

Steelcase Series® 2

AMERICAS, APAC



Certified
Environmental
Product Declaration
www.nsf.org



About this product

Steelcase Series® 2 offers attainable performance with a boost of expression. The geometric back design comes in – standard or quilted upholstery, or plenty of 3D Microknit or Air back options.

One chair is required to meet the functional unit of seating one individual for a 10-year period.

Date of Issue: April 17, 2024
Date of Expiration: April 17, 2029

Learn more

- Explore Steelcase environmental philosophy and commitments [overview](#).
- Find product details and sustainability certifications on the [Americas product page](#) and [APAC product page](#) at steelcase.com.
- See our product [warranty](#).
- Contact epd@steelcase.com for any EPD-related questions or inquiries.

About this document

This declaration describes the Life Cycle Assessment of the Series 2 task chair produced for the Americas and APAC markets by Steelcase Inc. in Mexico and Malaysia. The assessment is performed according to the ISO standards 14040 (2006), 14044 (2006) and 14025 (2006), and BIFMA PCR for Seating: UNCPC 3811 (2020) to generate an EPD for business-to-business communication.

ASSESSMENT OVERVIEW

EPD commissioner	Steelcase® Inc
Corporate Address	901 44th Street SE Grand Rapids, Michigan 49508-7594 United States
Product group	Seating
Product name	Series 2
Product intended use	Office chair
Product reference service life	10 years
Reference standards	ISO 14025, ISO 14040, ISO 14044
EPD scope	Cradle to grave
EPD number	EPD10934
Date of issuance	April 17, 2024
Date of expiration	April 17, 2029
EPD type	Product specific
EPD Product Coverage	Series 2 task chair and stool for the Americas and APAC markets, including the following codes: 436AIR3D, 436AIR, 436UPH, 436AIRSTOOL, 436AIR3DSTOOL, 436UPHSTOOL
Intended audience	Business to business (B2B)
Year of reported manufacturer data	2021
Functional unit	One unit of seating to seat one individual for a reference service life of 10 years
Applicable markets/regions	Americas, APAC
LCA software and database version	GaBi 10.6.2.9; GaBi database, 2022.2
LCIA methodology and version number	TRACI 2.1
Program administrator	NSF Certification LLC 789 N. Dixboro, Ann Arbor, MI 48105 www.nsf.org
Reference PCR and version number	BIFMA PCR for Seating: UNCPC 3811 (BIFMA PCR, 2020)
PCR reviewer	Review Panel Chaired by Dr. Thomas Gloria
EPD reviewer	External review conducted by:  Jim Mellentine, Thrive ESG This declaration and its Life Cycle Assessment was independently verified in accordance with ISO standards 14040 (2006), 14044 (2006), 14025 (2006), and BIFMA PCR for Seating UNCPC 3811 (2020).
LCA reviewer	External review conducted by:  Jim Mellentine, Thrive ESG The product Life Cycle Assessment was conducted in accordance with ISO 14044 and the reference PCR.
Disclaimer	The PCR this EPD was based on was written to determine the potential environmental impacts of a seating 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 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.

ASSESSMENT PARAMETERS

Functional unit

One unit of seating to seat one individual for a reference service life of 10 years. One product required to fulfill the functional unit.

Product scope

One Series 2 task chair with hard casters, 4D arms, mesh back and upholstered seat, lumbar, plastic base, weight-activated mechanics was modeled for this EPD.

Results for configurations produced in Americas and APAC are presented on the subsequent pages and are considered to have the highest impacts of all configurations produced in their respective regions, making the results presented in the EPD a conservative estimate for all products listed.



<u>Manufacturing location</u>	<u>Product SKUs within the variation allowance</u>	<u>Applicable markets and regions</u>
Reynosa, Mexico	436AIR3D, 436AIR, 436UPH, 436AIRSTOOL, 436AIR3DSTOOL, 436UPHSTOOL	Americas
Kuala Lumpur, Malaysia	436AIR3D, 436UPH, 436AIR3DSTOOL, 436UPHSTOOL	APAC




Assessment goal and scope

The potential environmental impacts of Series 2 and its packaging throughout its entire life cycle – including raw materials extraction, production, transport, use, and end of life – were assessed. In the absence of primary information, the GaBi database was used for secondary data.

The life cycle stages included in this assessment follow the BIFMA PCR for Seating: UNCPC 3811 V3. Material acquisition and pre-processing (including transportation), production, distribution, use and end-of-life are assessed for the seating product.

Assessment boundary

The Life Cycle Assessment considers the full life cycle of the product as described here, cradle to grave. Life cycle stages included in this assessment follow the BIFMA PCR for Seating: UNCPC 3811 2020. Life cycle stages and phases are presented according to the PCR for seating.

	Stage	Status	
 <p>Cradle to inbound gate MATERIALS ACQUISITION Raw material extraction and pre-processing.</p>	A1. Raw material supply	✓	
	Transportation up to the factory gate and internal transport.	A2. Transport	✓
	 <p>Gate to gate PRODUCTION PROCESS External and internal manufacturing of products, ancillary materials, parts, packaging.</p>	A3. Manufacturing	✓
 <p>Gate to grave DISTRIBUTION, USE AND END OF LIFE Distribution of products, installation, use and end of life.</p>		A4. Transport	✓
	A5. Installation	✓	
	B1. Use	✓	
	B2. Maintenance/cleaning	✓	
	B3. Repair	✓	
	B4. Replacement	✓	
	B5. Refurbishment	✓	
	B6. Operational energy use	✓	
	B7. Operational water use	✓	
	C1. Disassembly	✓	
	C2. Transport	✓	
	C3. Waste processing	✓	
	C4. Disposal	✓	
Beyond the boundary	D. Reuse/recovery		

AMERICAS TASK CHAIR CONFIGURATION RESULTS

Results for one Series 2 task chair with hard casters, 4D arms, upholstered seat, mesh back, plastic base, weight-activated mechanics, and lumbar.

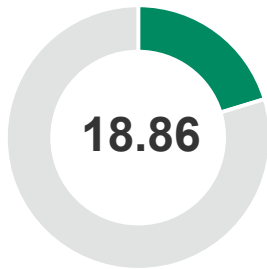
Product composition

Material	Weight (kg)	Weight (%)	Resource Type
Steel	4.911	29.95%	Recycled, Virgin non-renewable
Nylon (PA6)	6.242	38.07%	Recycled, Virgin non-renewable
Aluminum	0.569	3.47%	Recycled, Virgin non-renewable
Polypropylene (PP)	2.678	16.33%	Virgin non-renewable
Polyurethane (PU)	1.427	8.70%	Virgin non-renewable
Polyoxymethylene (POM)	0.285	1.74%	Virgin non-renewable
Other	0.285	1.74%	Virgin non-renewable
Total	16.397	100%	

Product packaging composition

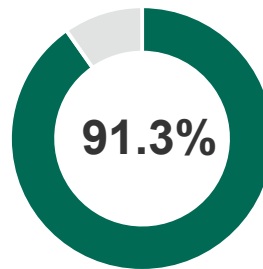
Material	Weight (kg)	Weight (%)	Resource Type
Cardboard	4.233	70.69%	Renewable
Paper	1.112	18.58%	Renewable
Linear low-density polyethylene (LLDPE)	0.568	9.48%	Non-renewable
Fiberboard	0.073	1.21%	Renewable
Polyethylene (PE)	0.002	0.03%	Non-renewable
High-density polyethylene (HDPE)	0.000	0.01%	Non-renewable
Total	5.988	100%	

Product recycled content* and recyclability** summary



TOTAL RECYCLED CONTENT*

*Total recycled content based on supplier's data. The source of recycled content of various materials could be either post-industrial or post-consumer based on market availability.



RECYCLABILITY BY WEIGHT**

**Recyclability: this recyclability rate is the maximum amount of the product that is recyclable, based on the availability of recycling facilities in the specified regions and the ability of the product to be disassembled. Note that, per the requirements of the PCR, the end-of-life results presented in this EPD were calculated using the US EPA's recycling rates within the 2020 Municipal Solid Waste Report for parts that can be disassembled.

Results for one Series 2 task chair with hard casters, 4D arms, upholstered seat, mesh back, plastic base, weight-activated mechanics, and lumbar.

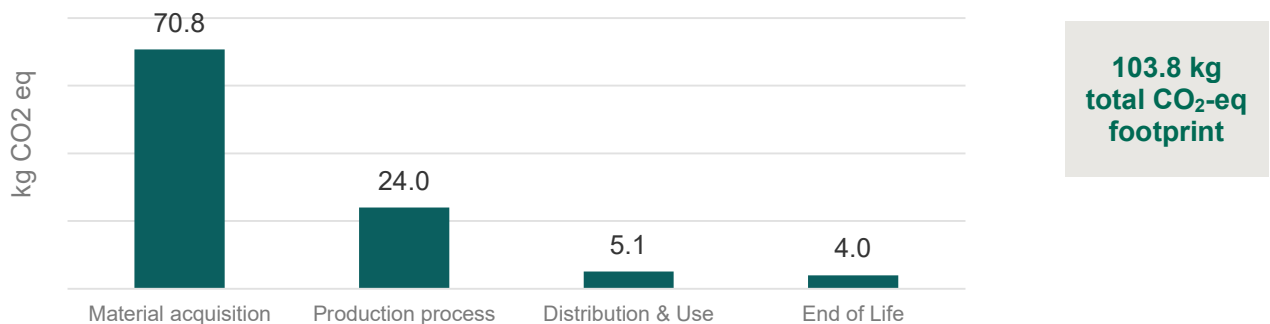
Life cycle impact by category and stage

Environmental impacts were calculated using the GaBi software platform. Impact results according to the BIFMA PCR have been calculated using TRACI 2.1 characterization factors, as well as LCI indicators. Results presented in this report are for one seat maintained for one individual for 10 years. Additionally, the results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks.

	Unit	Life cycle stages				Totals
		Materials acquisition	Production process	Distribution & Use	End of life	
*Global warming potential (100 years) Warming of the atmosphere caused by the global release of greenhouse gases.	kg CO2 eq	7.08E+01	2.40E+01	5.07E+00	3.97E+00	1.04E+02
*Acidification Emissions that increase the acidity of the environment due to various chemical reactions and/or biological activity, or by natural circumstances.	kg SO2 eq	2.50E-01	7.15E-02	3.37E-02	-2.87E-02	3.26E-01
*Photochemical ozone creation (Smog) Through various chemical reactions, which occur between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in sunlight.	kg O3 eq	3.34E+00	9.56E-01	6.62E-01	-2.89E-01	4.67E+00
*Eutrophication Enrichment of an aquatic ecosystem with nutrients (nitrates, phosphates) that accelerate biological productivity and an undesirable accumulation of algal biomass.	kg N eq	1.47E-02	1.18E-02	2.47E-03	-3.87E-03	2.52E-02
*Ozone depletion Reduction of the stratospheric ozone layer due to anthropogenic emissions of ozone depleting substances.	kg CFC-11 eq	1.49E-07	4.04E-10	1.43E-14	1.45E-13	1.50E-07
Primary energy demand Energy consumption at the source.	MJ	1.56E+03	6.13E+02	6.52E+01	9.70E+00	2.24E+03
Net freshwater usage Freshwater used and otherwise not recoverable.	kg	2.06E+03	3.30E+02	2.91E+00	3.15E-02	2.39E+03

*Methods: TRACI 2.1

Global warming potential summary



AMERICAS STOOL CONFIGURATION RESULTS

Results for one Series 2 stool with hard casters, 4D arms, upholstered back and seat, lumbar and headrest, foot adjustable ring, primarily metal base, weight-activated mechanics, and a sewn-stitched back are shown below. As this configuration is considered the worst-case in the Americas region, these results represent the maximum impacts for Series 2 Chair produced in Americas. Product numbers represented by these results include: 436AIR3D, 436AIR, 436UPH, 436AIRSTOOL, 436AIR3DSTOOL, and 436UPHSTOOL.

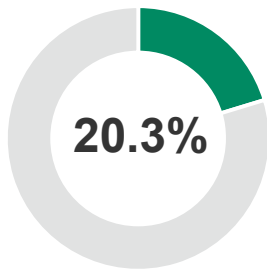
Product composition

Material	Weight (kg)	Weight (%)	Resource Type
Steel	8.867	38.90%	Recycled, Virgin non-renewable
Nylon (PA6)	4.966	21.80%	Recycled, Virgin non-renewable
Aluminum	3.436	15.10%	Recycled, Virgin non-renewable
Polypropylene (PP)	2.470	10.80%	Virgin non-renewable
Polyurethane (PU)	2.099	9.20%	Virgin non-renewable
Polyoxymethylene (POM)	0.266	1.20%	Virgin non-renewable
Other	0.688	3%	Virgin non-renewable
Total	22.792	100%	

Product packaging composition

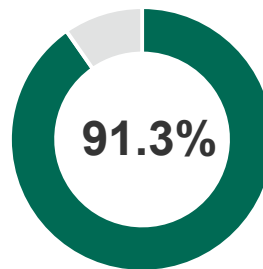
Material	Weight (kg)	Weight (%)	Resource Type
Cardboard	4.233	70.69%	Renewable
Paper	1.112	18.58%	Renewable
Linear low-density polyethylene (LLDPE)	0.568	9.48%	Non-renewable
Fiberboard	0.073	1.21%	Renewable
Polyethylene (PE)	0.002	0.03%	Non-renewable
High-density polyethylene (HDPE)	0.000	0.01%	Non-renewable
Total	5.988	100%	

Product recycled content* and recyclability** summary



TOTAL RECYCLED CONTENT*

*Total recycled content based on supplier's data. The source of recycled content of various materials could be either post-industrial or post-consumer based on market availability.



RECYCLABILITY BY WEIGHT**

**Recyclability: this recyclability rate is the maximum amount of the product that is recyclable, based on the availability of recycling facilities in the specified regions and the ability of the product to be disassembled. Note that, per the requirements of the PCR, the end-of-life results presented in this EPD were calculated using the US EPA's recycling rates within the 2020 Municipal Solid Waste Report for parts that can be disassembled.

Results for one Series 2 stool with hard casters, 4D arms, upholstered back and seat, lumbar and headrest, foot adjustable ring, primarily metal base, weight-activated mechanics, and a sewn-stitched back are shown below. As this configuration is considered the worst-case in the Americas region, these results represent the maximum impacts for Series 2 Chair produced in Americas. Product numbers represented by these results include: 436AIR3D, 436AIR, 436UPH, 436AIRSTOOL, 436AIR3DSTOOL, and 436UPHSTOOL.

Life cycle impact by category and stage

Environmental impacts were calculated using the GaBi software platform. Impact results according to the BIFMA PCR have been calculated using TRACI 2.1 characterization factors, as well as LCI indicators for primary energy and water usage. Results presented in this report are for one seat maintained for one individual for 10 years. Additionally, the results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks.

	Unit	Life cycle stages				Totals
		Materials acquisition	Production process	Distribution & Use	End of life	
*Global warming potential (100 years) Warming of the atmosphere caused by the global release of greenhouse gases.	kg CO2 eq	94.1	24.1	9.5	4.3	1.32E+02
*Acidification Emissions that increase the acidity of the environment due to various chemical reactions and/or biological activity, or by natural circumstances.	kg SO2 eq	3.53E-01	7.08E-02	3.52E-03	7.72E-03	4.35E-01
*Photochemical ozone creation (Smog) Through various chemical reactions, which occur between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in sunlight.	kg O3 eq	4.65E+00	9.64E-01	1.00E+00	1.56E-01	6.77E+00
*Eutrophication Enrichment of an aquatic ecosystem with nutrients (nitrates, phosphates) that accelerate biological productivity and an undesirable accumulation of algal biomass.	kg N eq	1.89E-02	1.18E-02	4.18E-03	5.07E-04	3.54E-02
*Ozone depletion Reduction of the stratospheric ozone layer due to anthropogenic emissions of ozone depleting substances.	kg CFC-11 eq	2.18E-07	5.82E-10	2.60E-14	2.95E-12	2.19E-07
Primary energy demand Energy consumption at the source.	MJ	1.96E+03	6.39E+02	1.36E+02	1.59E+01	2.75E+03
Net freshwater usage Freshwater used and otherwise not recoverable.	kg	4.17E+03	1.66E+02	1.82E+01	1.44E+01	4.37E+03

*Methods: TRACI 2.1

Global warming potential summary



APAC STOOL CONFIGURATION RESULTS

The product composition, packaging composition, recycled content, and recyclability visuals below relate specifically to the configurations consisting with the highest impacts made in the APAC region, including a stool, hard casters, 4D arms, upholstered back and seat, with lumbar and headrest, foot adjustable ring, primarily metal base, weight-activated mechanics, and sewn-stitched back.

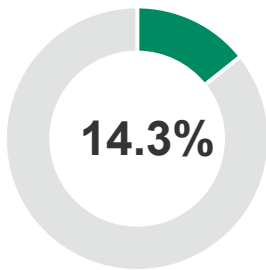
Product composition

Material	Weight (kg)	Weight (%)	Resource Type
Nylon (PA6 and PA66)	6.867	28.40%	Virgin non-renewable
Steel	5.658	23.40%	Recycled, Virgin non-renewable
Aluminum	4.043	16.70%	Recycled, Virgin non-renewable
Polyurethane (PU)	3.021	12.50%	Virgin non-renewable
Polypropylene (PP)	2.870	11.90%	Virgin non-renewable
Thermoplastic polyurethane (TPU)	0.550	2.30%	Virgin non-renewable
Polyester Fabric	0.403	1.70%	Virgin non-renewable
Other	0.758	3.10%	
Total	24.170	100%	

Product packaging composition

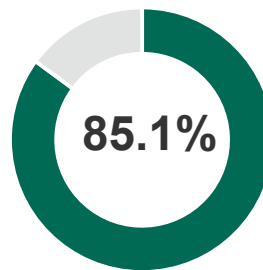
Material	Weight (kg)	Weight (%)	Resource Type
Cardboard	6.770	98.67%	Renewable
Linear low-density polyethylene (LLDPE)	0.080	1.17%	Non-renewable
Polyethylene (PE)	0.010	0.15%	Non-renewable
Paper	0.001	0.02%	Renewable
Total	6.861	100%	

Product recycled content* and recyclability** summary



TOTAL RECYCLED CONTENT*

14.3%



RECYCLABILITY BY WEIGHT**

85.1%

*Total recycled content based on supplier's data. The source of recycled content of various materials could be either post-industrial or post-consumer based on market availability.

**Recyclability: this recyclability rate is the maximum amount of the product that is recyclable, based on the availability of recycling facilities in the specified regions and the ability of the product to be disassembled. Note that, per the requirements of the PCR, the end-of-life results presented in this EPD were calculated using the US EPA's recycling rates within the 2020 Municipal Solid Waste Report for parts that can be disassembled.

Results for one Series 2 stool with hard casters, 4D arms, upholstered back and seat, lumbar and headrest, foot adjustable ring, primarily metal base, weight-activated mechanics, and a sewn-stitched back are shown below. As this configuration is considered the worst-case in the APAC region, these results represent the maximum impacts for Series 2 Chair produced in APAC. Product numbers represented by these results include: 436AIR3D, 436UPH, 436AIR3DSTOOL, and 436UPHSTOOL.

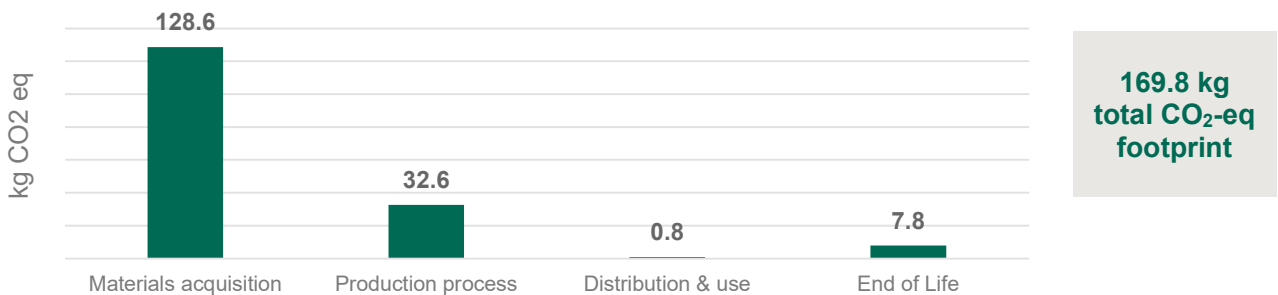
Life cycle impact by category and stage

Environmental impacts were calculated using the GaBi software platform. Impact results according to the BIFMA PCR have been calculated using TRACI 2.1 characterization factors, as well as LCI indicators for primary energy and water usage. Results presented in this report are for one seat maintained for one individual for 10 years. Additionally, the results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins, or risks.

	Unit	Life cycle stages				Totals
		Materials acquisition	Production process	Distribution & Use	End of life	
*Global warming potential (100 years) Warming of the atmosphere caused by the global release of greenhouse gases.	kg CO2 eq	1.29E+02	3.26E+01	8.11E-01	7.80E+00	1.70E+02
*Acidification Emissions that increase the acidity of the environment due to various chemical reactions and/or biological activity, or by natural circumstances.	kg SO2 eq	3.82E-01	1.93E-01	1.73E-02	1.08E-02	6.04E-01
*Photochemical ozone creation (Smog) Through various chemical reactions, which occur between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in sunlight.	kg O3 eq	5.41E+00	2.98E+00	3.55E-01	1.14E-01	8.86E+00
*Eutrophication Enrichment of an aquatic ecosystem with nutrients (nitrates, phosphates) that accelerate biological productivity and an undesirable accumulation of algal biomass.	kg N eq	9.92E+00	7.14E+00	6.93E-02	4.03E-01	1.75E+01
*Ozone depletion Reduction of the stratospheric ozone layer due to anthropogenic emissions of ozone depleting substances.	kg CFC-11 eq	8.26E-11	4.62E-10	1.43E-15	4.90E-14	5.45E-10
Primary energy demand Energy consumption at the source.	MJ	2.46E+03	8.44E+02	1.07E+01	2.15E+01	3.34E+03
Net freshwater usage Freshwater used and otherwise not recoverable.	kg	6.86E+02	1.50E+02	1.64E-01	1.62E+01	8.53E+02

*Methods: TRACI 2.1

Global warming potential summary.



ADDITIONAL ENVIRONMENTAL INFORMATION

Indoor air: Steelcase seating products are certified with SCS's Indoor Advantage Gold™ program, conforming to the ANSI/BIFMA Furniture Emissions Standard (M7.1/X7.1-2011 R2021) and CDPH/EHLB Standard Method (CA 01350) v1.2-2017 for seating. The certification can be found [here](#).

REFERENCES

Life Cycle Assessment, LCA Report for Steelcase. WAP Sustainability Consulting. August 2023.

NSF Certification Policies for Environmental Product Declarations (EPD). November 1, 2022.

ISO 14025:2006 Environmental Labels and Declarations – Type III Environmental Declarations – Principles and Procedures.

ISO 14040:2006 Environmental Management – Life Cycle Assessment – Principles and Framework, Requirements and Guidelines.

ISO 14044:2006 Environmental Management – Life cycle assessment – Requirements and Guidelines.

ISO 14044: 2006/ Amd 1:2017 Environmental Management – Life cycle assessment – Requirements and Guidelines – Amendment 1.

Product Category Rule for Environmental Product Declarations, BIFMA PCR for Seating: UNCPC 3811 (ext. 2020-111)



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Contact
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