HermanMiller
Environmental Product

Cosm™ Chairs

Designed by Studio 7.5

For the Berlin-based designers at Studio 7.5—Carola Zwick, Roland Zwick, and Burkhard Schmitz—their latest chair for Herman Miller represents something of a holy grail: a design that creates a new reference point for instant, personalized comfort. Cosm's new Auto-Harmonic™ Tilt, in particular, has been a goal they've worked toward for years.

The German word for design is entwerfen, which roughly translates as "to throw." According to Carola, that's "throw something a little bit ahead of the curve, or ahead of what you know, to help pull you in the right direction." With Cosm, "throwing" led Studio 7.5 and Herman Miller to their most sophisticated design yet.

EPD10260
Program Operator
NSF Certification, LLC
www.NSF.org

Environmental Data
34% Recycled Content
22% Post Consumer
12% Pre Consumer
94% Recyclability

Life Cycle Assessment Data
73 kg C02eq Global Warming
0.29 kg SO2 eq Acidification
0.03 kg Neq Eutrophication
3.51 kg O3 eq Smog
132 MJ Primary Energy Demand
1.81 x 10^{-9} kg CFC-11eq Ozone Depletion

Environmental Certifications
BIFMA level® 3
Indoor Advantage™ Gold

Functional Unit
One unit of seating for one individual, maintained over a lO-year period, including packaging materials used for the final assembled product.

Warranty
Backed by Herman Miller's 12-year warranty

Manufactured
Herman Miller Greenhouse, Holland, MI 49424
ISO 14001/OHSAS 18001
Greenhouse manufacturing facility uses 100% Renewable Electric Energy (Through the purchase of Renewable Energy Certificates)

Period of Validity: July 11 2019 - July 11, 2024 (EPD was updated May 4 2022)

Disclaimer
The PCR this EPD was based on 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.

Environmental Product

Company Description
Herman Miller creates inspiring designs to help people do great things at work, for learning, for wellness, at home, wherever people are. Our designs and the designers who work with us solve real problems for people and their organizations. This way of thinking about design has led us to be recognized as an innovator in furnishings, personal work accessories, and strategic services.

Our Sustainability Goals
We will be Resource Smart, Ecoinspired, and Community Driven.

Resource Smart

- Zero Waste
- Net Zero Water
- Net Zero Energy

Eco-inspired Design

- All products designed for the environment
- All products BIFMA level 3 certified
- Closed-Loop recycling of used product

Community Driven

- All employees engaged in Earthright
- All suppliers committed to being Resource Smart

LEED
Please refer to www.hermanmiller.ecomedes.com for detailed LEED information.

Packaging
Returnable packaging is available.

Supplier Support
At Herman Miller, we are committed to working closely with our suppliers to reduce our collective impact on the environment. We encourage our suppliers to minimize their operations' environmental impacts and require they assist us in decreasing our facilities' environmental effects.

Design for the Environment Criteria
Our commitment to corporate sustainability naturally includes minimizing the environmental impact of each of our products. Our Design for the Environment team applies environmentally sensitive design standards to both new and existing Herman Miller products, and goes beyond regulatory compliance to thoroughly evaluate new product designs in key areas:

- Material Chemistry and Safety of Inputs
  What chemicals are in the materials we specify, and are they the safest available?
- Disassembly
  Can we take products apart at the end of their useful life, to recycle their materials?
- Recyclability
  Do the materials contain recycled content, and more importantly, can the materials be recycled at the end of the product's useful life?
- Life Cycle Assessment (LCA)
  Have we optimized the product based on the entire life cycle?

Environmental Product

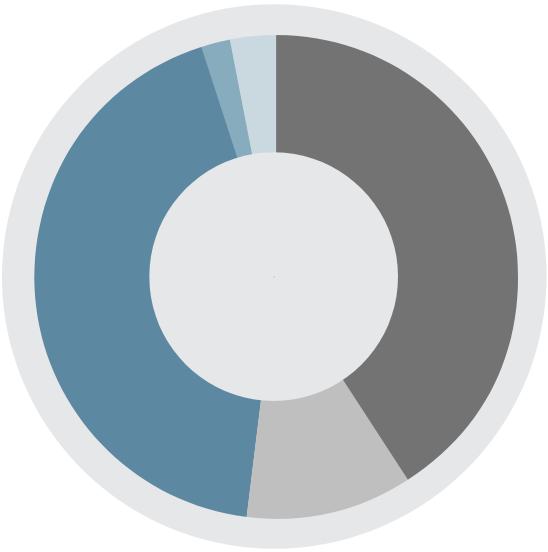
Material Declaration

Reference Flow and Product Description

One Cosm Chair (product number FLC152SFHG1G1G1BKSBK84501) with 5-star plastic Base, height adjustable seat, fully adjustable arms, and casters—intended for use in North America—was modeled for this EPD.

Content Declaration

The chart to the right details the materials included in the product.



Total Material Components

- Aluminum 41%
- Steel 11%
- Plastic 43%
- Foam 2%
- Textile 3%

Material	Mass (kg)	Mass (%)	Resource
Acrylonitrile Butadiene Styrene (ABS)	0.18	1%	Virgin Non-renewable
Aluminum	6.58	41%	Recycled Content
Epoxy Glass Filled	0.10	0%	Virgin Non-renewable
Polyamide 6 (PA6)	4.39	27%	Virgin Non-renewable
Polyamide 6/6 (PA66)	0.06	0%	Virgin Non-renewable
Polyoxymethylene (POM)	0.14	1%	Virgin Non-renewable
Polypropylene (PP)	2.2	14%	Virgin Non-renewable
Polyurethane (PUR)	0.33	2%	Virgin Non-renewable
Natural Rubber	0.02	0%	Virgin Renewable
Steel	1.63	10%	Recycled Content
Stainless Steel	0.16	1%	Recycled Content
Thermoplastic Elastomer (TPE)	0.42	3%	Virgin Non-renewable
Total	**16.2**	**100%**	
Packaging *			
Corrugate	3.58 kg	99%	Recycled Content
PE Bag (Polyethylene)	0.01 kg	0%	Virgin Non-renewable
PP Banding (Polypropylene)	0.02 kg	1%	Virgin Non-renewable
Total	**3.61 kg**	**100%**	

Environmental Product

Environmental Product Declaration System Boundaries

Cradle to grave, including transportation.

Product
This EPD covers the Cosm Chair produced for use in North America at Herman Miller's GreenHouse manufacturing plant in Holland, Michigan. The EPD applies to all color options, the plastic chair base, all three height ranges (High, Low and Mid), glides or casters, and fixed or fully adjustable arms. Cosm with no arms and/or aluminum base are excluded from this EPD.

Raw Material Extraction and Preprocessing
The raw materials stage covers the extraction and production of the raw materials needed to manufacture the product. It includes the processing of the extracted raw material to the point where it can be made into a recognizable part, as well as transportation of the finished raw material to the part production factory.

Production
Materials are converted into parts and assemblies and made into the final product. This stage, often referred to as Gate to Gate, includes packaging of the final product and transport of parts and assemblies to the place of final product assembly and packaging.

Distribution
Transport of the product to the final customer, including retail and warehousing. Herman Miller products generally ship directly from the manufacturing plant to the final customer and are not sent to retail or warehousing.

Usage
Use, maintenance, and regular cleaning of the product. Herman Miller seating products are generally cleaned with a dry or damp rag and do not typically require maintenance during their warranted lifetime.

End of Life
End of life treatment of the product including landfill, recycling, waste-to-energy process, and transportation to the place of final
disposal or recycling. We design our products to be easily disassembled and recycled; however, in this study, our product was modeled using the national average recycling values. As a result, more of our materials were modeled as going to the landfill than should occur in actual practice. Herman Miller also offers programs to help our customers find homes for their furniture and materials at end of life.

Environmental Product

Life Cycle Environmental Impacts

	Impact Category	Unit	Total	Methodology
	Acidification Potential Atmospheric deposition of substances that can cause a change of acidity in the soil. Changes in levels of acidity can cause a shift of species to occur.	kg SO_2 eq	$2.9x10^{-1}$	TRACI 2.1 as based on ASTRAP (Shannon 1991, 1992)
	Eutrophication Water Nutrient enrichment of the aquatic environment that impacts its ecological quality of water.	kg nitrogen-eq	$2.0x10^{-3}$	TRACI 2.1 as characterized by the Redfield Ratio Model (1963)
	Global Warming Potential (100 Years) A measure of the potential of emitted gasses to cause an increase in the radiative forcing potential of the atmosphere leading to climate change.	kg CO_2-eq	73	TRACI 2.1 as characterized by IPCC 2001, 2007
	Photochemical Ozone Creation Potential (Smog) Air pollution derived from man-made emissions to the atmosphere that can potentially cause ground level ozone.	kg O_3-eq	3.5	TRACI 2.1 as based on Carter, W.SAPRC Atmospheric Chemical Mechanisms and VOC reactivity scale (2010)
	Ozone Depletion Potential Air pollution from man-made emissions to the atmosphere that have the ability to destroy ozone that protects the earth from UV sun-rays.	kg CFC-11 eq	$1.81x10^{-09}$	TRACI 2.1 based on Handbook for the International Treaties for the Protection of the Ozone Layer (UNEP-SETAC 2000)

Detailed Life Cycle Inventory

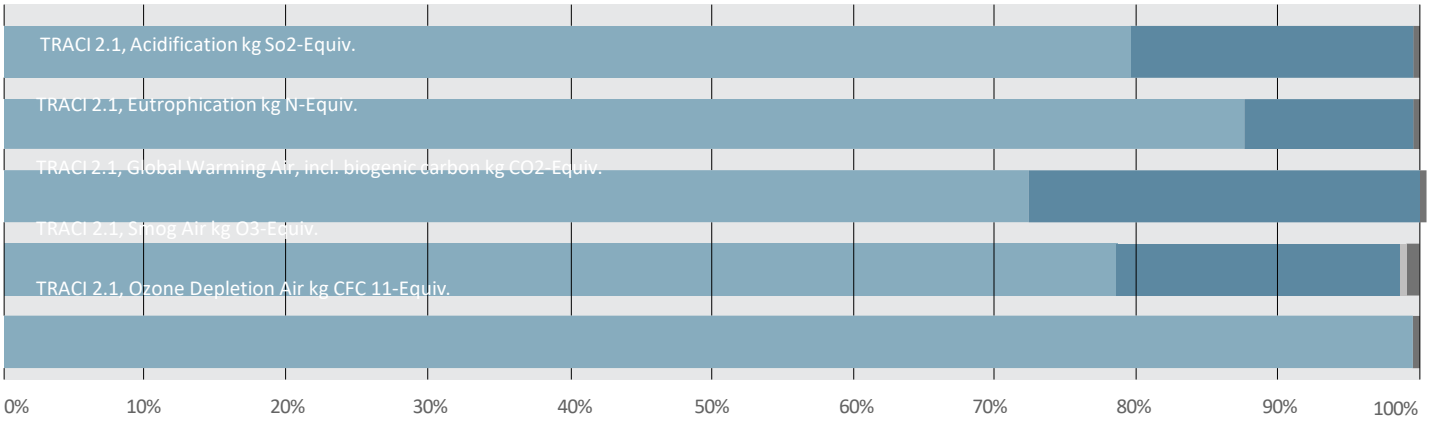
LCI Results	Unit	Total	Raw Material Production	Product Production	Distribution and Retail	End of Life
Energy Demand						
Primary Energy Resources	MJ	$1.32x10^{2}$	$1.15x10^{2}$	$1.48x10^{1}$	$4.78x10^{-1}$	$1.61x10^{0}$
Other						
Fresh Water Use	kg	$3.54x10^{2}$	$2.90x10^{2}$	$6.30x10^{1}$	$4.26x10^{-1}$	$4.56x10^{-1}$

Environmental Product

Detailed Life Cycle Impact Assessment

LCIA Results	Unit	Total	Raw Material Production	Product Production	Distribution and Retail	End of Life
Acidification Potential	kg SO_2 eq	$2.89E^{-1}$	$2.27E^{-1}$	$5.88E^{-2}$	$1.09E^{-3}$	$1.82E^{-3}$
Eutrophication Water	kg nitrogen-eq	$2.81E^{-2}$	$2.45E^{-2}$	$3.25E^{-3}$	$9.02E^{-5}$	$3.08E^{-4}$
Global Warming Potential	kg CO_2-eq	$7.33E^{1}$	$5.36E^{1}$	$2.02E^{1}$	$2.52E^{-1}$	$-7.48E^{-1}$
Photochemical Ozone Creation Potential (Smog)	kg O_3-eq	$3.51E^{0}$	$2.70E^{0}$	$7.11E^{-1}$	$3.59E^{-2}$	$6.73E^{-2}$
Ozone Depletion Potential	kg CFC-11-eq	$1.81E^{-9}$	$1.79E^{-9}$	$1.92E^{-11}$	$6.98E^{-15}$	$1.69E^{-13}$

Life Cycle Impacts of the Cosm Chair



Detailed Life Cycle Assessment

- Raw Material Production
- Product Production
- Distribution and Retail
- End of Life

Environmental Product

EPD and LCA Creation and Verification
The EPD and LCA were created by Herman Miller's Design for the Environment Team.

References
PCR for Environmental Product Declarations Seating: UNCFC 3811, Valid through January 10, 2024.

Recycling and disassembly instructions can be found at *https://www.hermanmiller.com/content/dam/hermanmiller/documents/environmental/recycling/cosm_chairs_recycling_instructions.pdf*

LCA for Cosm Chair, January, 2019

ISO 14025:2006 Environmental labels and Declaration–Type III Environmental Declaration–Principles and Procedures.

PCR Review:

Herman Miller, Inc.

Reference PCR: Product Category Rule for Environmental Product Declaration BIFMA PCR for Seating. Valid through January 10, 2024.

PCR Review was conducted by: NSF International by an LCA expert panel chaired by Tom Gloria, Industrial Ecology Consultants.

Email ncss@nsf.org for any PCR questions.

This EPD was based on the January, 2019 LCA for Cosm Chair. The LCA was independently verified in accordance with ISO 14044 and the PCR by an external reviewer.

This Declaration was independently verified in accordance with ISO 14025 and the PCR.

Internal External

Jack Geibig

Name

Signature

Jenny Oorbeck

Name

Signature

Manufacturer's contact information
www.hermnamiller.com/contact

Indoor Advantage Gold™ Certification
Indoor Advantage Gold™ certified products meet the rigorous indoor emissions criteria of California's Section 01350 (CDPH Standard Method) and the furniture industries ANSI/BIFMA Furniture Emissions Standard and Testing Method (M7.1 and X7.1). For more information visit scsglobalservices.com.

level® Certification
The level conformance mark ensures a comprehensive, independent, and impartial assessment of the environmental and social impacts of a product.

Certified Environmental Product Declaration
www.nsf.org