E+03	1.00E+02	2.79E+00	0	0	1.95E+00	2.37E+01	1.71E+01	-5.06E+01
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	6.53E+01	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-B7*	*C1*	*C2*	*C3*	*C4*	*D*
Total use of non-renewable primary energy resources (PENRT) [MJ]	2.07E+03	1.00E+02	2.79E+00	0	0	1.95E+00	2.37E+01	1.71E+01	-5.06E+01
Input of secondary material (SM) [kg]	5.13E+00	0	0	0	0	0	0	0	0
Use of renewable secondary fuels (RSF) [MJ]	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
Use of net fresh water (FW) [m3]	5.54E-01	1.37E-02	4.52E-03	0	0	2.66E-04	2.15E-02	1.10E-01	-7.62E-02
Hazardous waste disposed (HWD) [kg]	3.33E-04	2.88E-10	7.31E-11	0	0	5.59E-12	6.84E-10	3.93E-10	-2.47E-07
Non-hazardous waste disposed (NHWD) [kg]	1.13E+01	8.70E-03	3.63E+00	0	0	1.69E-04	8.61E+00	4.38E+01	-9.01E-01
Radioactive waste disposed (RWD) [kg]	5.36E-02	2.87E-04	4.31E-05	0	0	5.58E-06	1.05E-03	3.16E-04	-2.09E-03
High-level radioactive waste, conditioned, to final repository (HLRW) [kg]	6.31E-05	3.40E-07	4.98E-08	0	0	6.62E-09	1.25E-06	3.64E-07	-2.50E-06
Intermediate- and low-level radioactive waste, conditioned, to final repository (ILLRW) [kg]	5.35E-02	2.86E-04	4.30E-05	0	0	5.57E-06	1.05E-03	3.15E-04	-2.08E-03
Components for re-use (CRU) [kg]	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	-1.05E+00	0	1.87E+00	0	0	0	1.03E+00	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	1.25E-01	0
Total recovered energy exported from the product system (EEE and EET) [MJ]	1.27E+00	0	5.88E+00	0	0	0	0	9.54E-01	0
Particulate matter [Disease incidences]	8.99E-06	3.53E-07	9.61E-08	0	0	4.48E-09	7.91E-08	6.67E-08	-2.60E-07
Ionizing radiation, human health [kBq U235 eq.]**	4.68E+00	2.42E-02	3.86E-03	0	0	4.71E-04	8.80E-02	2.84E-02	-1.78E-01
Ecotoxicity, freshwater [CTUe]*	7.22E+02	7.80E+01	4.90E+01	0	0	1.52E+00	8.72E+00	1.01E+01	-4.28E+01
Human toxicity, cancer [CTUh]*	3.57E-07	1.81E-09	5.22E-10	0	0	2.76E-11	3.78E-10	1.01E-09	-2.24E-09
Human toxicity, non-cancer [CTUh]*	1.08E-06	2.94E-08	1.94E-08	0	0	5.64E-10	2.83E-08	1.01E-07	-6.73E-08
Land Use [Pt]*	3.53E+03	1.75E+01	2.85E-01	0	0	3.41E-01	2.34E+00	1.44E+00	-5.70E+02

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 m^2 floorspace maintained for a 10-year period
Number of occupants	6
Reference service life required	10 years
Biogenic carbon in product	0 kg C
Biogenic carbon in packaging	3.43 kg C

A4: Transport to the building site

Parameter	Value per functional unit
Transportation type	Truck
Fuel consumption (l/km)	0.42 diesel
Distance	1420 km
Capacity utilization	67%
Capacity utilization volume factor	=1
Weight of product (kg)	53.6
Volume (m^3)	0.0571

A5: Installation in the building

Parameter	Value per functional unit
Packaging waste produced	8.19 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	53.6 kg
Weight to recycling	12.9 kg
Weight to energy recovery	7.25 kg
Weight to landfill	33.4 kg
Distance to recycling	32.2 km
Distance to energy recovery	32.2 km
Distance to landfill	32.2 km

References

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