



## Environmental Product Declaration Involve® Front Access Tower

### Product Description

Allsteel Involve's modular design brings everything together to accommodate all the different ways work gets done, from private office to open plan and beyond. It incorporates soft seating in the primary workspace to encourage spontaneous interaction, laminate storage options that support active work, and screens that define space and create separation. Allsteel Involve is certified Indoor Advantage™ Gold, BIFMA LEVEL® 3, *Cradle to Cradle Certified™* Bronze, and available as FSC® Certified.

### Functional Unit

The primary function of Allsteel Involve's Front Access Tower is to store office-based materials and supplies in an office setting. As a general storage device, the functional unit is 0.25m<sup>3</sup> of storage capacity, serving the function of storage for a 10-year period. The front access tower provides a total storage capacity of 0.30m<sup>3</sup>. The reference flow for the modeling system is one complete storage unit and the results are normalized to 0.25m<sup>3</sup> of storage capacity.

### 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](http://www.allsteeloffice.com)

### EPD Program Operator

SCS Global Services  
2000 Powell Street, Ste 600  
Emeryville, CA 94608  
[www.scsglobalservices.com](http://www.scsglobalservices.com)



### Product Category Rule

BIFMA PCR for Storage: UNCPC 3812  
June 30, 2021

### EPD Number and Period of Validity

SCS-EPD-06347  
September 4, 2020 through September 3, 2025

Allsteel®

<b>Declaration Owner:</b>	Allsteel
<b>Address:</b>	2210 Second Avenue, Muscatine, Iowa 52761
<b>Declaration Number:</b>	SCS-EPD-06347
<b>Declaration Validity Period:</b>	September 4, 2020 through September 3, 2025
<b>Program Operator:</b>	SCS Global Services
<b>Declaration URL Link:</b>	<a href="https://www.scsglobalservices.com/certified-green-products-guide">https://www.scsglobalservices.com/certified-green-products-guide</a>
<b>LCA Practitioner:</b>	Lila Taheraly and Aditi Suresh
<b>LCA Software:</b>	openLCA v1.9
<b>Independent critical review of the LCA and data, according to ISO 14044</b>	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
<b>LCA Reviewer:</b>	 _____ Tom Gloria, PhD, Industrial Ecology Consultants
<b>Independent verification of the declaration and data, according to ISO 14025 and the PCR</b>	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External
<b>Product Category Rule:</b>	BIFMA PCR for Storage: UNCPC 3812
<b>PCR Review conducted by:</b>	Thomas P. Gloria, Ph.D. (Chair), Industrial Ecology Consultants
<b>EPD Verifier:</b>	 _____ Tom Gloria, PhD, Industrial Ecology Consultants
<b>Declaration Contents:</b>	Product and Company Information.....1 Product Specifications.....3 Material Composition.....3 Life Cycle Assessment Stages.....4 Life Cycle Inventory.....4 Life Cycle Impact Assessment.....6 Additional Environmental Information.....7 References.....8
<p><b>Disclaimers:</b> This EPD conforms to ISO 14025, 14040 and 14044.</p> <p><b>Scope of Results Reported:</b> 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.</p> <p><b>Accuracy of Results:</b> Due to PCR constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of accuracy.</p> <p><b>Comparability:</b> 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.</p>	

## Product Specifications

Involve's modular design is intended to accommodate all the different ways work gets done, from private office to open plan and beyond. It incorporates laminate storage options that support active work and screens that define space and create separation.

The Allsteel Involve Front Access Tower, assembled at the Progress Park facility in Muscatine, Iowa, is primarily constructed using particleboard, high pressure laminate, zinc alloys, steel, high-density fiberboard, various plastics, and adhesives. The Allsteel Involve Front Access Tower passes the ANSI/BIFMA X5.9 test, demonstrating a minimum expected lifetime of 10 years under specified conditions. This unit contains 6% post-consumer and 52% pre-consumer recycled content.

Table 1. The Allsteel Involve Front Access Tower product information.

Product Dimensions (W x D x H)	Storage Volume (m <sup>3</sup> )	Number of Storage Units to Fulfill the Functional Unit
24" x 24" x 50"	0.30	0.85

## Material Composition

Table 2. Material composition of the Involve Front Access Tower. Results are shown on a mass basis and as a percent of total.

Material Classification	(kg/unit)	(kg/ Functional Unit <sup>1</sup> )	Percent of Total
Particleboard	84	71	74%
High-Pressure Laminate (HPL)	11	9.2	10%
Zinc	9.2	7.8	8.2%
Steel	5.2	4.4	4.6%
High-Density Fiberboard (HDF)	1.3	1.1	1.2%
Plastic	1.1	0.97	1.0%
Adhesive	1.1	0.90	0.9%
Wood	0.16	0.14	0.1%
<b>Total</b>	<b>113</b>	<b>96</b>	<b>100%</b>

<sup>1</sup>The Functional Unit is defined as 0.25m<sup>3</sup> of storage capacity for a ten-year period.

Table 3. Packaging material composition of Involve Front Access Tower. Results are shown on a mass basis, and as a percent of total.

Packaging Material	(kg/unit)	(kg/ Functional Unit <sup>1</sup> )	Percent of Total
Paper/Corrugated paperboard	1.8	1.5	59%
Polyethylene Film	1.0	0.88	35%
Adhesive	0.16	0.14	6%
<b>Total Packaging</b>	<b>3.0</b>	<b>2.5</b>	<b>100%</b>

<sup>1</sup>The Functional Unit is defined as 0.25m<sup>3</sup> of storage capacity for a ten-year period.

## Life Cycle Assessment Stages

Figure 1 below is a representation of the life cycle of the Involve Front Access Tower. 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 Involve Front Access Tower.



## Life Cycle Inventory

The life cycle inventory (LCI) flows by life cycle stage of the Involve Front Access Tower are shown in Tables 4-8.

Table 4. Average air emissions by life cycle stage for the the Involve Front Access Tower. Results are shown in kg per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Sulfur Dioxide (SO <sub>2</sub> )	kg	<b>0.44</b>	0.39	4.3 x 10 <sup>-2</sup>	8.4 x 10 <sup>-3</sup>	2.1 x 10 <sup>-3</sup>
Nitrogen Oxides (NO <sub>x</sub> )	kg	<b>0.39</b>	0.32	3.0 x 10 <sup>-2</sup>	2.6 x 10 <sup>-2</sup>	7.2 x 10 <sup>-3</sup>
Carbon Dioxide, fossil (CO <sub>2</sub> )	kg	<b>120</b>	94	18	5.7	1.7
Carbon Dioxide, biogenic (CO <sub>2</sub> )	kg	<b>40</b>	21	2.4	2.8 x 10 <sup>-2</sup>	17
Methane (CH <sub>4</sub> )	kg	<b>0.46</b>	0.25	0.10	4.2 x 10 <sup>-3</sup>	0.11
Nitrous Oxide (N <sub>2</sub> O)	kg	<b>8.4 x 10<sup>-3</sup></b>	7.4 x 10 <sup>-3</sup>	6.0 x 10 <sup>-4</sup>	1.3 x 10 <sup>-4</sup>	2.0 x 10 <sup>-4</sup>
Carbon Monoxide (CO)	kg	<b>0.44</b>	0.40	1.4 x 10 <sup>-2</sup>	1.2 x 10 <sup>-2</sup>	4.8 x 10 <sup>-3</sup>

Table 5. Water emissions by life cycle stage for the Involve Front Access Tower. Results are shown in kg per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Phosphates	kg	<b>0.29</b>	0.22	6.3 x 10 <sup>-3</sup>	1.4 x 10 <sup>-3</sup>	7.6 x 10 <sup>-4</sup>
Nitrates	kg	<b>9.5 x 10<sup>-2</sup></b>	5.6 x 10 <sup>-2</sup>	3.2 x 10 <sup>-2</sup>	5.4 x 10 <sup>-4</sup>	6.1 x 10 <sup>-3</sup>
Dioxin	kg	-	-	-	-	-
Arsenic	kg	<b>2.0 x 10<sup>-3</sup></b>	1.9 x 10 <sup>-3</sup>	9.3 x 10 <sup>-5</sup>	5.1 x 10 <sup>-6</sup>	2.8 x 10 <sup>-5</sup>
Lead	kg	<b>1.2 x 10<sup>-2</sup></b>	6.0 x 10 <sup>-3</sup>	4.0 x 10 <sup>-3</sup>	4.3 x 10 <sup>-5</sup>	2.0 x 10 <sup>-3</sup>
Mercury	kg	<b>3.5 x 10<sup>-5</sup></b>	9.9 x 10 <sup>-6</sup>	1.1 x 10 <sup>-5</sup>	1.1 x 10 <sup>-7</sup>	1.5 x 10 <sup>-5</sup>
Cadmium	kg	<b>2.7 x 10<sup>-6</sup></b>	2.5 x 10 <sup>-6</sup>	1.8 x 10 <sup>-7</sup>	6.0 x 10 <sup>-8</sup>	2.5 x 10 <sup>-8</sup>
Chromium	kg	<b>2.5 x 10<sup>-3</sup></b>	2.0 x 10 <sup>-3</sup>	4.9 x 10 <sup>-4</sup>	2.2 x 10 <sup>-5</sup>	1.4 x 10 <sup>-5</sup>

## Life Cycle Inventory (continued)

Table 6. Average water usage by life cycle stage for the Involve Front Access Tower. Results are shown in kg per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Water Consumption	kg	3,200	2,500	720	17	6.0

Table 7. Average energy usage by life cycle stage for the Involve Front Access Tower. Results are shown in MJ per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Primary Energy Demand	MJ	2,600	2,200	290	90	18
Fossil Fuels	MJ	1,300	1,000	220	88	17
Nuclear	MJ	350	310	43	1	1
Renewable Energy	MJ	890	855	32	0.97	0.34
Miscellaneous Fuels	MJ	2.3	2.3	0.02	0.01	1.5 x 10 <sup>-4</sup>

Table 8. Average waste type by life cycle stage for the Involve Front Access Tower. Results are shown in kg per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Incineration w/ Energy Recovery	kg	14	INA	1.3	INA	13
Incineration w/o Energy Recovery	kg	0	INA	0	INA	0
Recycling	kg	19	INA	1.2	INA	18
Hazardous	kg	2.5 x 10 <sup>-2</sup>	2.5 x 10 <sup>-2</sup>	5.4 x 10 <sup>-4</sup>	5.5 x 10 <sup>-5</sup>	1.8 x 10 <sup>-5</sup>
Non-Hazardous (Landfill)	kg	94	29	7.3	8	49

Table 9. Translation of LCA results to familiar activities for select aggregated inventory results for Involve Front Access Tower.

Category Indicator	Life Cycle Impact Assessment for 0.25 m <sup>3</sup> of storage volume, maintained for 10-years	Life Cycle Impact Assessment for 1 storage unit, maintained for 10-years	Basis of Calculation	0.25 m <sup>3</sup> of storage volume, maintained for 10-years	1 storage unit, maintained for 10-years
Net Water Consumption	3.2 m <sup>3</sup>	3.8 m <sup>3</sup>	Number of cycles run in a dishwasher <sup>1</sup>	73	85
Primary Energy Demand	2,600 MJ	3,000 MJ	Number of days operating a refrigerator <sup>2</sup>	137	161
Energy Resource Depletion (SCS-002)	800 MJ eq	950 MJ eq	Number of days operating a refrigerator <sup>2</sup>	42	50






<sup>1</sup>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](https://www.energystar.gov/index.cfm?c=dishwash.pr_crit_dishwashers)

<sup>2</sup>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 2.0 characterization methods, including acidification potential, eutrophication potential, photochemical ozone creation potential, ozone depletion potential, and global warming potential 100-year time horizon based on IPCC 2013.

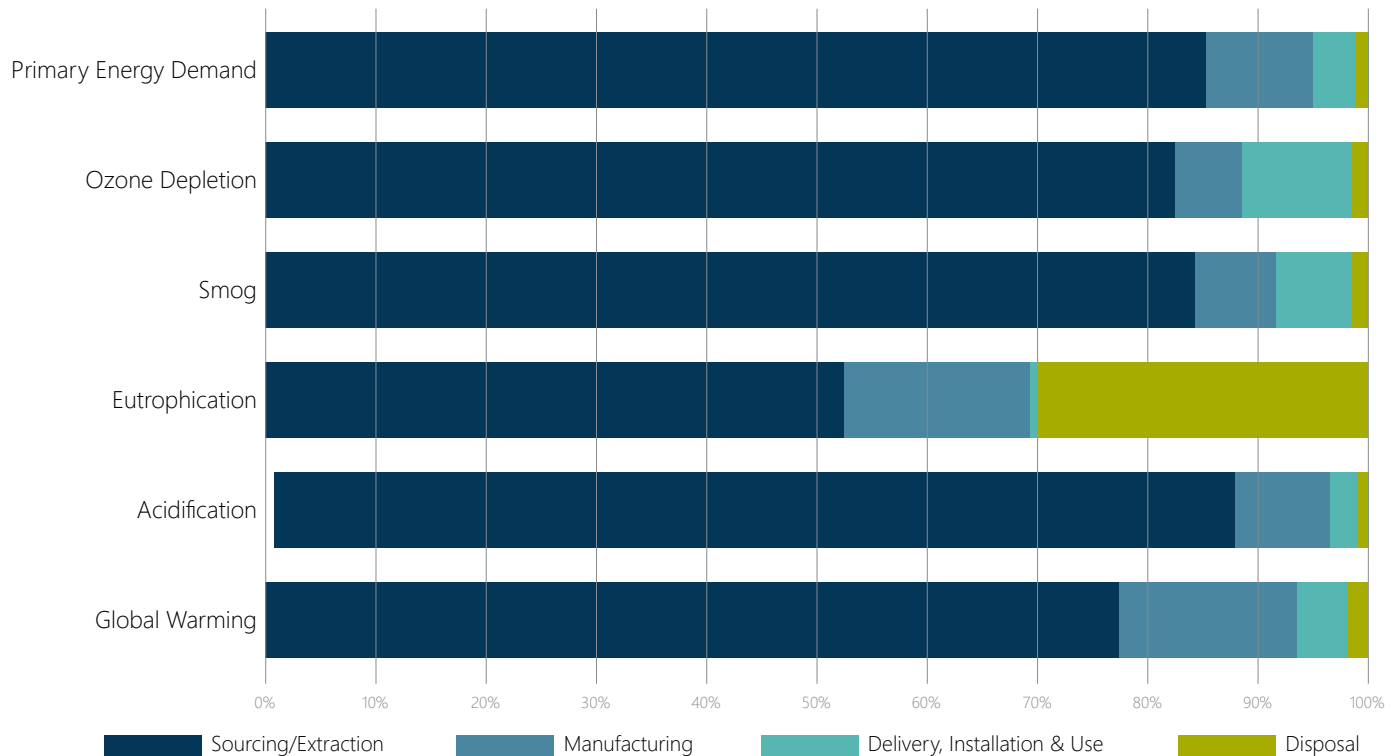
Table 10. Average life cycle impact assessment results for Involve Front Access Tower. Results are shown per functional unit (0.25 m<sup>3</sup> storage capacity). Results for 1 storage unit are shown in parenthesis.

	Impact Category	Unit	Total	Material Acquisition	Production	Distribution, Installation & Use	Disposal
	Global Warming Potential	kg CO <sub>2</sub> eq	<b>140</b> (164)	107 (126)	22 (26)	5.9 (7.0)	4.8 (5.7)
	Acidification Potential	mol H <sup>+</sup> eq	<b>42</b> (49)	36 (43)	3.8 (4.4)	1.5 (1.7)	0.41 (0.48)
	Eutrophication Potential	kg N eq	<b>1.1</b> (1.4)	0.60 (0.71)	0.20 (0.24)	6.7 x 10 <sup>-3</sup> (7.9 x 10 <sup>-3</sup> )	0.34 (0.40)
	Photochemical Ozone Creation Potential	kg O <sub>3</sub> eq	<b>10</b> (12)	8.4 (9.8)	0.78 (0.92)	0.64 (0.76)	0.18 (0.21)
	Ozone Depletion Potential	kg CFC-11 eq	<b>1.6 x 10<sup>-5</sup></b> (1.9 x 10 <sup>-5</sup> )	1.3 x 10 <sup>-5</sup> (1.5 x 10 <sup>-5</sup> )	1.1 x 10 <sup>-6</sup> (1.2 x 10 <sup>-6</sup> )	1.5 x 10 <sup>-6</sup> (1.8 x 10 <sup>-6</sup> )	2.7 x 10 <sup>-7</sup> (3.2 x 10 <sup>-7</sup> )

On assessing the percentage contribution by life cycle phase, it is evident that the raw material extraction and processing phase is the most dominant phase with significant environmental impacts across all the category indicators. The end-of-life phase also contributes measurably to the eutrophication potential indicator.

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

### Life Cycle Impacts of Involve Front Access Tower



## Life Cycle Impact Assessment (continued)

Additional life cycle impact results are reported in Table 11 below as optional parameters of concern. These impacts are calculated using the SCS-002 framework, which complements the ISO 14044 standard for LCA with additional guidance on conducting a more comprehensive impact assessment.

Table 11. Life cycle impact assessment results for the Involve Front Access Tower, according to SCS-002 standard.

Impact Category (SCS-002 Parameters)	Unit	Life Cycle Impact Results for 0.25m <sup>3</sup> of Storage Capacity	Life Cycle Impact Results for 1 Storage Unit
Global Climate Change	kg CO <sub>2</sub> eq	162	191
Ocean Acidification	kg H <sub>2</sub> CO <sub>3</sub> eq	57	67
Energy Resource Depletion	MJ eq	800	950

Select impact category indicators are equated on the basis of the number of miles driven in a typical passenger vehicle, or number of days of refrigerator operation, to help consumers make more informed choices regarding purchase of commercial furniture.

Table 12. Translation of LCA results to familiar activities for select aggregated inventory results for the Involve Front Access Tower.

Category Indicator	Life Cycle Impact Assessment results for 0.25 m <sup>3</sup> of storage volume, maintained for 10-years	Life Cycle Impact Assessment results for 1 unit of storage, maintained for 10-years	Basis of Calculation	0.25 m <sup>3</sup> of storage, maintained for 10-years	1 storage unit, maintained for 10-years
Global Warming Potential (IPCC, 100 year time horizon)	140 kg CO <sub>2</sub> eq	164 kg CO <sub>2</sub> eq	Number of miles driven in a typical passenger vehicle <sup>3</sup>	335	395
Global Climate Change (SCS-002)	162 kg CO <sub>2</sub> eq	191 kg CO <sub>2</sub> eq	Number of miles driven in a typical passenger vehicle <sup>3</sup>	363	427

<sup>3</sup>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-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).

Involve storage is LEVEL<sup>®</sup> 3 certified to the ANSI/BIFMA e3 Furniture Sustainability Standard, SCS Indoor Advantage Indoor Advantage<sup>™</sup> Gold certified for indoor air quality, *Cradle to Cradle Certified<sup>™</sup>* Bronze, and available as FSC<sup>®</sup> Certified. Involve has the ability to contribute to several credits in the LEED<sup>®</sup> green building program and the WELL Building Standard<sup>®</sup>.

## References

1. SCS Global Services. Life Cycle Assessment of HNI Laminate storage. August 2020. 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 Storage: UNCPC 3812.
6. SCS Type III Environmental Declaration Program: Program Operator Manual v10. April 2019. SCS Global Services
7. BIFMA x5.9. American National Standard for Office Furnishings – Storage Units – Tests.
8. Intergovernmental Panel on Climate Change (IPCC). IPCC Fourth Assessment Report. [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/ch2s2-10-2.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html)
9. Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI). Version 2.0. US Environmental Protection Agency.
10. Ecoinvent Centre (2018) ecoinvent data from v3.5 Swiss Center for Life Cycle Inventories, Dubendorf, 2018, <http://www.ecoinvent.org>
11. US Life-Cycle Inventory Database. National Renewable Energy Laboratory. <https://www.nrel.gov/lci/>
12. Environmental Protection Agency. The Emissions & Generation Resource Integrated Database (eGRID). <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid>
13. US Environmental Protection Agency. Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Tables and Figures for 2015. Retrieved on 9/02/2019 from: <https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling/advancing-sustainable-materials-management>
14. US Environmental Protection Agency. Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI).
15. EPA Greenhouse gas equivalencies calculator (2014); <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>
16. Energy use of refrigerators: <https://www.energystar.gov/index.cfm?fuseaction=refrig.calculator>
17. Water use in dishwashers: [https://www.energystar.gov/index.cfm?c=dishwash.pr\\_crit\\_dishwashers](https://www.energystar.gov/index.cfm?c=dishwash.pr_crit_dishwashers)
18. Standard for Type III Consequential Life-Cycle Assessment Declarations. SCS-002 Draft Standard. October 2018.

Allsteel®

Allsteel Inc.  
Muscatine, Iowa 52761-5257  
[allsteeloffice.com](http://allsteeloffice.com)

©2020 Allsteel Inc.  
Allsteel and Involve are registered trademarks.  
Indoor Advantage is a trademark of SCS  
Global Services. FSC is a registered trademark  
of the Forest Stewardship Council. LEVEL is a  
registered trademark of BIFMA International.  
Cradle to Cradle Certified™ is a certification  
mark licensed by the Cradle to Cradle Products  
Innovation Institute. LEED is a registered  
trademark of the U.S. Green Building Council.  
WELL Building Standard is a registered  
trademark of the International WELL Building  
Institute.

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

