Environmental Product Declaration

Cadence® Desking

Product Description

Cadence offers freestanding desks, credenzas, and storage for unlimited versatility in a private office setting. Its modular flexibility lets you personalize any environment and accommodate a range of needs with a variety of worksurface shapes, multiple worksurface edges, and a complete paint finish and laminate offering. Plus, it's compatible with Concensys®, Allsteel storage solutions, and Extensions™ work tools. Durable, long-lasting, heavy-gauge steel construction and metal-to-metal connection points make installation and reconfiguration reliable and easy.

Functional Unit

The functional unit is 1 m^2 of floorspace, serving the function of providing office workspace for a 10-year period. The desk occupies a total floorspace of 23.3 m^2, with 11.3 m^2 of worksurface, and 0.69 m^3 of storage. The reference flow for the modeling system is one complete desking system and the results are normalized to 1 m^2 of floorspace.

Manufacturer

At Allsteel, we demystify the office planning process by helping our customers align their workplace strategy with their business strategy. With an accessible team and an adaptable portfolio of systems, seating, casegoods, tables, collaborative furniture and architectural walls, we address our customers' needs for today and tomorrow.

Allsteel Inc.
2210 Second Avenue
Muscatine, IA 52761
www.allsteeloffice.com

EPD Program Operator

SCS Global Services
2000 Powell Street, Ste 600
Emeryville, CA 94608
www.scsglobalservices.com

Product Category Rule

BIFMA PCR for Office Furniture Workspace Products: UNCPC 3814, August 5, 2015.

EPD Number and Period of Validity

SCS-EPD-04226
November 1, 2016 to October 31, 2021

Disclaimers

Scope of Results Reported: The PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social performance benchmarks and thresholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean impacts related to greenhouse gas emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions.

Accuracy of Results: Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.

Comparability: 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. This EPD is augmented with information from draft LEO-SCS-002 standard, which is intended to promote comparison between EPDs. 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.

Allsteel®

Product Specifications

Cadence personalizes any work environment, accommodates a range of needs, and offers all the right features – curvilinear worksurface shapes, multiple worksurface edges, and a complete paint finish and laminate offering. Cadence is made to last with heavy-gauge steel construction and metal-reinforced worksurfaces. Metal-to-metal worksurface connection points make installation and reconfiguration reliable and easy.

Cadence is primarily constructed with cold rolled steel and laminated composite wood materials. Cadence desking passes the ANSI/BIFMA X5.5 tests, demonstrating a minimum expected lifetime of 10 years under specified conditions. This EPD is based on an office workspace for one person, consisting of a worksurface, storage, and credenzas in a private office setting. This setup contains 19% Post-Consumer and 27% Pre-Consumer recycled content.

Table 1. The Allsteel Cadence desking product configuration.

Allsteel Cadence Desking Physical Footprints	
Physical Floor Space Area	23.3 m^2
Physical Worksurface Area	11.3 m^2
Storage Volume	0.69 m^3

Materials Composition

Table 2. Material composition of Allsteel Cadence desking system. Results are shown on a mass basis, and as a percent of total.

Material Type	Amount (kg/1 m^2 floorspace)	Amount (kg/unit of benching system)	Amount (%)
Steel	10	228	73%
Particleboard	3.0	71	23%
Laminate	0.18	4.3	1%
Backer	0.13	3.2	1%
Adhesive (PVA)	0.08	1.8	0.55%
Fiberglass	0.055	1.3	0.42%
ABS	0.04	0.9	0.28%
Polyester Fabric	9.0×10^{-3}	0.19	0.06%
Zinc	6.8×10^{-3}	0.16	0.05%
Total	**13**	**311**	**100%**

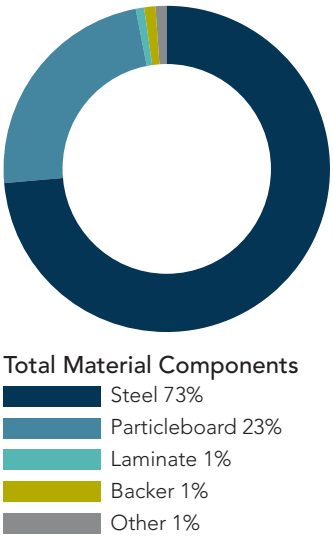


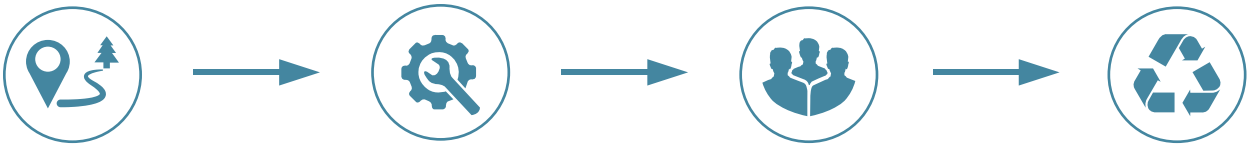
Table 3. Packaging material composition of Allsteel Cadence desking system. Results are shown on a mass basis, and as a percent of total.

Packaging Material	kg	% of Total
Paper/Corrugated Paperboard	15	79%
Polyethylene	0.5	3%
Expanded Polystyrene	3.8	18%
Total Packaging	**19**	**100%**

Life Cycle Assessment Stages

Figure 1 below is a representation of the life cycle of Cadence. The system boundary is cradle-to-grave and includes resource extraction and processing, product manufacture and assembly, distribution/transport, use and maintenance, and end-of-life.

Figure 1. Life cycle diagram for Allsteel Stride benching.



Materials

This stage includes raw materials extraction and transformation, as well as transport of parts and semi-manufactured parts to the production site in Muscatine, Iowa.

Production

Some raw materials are transformed and finished. All manufactured and supplied parts are assembled. Final products are packaged for shipment.

Distribution and Usage

Transport from Muscatine to the final customer. For this study, transportation to major US markets were considered. Use, maintenance, and regular cleaning of the product. Allsteel recommends cleaning with low-impact materials and our products typically require minimal maintenance during their warranted lifetime.

End of Life

Allsteel designs its products to be easily disassembled and recycled. End of life impacts were considered, including transport to waste treatment and recycling facilities. Emissions considered include disposal of product in a landfill or from incineration.

Life Cycle Inventory

The life cycle inventory (LCI) flows for the Allsteel Cadence desking system are shown in Table 4. Table 5 includes equivalency factors that were determined for the purpose of communicating critical environmental impacts in simplified terms for better understanding.

Table 4. Aggregated inventory flows and impacts for Allsteel Cadence desking. Results are shown per 1 m^2 of floorspace, and 1 unit of desking system.

Parameters Prescribed by BIFMA PCR	Units	Total (per 1 m^2 floorspace)	Total (per 1 unit of desking system)
Water Use	kg	0.74	17
Total Primary Energy Demand	MJ	860	20,000
Primary Energy Demand, Renewable	MJ	60	1,400
Primary Energy Demand, Non-renewable	MJ	800	18,600

Table 5. Equivalency Factors for select aggregated inventory results for Allsteel Cadence desking system.

Category Indicator	Life Cycle Inventory results for 1 m^2 of floorspace, maintained for 10-years	Life Cycle Inventory results for 1 desking system, maintained for 10-years	Basis of Equivalency Factor	1 m^2 of floorspace of desk, maintained for 10-years	1 desking system, maintained for 10-years
Net Water Use	0.74 m^3	17 m^3	Number of cycles run in a dishwasher	17	390
Primary Energy Demand	860 MJ	20,000 MJ	Number of days operating a refrigerator	45	1,060
Energy Resource Depletion (LEO-SCS-002)	300 MJ eq	7,000 MJ eq	Number of days of operating a refrigerator	16	369

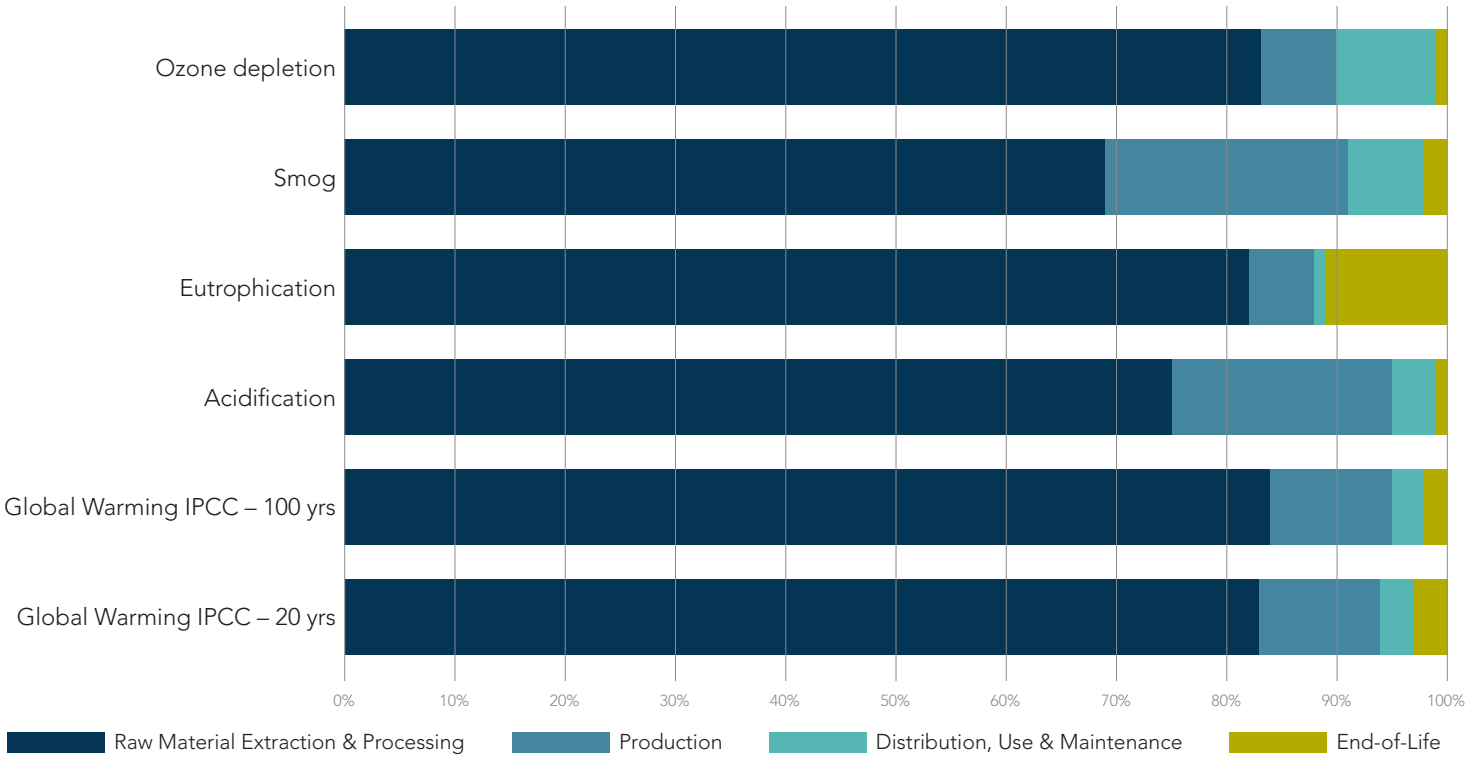
Life Cycle Impact Assessment

Impact category indicators are calculated using the TRACI 2.1 characterization methods, including acidification potential, eutrophication potential, smog potential, ozone depletion potential, and global warming potential based on IPCC 2013, in accordance with the BIFMA PCR. Additionally, the IPCC GWP result for a 20-year time horizon is reported following the BIFMA PCR requirements for IPCC 2013. Note, biogenic carbon uptake and biomass CO_2 emissions are not included.

Table 6. Life cycle impact assessment results for the Allsteel Cadence desking system. Results are shown per 1 m^2 of floorspace. Results for 1 unit of benching system are presented in parenthesis.

Impact Category	Unit	Raw Material Extraction & Processing	Production (Manufacturing & Assembly)	Distribution, Use & Maintenance	End-of-Life	Total
IPCC Global Warming Potential – 20 year	kg CO_2 eq	45 (1048)	6 (140)	1.7 (40)	1.7 (40)	54 (1260)
IPCC Global Warming Potential – 100 year	kg CO_2 eq	39 (910)	4.8 (112)	1.6 (37)	0.81 (19)	46 (1070)
Acidification Potential	kg SO_2 eq	0.16 (3.7)	0.044 (1.0)	0.01 (0.23)	0.002 (0.046)	0.21 (4.9)
Eutrophication Potential	kg N eq	0.19 (4.4)	0.013 (0.3)	0.002 (0.046)	0.025 (0.58)	0.23 (5.3)
Smog Potential	kg O_3 eq	1.9 (44)	0.62 (14)	0.21 (4.9)	0.045 (1.0)	2.8 (65)
Ozone Depletion Potential	kg CFC-11 eq	$3.1x10^{-6}$ ($7.2x10^{-5}$)	$2.5x10^{-7}$ ($5.8x10^{-6}$)	$3.5x10^{-7}$ ($8.2x10^{-6}$)	$4.6x10^{-8}$ ($1.0x10^{-6}$)	$3.7x10^{-6}$ ($8.6x10^{-5}$)

Figure 2. Contribution analysis graph representing % contribution to each impact category indicator by life cycle phase.



Life Cycle Impact Assessment (continued)

Additional life cycle impact results are reported in Table 7 below as optional parameters of concern. These impacts are calculated using the LEO-SCS-002 framework, which augments the specified impact categories and method TRACI 2.1, identified by the NSF PCR.

Table 7. Life cycle impact assessment results for Allsteel Cadence desking according to LEO-SCS-002 draft standard (June 2014).

Impact Category (LEO SCS-002 Parameters)	Unit	Life Cycle Impact Results for 1m² of Floorspace	Life Cycle Impact Results for One Desking System
Global Climate Change	kg CO_2 eq	48	1,100
Arctic Climate Change	kg CO_2 eq	60	1,400
Ocean Acidification	kg H_2CO_3 eq	71	1,650
Energy Resource Depletion	MJ eq	300	700

Results for select impact category indicators are translated to the number of miles driven in a typical passenger vehicle, and are provided to help customers interpret the scale of potential environmental impact attributed to the product.

Table 8. Equivalency factors for select life cycle impact assessment results for Cadence desking system.

Category Indicator	Life Cycle Impact Assessment results for 1 m² of floorspace, maintained for 10-years	Life Cycle Impact Assessment results for 1 desking system, maintained for 10-years	Basis of Equivalency Factor	1 m² of floorspace of desk, maintained for 10-years	1 desking system, maintained for 10-years
Global Warming Potential (IPCC, 20 year time horizon)	54 kg CO_2 eq	1,260 kg CO_2 eq	Number of miles driven in a typical passenger vehicle	130	3,000
Global Climate Change (LEO-SCS-002)	48 kg CO_2 eq	1,100 kg CO_2 eq	Number of miles driven in a typical passenger vehicle	110	3,000

Additional Environmental Information

Allsteel makes it a priority to design product and implement processes that reduce our collective impact on the environment. Allsteel is proud to support sustainable initiatives in the building industry as a member of the U.S. Green Building Council (USGBC).

Cadence desking is level® 2 certified to the ANSI/BIFMA e3 Furniture Sustainability Standard; SCS Indoor Advantage™ Gold certified for indoor air quality; and available with FSC® Certified worksurfaces. Cadence desking has the ability to contribute to several credits in the LEED® green building program and the WELL Building Standard®.

Approved November 1, 2016 | Valid until October 31, 2021	
PCR Review was conducted by	Thomas P. Gloria, PhD, Industrial Ecology Consultants t.gloria@industrial-ecology.com
Independent verification of the declaration and data, according to ISO 14025-2006	☐ Internal ☑ External
Third party verifier	Tom Gloria, PhD, Industrial Ecology Consultants

References

1. SCS Global Services. Life Cycle Assessment of The Allsteel Cadence Desking. October 2015. Final Draft Report. Prepared for Allsteel an HNI Corporation company.
2. ISO 14025: 2006 Environmental labels and declarations – Type III environmental declarations – Principles and Procedures
3. ISO 14040: 2006 Environmental Management – Life cycle assessment – Principles and framework
4. ISO 14044: 2006 Environmental Management – Life cycle assessment – Requirements and Guidelines
5. Product Category Rule (PCR) Environmental Product Declarations (EPD), BIFMA PCR for Office Furniture Workspace Products: UNCPC 3814.
6. SCS Type III Environmental Declaration Program: Program Operator Manual v6.0. August 2015. SCS Global Services
7. Leonardo Academy. Standard for Type III Life-Cycle Impact Profile Declarations for Products, Services and Systems (LEO-SCS-002). http://www.leonardoacademy.org/programs/standards/life-cycle.html
8. BIFMA x5.5. American National Standard for Office Furnishings – Desk Products – Tests. 2014.
9. Intergovernmental Panel on Climate Change (IPCC). IPCC Fourth Assessment Report. http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html
10. Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI). Version 2.1. US Environmental Protection Agency.
11. Ecoinvent Centre (2010) ecoinvent data from v2.2 Swiss Center for Life Cycle Inventories, Dubendorf, 2010, http://www.ecoinvent.org
12. US Life-Cycle Inventory Database. National Renewable Energy Laboratory. http://www.nrel.gov/lci/US
13. Environmental Protection Agency. The Emissions & Generation Resource Integrated Database (eGRID). http://www.epa.gov/cleanenergy/energy-resources/egrid/
14. US Environmental Protection Agency. Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Tables and Figures for 2013. Retrieved on 7/25/2015 from: http://www.epa.gov/wastes/nonhaz/municipal/pubs/2013_advncng_smm_fs.pdf
15. US Environmental Protection Agency. Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI).
16. EPA Greenhouse gas equivalencies calculator (2014); http://www.epa.gov/cleanenergy/energyresources/calculator.html
17. Energy use of refrigerators: https://www.energystar.gov/index.cfm?fuseaction=refrig.calculator
18. Water use in dishwashers: https://www.energystar.gov/index.cfm?c=dishwash.pr_crit_dishwashers
19. NM van der Velden, MK Patel, JG Vogtländer, "LCA benchmarking study on textiles made of cotton, polyester, nylon, acryl, or elastane," The International Journal of Life Cycle Assessment 19(2), 331-356.

Allsteel®

Allsteel Inc.
Muscatine, Iowa 52761-5257
allsteeloffice.com

Allsteel supports green initiatives in the contract furniture industry as a member of the U.S. Green Building Council. Cadence is an SCS Indoor Advantage™ Gold and level® 2 certified product.