



Environmental Product Declaration

Abound® Open Plan Workstation

Product Description

Abound systems furniture offers flexible space-planning solutions for a variety of design applications and work environments. Abound offers aesthetic differentiation and increased design flexibility – from open, light-scale, collaborative workspaces with lower panel heights to more private spaces with higher panels. Abound is certified SCS Indoor Advantage™ and BIFMA LEVEL® 3 certified.

Functional Unit

The functional unit is 1 m² of floorspace, serving the function of providing office workspace for a 10-year period. The Abound open plan workstation includes panels, a height-adjustable worksurface and base, and a metal storage credenza. The reference flow for the modeling system is a configuration of six complete workstations, with panel walls, height-adjustable worksurface and base, and a metal storage credenza, and the results are normalized to 1 m² of floorspace. The configuration of six workstations occupies a total floorspace of 3.35m², with 0.93m² of worksurface and 0.39m³ of storage.

About HON

We're inspired by the way you work — and the ways that's changing.

The technology you use. The chair you sit in. And the spaces you choose to get it all done. Because the way you work inspires our work. We're dedicated to design and devoted to budget. We believe that well designed office furniture not only looks great, but makes you and your workers feel great, too. That's why everything we build is designed with purpose and motivated by change. Our products are simple, affordable and do exactly what they're meant to — day in and day out — to help you work smarter, work better and work your way.

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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-06065
April 10, 2020 - April 9, 2025

HON.

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Address:	200 Oak Street, Muscatine, IA 52761
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Declaration Validity Period:	EPD Valid - April 10, 2020 - April 9, 2025
Program Operator:	SCS Global Services
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LCA Practitioner:	Aditi Suresh
LCA Software:	OpenLCA v1.9
Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
LCA Reviewer:	 <hr/> Tom Gloria, PhD, Industrial Ecology Consultants
Product Category Rule:	BIFMA PCR for Office Furniture Workspace Products: UNCPC 3814
PCR Review conducted by:	Thomas P. Gloria, Ph.D. (Chair), Industrial Ecology Consultants
Independent verification of the declaration and data, according to ISO 14025 and the PCR	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
EPD Verifier:	 <hr/> Tom Gloria, PhD, Industrial Ecology Consultants
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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

The Abound frame-and-tile solution offers both flexibility and refined design details. With Abound, spaces can be as active as the people who use them. Worksurfaces of varying heights give people the freedom to adjust their work position. Soft seating integrated within primary work areas encourages collaboration. Add flexible storage options to tailor to individual needs. From the clean aesthetic of benching, to open collaborative spaces, to individual workstations, Abound provides unique designs that make a strong visual statement.

Abound is primarily constructed with steel, extruded aluminum, laminated particleboard worksurfaces, fabric-covered fiberglass tiles, and steel storage. Abound passes the ANSI/BIFMA X5.6 tests, demonstrating a minimum expected lifetime of 10 years under specified conditions. This EPD is based on an Open-Plan workstation configuration for six people and features height-adjustable worksurfaces and steel storage.

Tables 1 and 2. The HON Abound open plan workstation product configuration and recycled content.

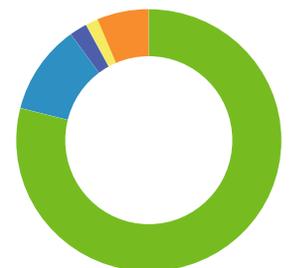
HON Abound Physical Footprints		HON Abound Recycled Content	
Physical Floor Space Area	3.35 m ²	Post-Consumer	17%
Physical Worksurface Area	0.93 m ²	Pre-Consumer	18%
Storage Volume	0.39 m ³		

Materials Composition

Table 3. Material composition of HON Abound open plan workstation. Results are shown on a mass basis, and as a percent of total.

Material Type	Amount (lb / six workstations)	Amount (lb / Functional Unit ¹)	Amount (%)
Steel	1,861	555	79%
Particleboard	264	79	11%
Fiberglass	49	15	2.1%
Polyester fabric	38	11	1.6%
Aluminum	35	11	1.6%
Plastic - generic	35	10	1.4%
ABS	32	10	1.4%
Zamak	28	8.4	1.2%
Electrical Components	15	4.5	0.64%
High Pressure Laminate (HPL)	13	3.8	0.54%
Adhesive (EVA; PVA, Polyolefin, Water based)	9.9	3.0	0.42%
Backer	8.0	2.4	0.34%
Hardware	4.8	1.4	0.20%
Nylon 6,6	0.3	0.07	0.010%
Total	2,371	707	100%

¹The Functional Unit is defined as 1 m² of floorspace over a ten-year period.



Total Material Components

- Steel 79%
- Particleboard 11%
- Fiberglass 2.1%
- Aluminum 1.6%
- Other 6.3%

Table 4. Packaging material composition of HON Abound open plan workstation. Results are shown on a mass basis, and as a percent of total.

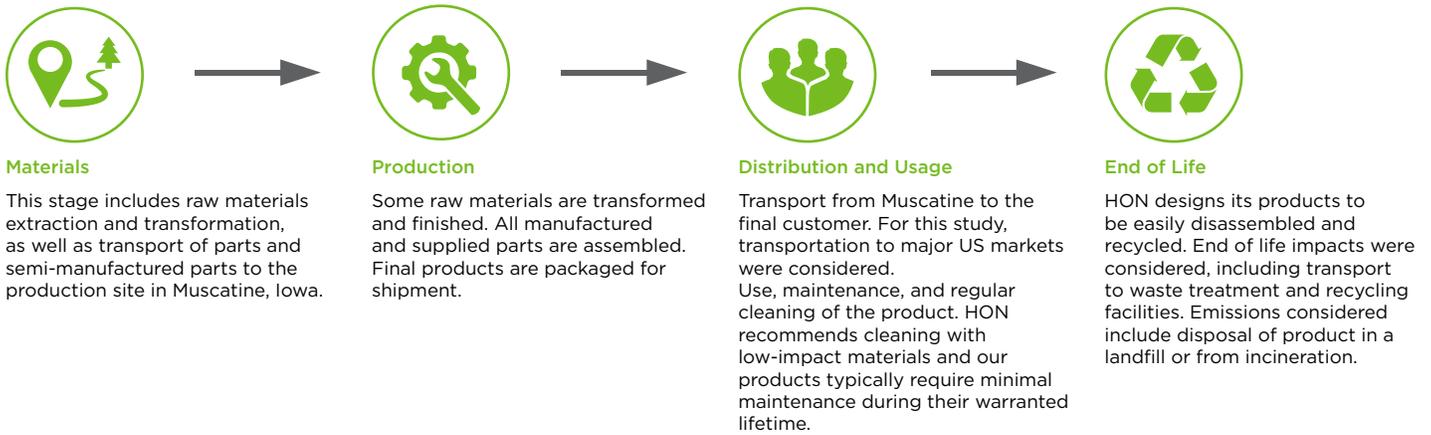
Packaging Material	Amount (lb / six workstations)	Amount (lb / Functional Unit ¹)	Amount (%)
Paper/Corrugated Paperboard	202	60	70%
Wood Pallets	57	17	20%
Polyethylene film	21	6.4	7.4%
Expanded Polystyrene	4.5	1.3	1.6%
Adhesive	0.31	0.09	0.1%
Total Packaging	289	86	100%

¹The Functional Unit is defined as 1 m² of floorspace over a ten-year period.

Life Cycle Assessment Stages

Figure 1 below is a representation of the life cycle of Abound. 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 HON Abound open plan workstation.



Life Cycle Inventory

The life cycle inventory (LCI) flows for the HON Abound open plan workstation are shown in Table 5. Table 6 includes equivalency factors that were determined for the purpose of communicating critical environmental impacts in simplified terms for better understanding.

Table 5. Aggregated inventory flows and impacts for HON Abound open plan workstation. Results are shown per six workstations and 1 m² of floorspace.

Parameters Prescribed by BIFMA PCR	Units	Total (per 1 m ² floorspace)	Total (per six workstations)
Water Use	m ³	30	99
Total Primary Energy Demand	MJ	20,700	69,000
Primary Energy Demand, Renewable	MJ	2,500	8,300
Primary Energy Demand, Non-renewable	MJ	18,200	60,900

Table 6. Translation of LCA results to familiar activities for select aggregated inventory results for HON Abound open plan workstation.

Category Indicator	Life Cycle Inventory results for 1 m ² of floorspace, maintained for 10-years	Life Cycle Inventory results for six workstations, maintained for 10-years	Basis of Equivalency Factor	1 m ² of floorspace, maintained for 10-years	Six workstations, maintained for 10-years
Net Water Use	30 m ³	99 m ³	Number of cycles run in a dishwasher [1]	670	2,200
Primary Energy Demand	20,700 MJ	69,000 MJ	Number of days operating a refrigerator [2]	1,100	3,700
Energy Resource Depletion (SCS-002)	7,700 MJ eq	26,000 MJ eq	Number of days of operating a refrigerator [2]	410	1,400

[1] The 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

[2] The primary energy demand 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

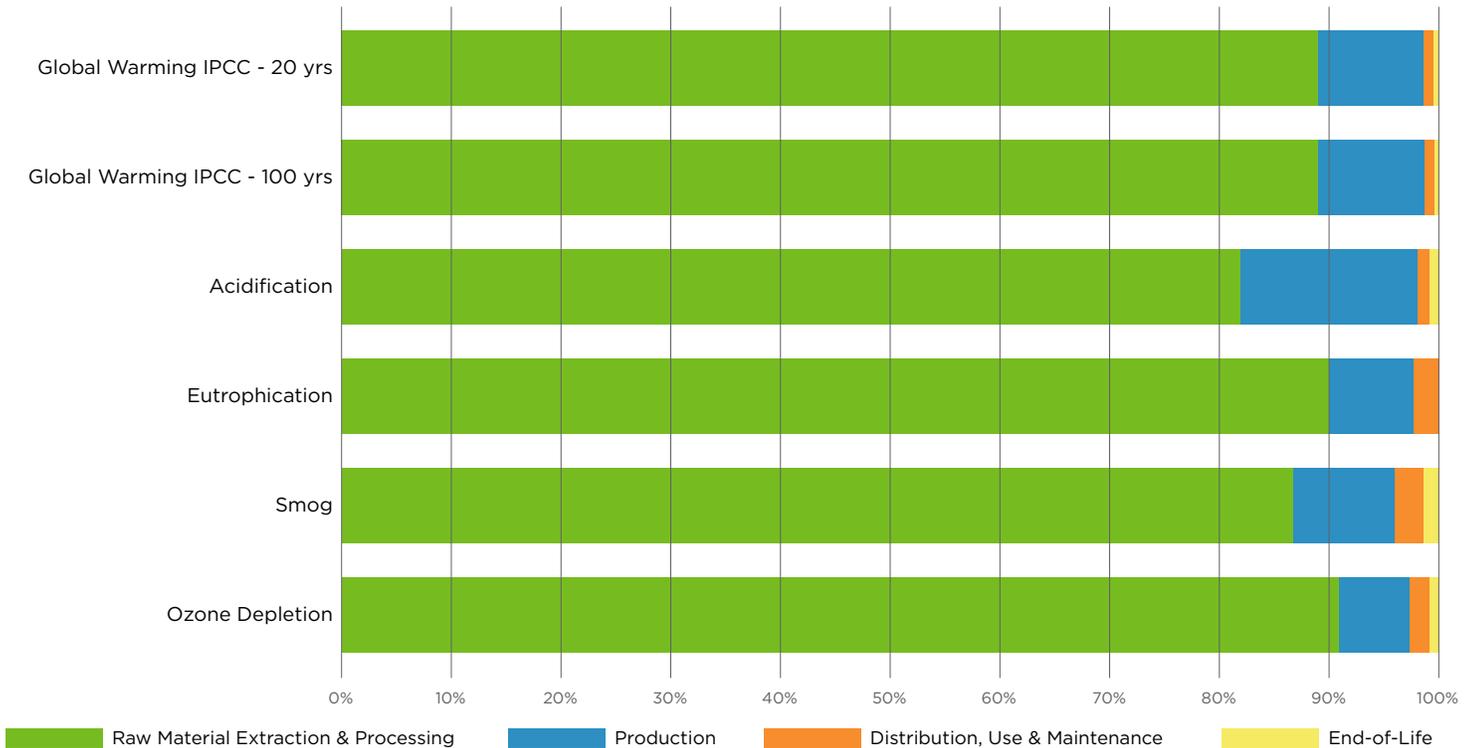
Impact category indicators are calculated using the TRACI 2.1 characterization methods, including acidification potential, eutrophication potential, smog potential, ozone depletion potential, and global warming potential based on IPCC 2013, in accordance with the BIFMA PCR. Additionally, the IPCC GWP 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 7. Life cycle impact assessment results for the HON Abound open plan workstation. Results are shown per 1 m² of floorspace for a ten-year period. Results for six workstations 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	1,900 (6,500)	200 (670)	24 (81)	22 (73)	2,200 (7,300)
 IPCC Global Warming Potential - 100 year	kg CO ₂ eq	1,600 (5,470)	160 (600)	32 (78)	17 (50)	1,800 (6,200)
 Acidification Potential	kg SO ₂ eq	8.5 (28)	1.7 (5.6)	0.10 (0.35)	0.04 (0.14)	10 (34)
 Eutrophication Potential	kg N eq	11 (38)	1.0 (3.4)	0.3 (1.0)	2.6x10 ⁻² (0.087)	13 (43)
 Smog Potential	kg O ₃ eq	99 (330)	6.0 (20)	2.5 (8.0)	0.82 (3.1)	110 (370)
 Ozone Depletion Potential	kg CFC-11 eq	1.3x10 ⁻⁴ (4.5x10 ⁻⁴)	1.2x10 ⁻⁵ (3.9x10 ⁻⁵)	5.9x10 ⁻⁶ (2.0x10 ⁻⁵)	1.3x10 ⁻⁶ (4.4x10 ⁻⁶)	1.5x10 ⁻⁴ (5.1x10 ⁻⁴)

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

Life Cycle Impacts of Abound Open Plan Workstation



Life Cycle Impact Assessment (continued)

Additional life cycle impact results are reported in Table 8 below as optional parameters of concern. These impacts are calculated using the SCS-002 framework, which augments the specified impact categories and method TRACI 2.1, identified by the BIFMA PCR.

Table 8. Life cycle impact assessment results for HON Abound open plan workstation according to SCS-002 draft standard.

Impact Category (SCS-002 Parameters)	Unit	Life Cycle Impact results for 1m ² of floorspace	Life Cycle Impact results for six workstations
Global Climate Change	(kg CO ₂ eq)	1,400	4,700
Ocean Acidification	(kg H ₂ CO ₃ eq)	2,400	8,000
Energy Resource Depletion	(MJ eq)	7,700	26,000

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 9. Equivalency factors for select life cycle impact assessment results for HON Abound open plan workstation.

Category Indicator	Life Cycle Impact Assessment results for 1 m ² of floorspace maintained for 10-years	Life Cycle Impact Assessment results for six workstations, maintained for 10-years	Basis of Equivalency Factor	1 m ² of floorspace, maintained for 10-years	Six workstations, maintained for 10-years
Global Warming Potential (IPCC, 20 year time horizon)	2,000 kg CO ₂ eq	7,300 kg CO ₂ eq	Number of miles driven in a typical passenger vehicle [3]	5,300	17,500
Global Climate Change (SCS-002)	1,400 kg CO ₂ eq	4,700 kg CO ₂ eq	Number of miles driven in a typical passenger vehicle [3]	3,100	10,500

Additional Environmental Information

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

Abound is LEVEL® 3 certified to the ANSI/BIFMA e3 Furniture Sustainability Standard and SCS Indoor Advantage™ Gold certified for indoor air quality. Abound has the ability to contribute to several credits in the LEED® green building program and the WELL Building Standard®.

[3] Average 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-equiv-alenciescalculator-calculations-and-references>

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