



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. Allsteel Cadence desking is certified Indoor Advantage[™] Gold, BIFMA LEVEL[®] 3, and available as FSC[®] Certified.

Functional Unit

The functional unit is 1 m² of floorspace, serving the function of providing office workspace for a 10-year period. The desk occupies a total floorspace of 23.3 m², with 11.3 m² of worksurface, and 0.69 m³ of storage. The reference flow for the modeling system is one complete desking system and the results are normalized to 1 m² 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.

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EPD Program Operator

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Product Category Rule

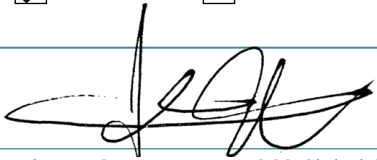
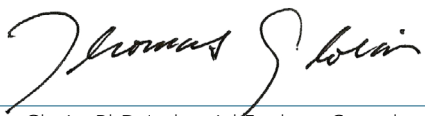
BIFMA PCR for Office Furniture Workspace Products:
UNCPC 3814, August 5, 2015.

EPD Number and Period of Validity

SCS-EPD-04226
November 1, 2016 – October 31, 2021
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Allsteel[®]

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LCA Practitioner:	Aditi Suresh
LCA Software:	SimaPro 8.0
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	<input checked="" type="checkbox"/> Internal <input type="checkbox"/> External
LCA Reviewer:	 Jeremie Hakian, LCA Practitioner, SCS Global Services
Product Category Rule:	BIFMA PCR for Office Furniture Workspace Products: UNCPC 3814, August 5, 2015.
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EPD Verifier:	 Tom Gloria, PhD, Industrial Ecology Consultants
Declaration Contents:	Product and Company Information.....1 Product Specifications.....3 Material Composition.....3 Life Cycle Assessment Stages.....4 Life Cycle Inventory.....4 Life Cycle Impact Assessment.....5 Additional Environmental Information.....6 References.....7

Disclaimers: This EPD conforms to ISO 14025, 14040, and 14044.

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. 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.

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.

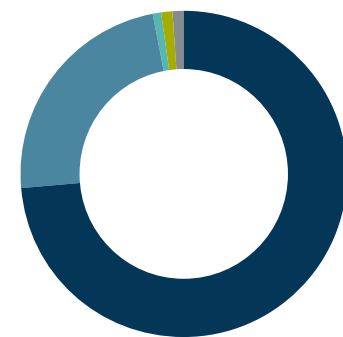
Table 1. The Allsteel Cadence desking product configuration.

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 x 10 ⁻³	0.19	0.06%
Zinc	6.8 x 10 ⁻³	0.16	0.05%
Total	13	311	100%



Total Material Components

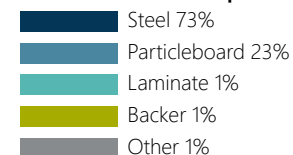


Table 3. Packaging material composition of Allsteel Cadence desking system. Results are shown on a mass basis, and as a percent of total.

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.



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 m² 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	740	17,000
Total Primary Energy Demand	MJ	860	20,000
Primary Energy Demand, Renewable	MJ	60	1,400
Primary Energy Demand, Non-renewable	MJ	800	19,000

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	740 kg	17,000 kg	Number of cycles run in a dishwasher ¹	17	390
Primary Energy Demand	860 MJ	20,000 MJ	Number of days operating a refrigerator ²	45	1,100
Energy Resource Depletion (LEO-SCS-002)	300 MJ eq	7,000 MJ eq	Number of days of operating a refrigerator ²	16	370

¹The net water use estimate is based on Energy Star-rated dishwashers and also considers the upstream water required to generate electricity to run the dishwasher. https://www.energystar.gov/index.cfm?c=dishwash.pr_crit_dishwashers

²The equivalency factors for primary energy demand and energy resource depletion estimate is based on the energy consumption for Energy Star refrigerators, using a US average electricity supply mix, and also considers the upstream energy demand for electricity generation in US. <https://www.energystar.gov/index.cfm?fuseaction=refrig.calculator>

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 CO₂ emissions are not included.

Table 6. Life cycle impact assessment results for the Allsteel Cadence desk system. Results are shown per 1 m² of floorspace. Results for 1 unit of benching system are presented in parenthesis.







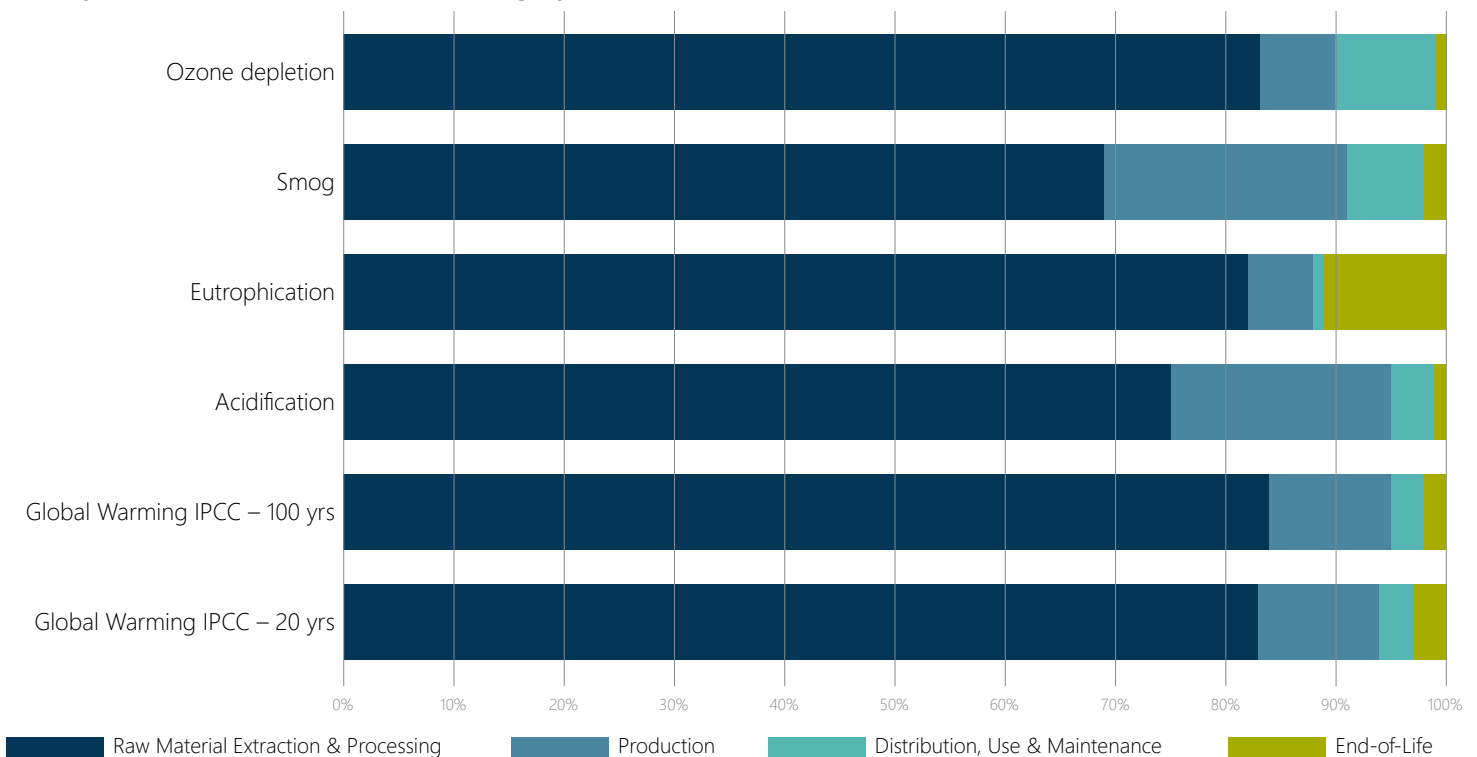
Impact Category	Unit	Raw Material Extraction & Processing	Production (Manufacturing & Assembly)	Distribution, Use & Maintenance	End-of-Life	Total
 IPCC Global Warming Potential – 20 year	kg CO ₂ eq	45 (1000)	6 (140)	1.7 (40)	1.7 (40)	54 (1300)
 IPCC Global Warming Potential – 100 year	kg CO ₂ eq	39 (910)	4.8 (110)	1.6 (37)	0.81 (19)	46 (1100)
 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 Impacts of Cadence Desk System



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 1m ² 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 ₂ CO ₃ eq	71	1,700
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 m ² of floorspace, maintained for 10-years	Life Cycle Impact Assessment 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
Global Warming Potential (IPCC, 20 year time horizon)	54 kg CO ₂ eq	1,300 kg CO ₂ eq	Number of miles driven in a typical passenger vehicle ³	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 ³	110	3,000

³Average vehicle miles traveled are estimated using average US fuel economies for passenger vehicles and light trucks and the amount of carbon dioxide emitted per gallon of motor gasoline burned. <https://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references>

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[®] 3 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[®].

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Allsteel supports green initiatives in the contract furniture industry as a member of the U.S. Green Building Council. Terrace is an SCS Indoor Advantage™ Gold and LEVEL® 3 certified product.

