



Environmental Product Declaration

Align™ Box/Lateral and Box/Lateral/ Open Metal Shelf Credenzas

Product Description

Align storage makes a strong aesthetic statement while offering you great design flexibility. Choose from a wide selection of credenzas, pedestals, and personal towers. Then dress up drawer or door fronts with a range of material choices. Behind the beauty you'll find storage products designed to handle the everyday demands of the productive office with double-wall drawer fronts, heavy-duty, European door hinges, and the extra durability of all-metal construction. With Align, you will find storage for all the kinds of work you do. Allsteel Align is certified Indoor Advantage™ Gold, BIFMA LEVEL® 3 and *Cradle to Cradle Certified™* Bronze.

Functional Unit

A storage device with retractable storage areas containing 0.15 m³ of storage capacity, maintained for a 10 year period. The reference flow for the modeling system is one complete storage unit. Results are reported on the basis of 0.15 m³. The Allsteel Align Credenza Office Storage passes the ANSI/BIFMA X5.9 test, demonstrating a minimum expected lifetime of 10 years under normal use conditions.

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 Storage: UNCPC 3812
June 10, 2013

EPD Number and Period of Validity

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Allsteel®

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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.....6 Additional Environmental Information.....7 References.....8

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

Align storage components provide function while adding clean, contemporary design appeal. They don't just store your files and personal belongings – they can also act as supplementary seating when your space turns into a collaboration area. They pull double-duty as workstation support pieces, fitting seamlessly with Allsteel systems furniture. Align credenzas, pedestals, lockers, and towers are built tough to meet today's workplace demands.

Align storage, assembled at the HNI Muscatine, Iowa facility, is primarily constructed of cold-rolled steel with a small amount of plastic. The storage units, which are available in a variety of sizes and configurations, include galvanized drawer slides and are coated with an epoxy heat-cured finish. Align Storage passes the ANSI/BIFMA X5.9 tests, demonstrating a minimum expected lifetime of 10 years under specified conditions.

This EPD is based on the Align box/lateral and box/lateral/open metal shelf credenzas. These models contain 25% post-consumer recycled content.

Table 1. Align credenza product information.

Model No.	Product Description	Storage Volume (m ³)	Number of Functional Units Fulfilled by Storage Device
YPCBX224218(R)BFOM/ YPCBX224218(L)BFOM	22"x42"x18" Box Lateral; Right/Left Open with Metal Shelf	0.27	1.8
YPCBX224818(R)BFOM/ YPCBX224818(L)BFOM	22"x48"x18" Box Lateral; Right/Left Open with Metal Shelf	0.31	2.1
YPCB 223018BFM	22"x30"x18" Box Lateral	0.20	1.3
YPCB 223618BFM	22"x36"x18" Box Lateral	0.23	1.6

Materials Composition

Table 2. Material composition of the Align Credenza – Model BFM/BFOM product line. Results are shown in kg per functional unit, and as a percent of total.

Material Classification	Material Resource	Model BFM 30" (kg)	Model BFM 36" (kg)	Model BFOM 42" (kg)	Model BFOM 48" (kg)
Plastic (ABS)	Virgin non-renewable	1.5x10 ⁻³ (0.007%)	1.3x10 ⁻³ (0.006%)	1.1x10 ⁻³ (0.0050%)	9.5x10 ⁻⁴ (0.0040%)
Steel	Virgin non-renewable; Recycled	23.0 (~100%)	20.8 (~100%)	23.2 (~100%)	21.9 (~100%)

Table 3. Packaging material composition of the Align Credenza – Model BFM/BFOM product line. Results are shown in kg per functional unit, and as a percent of total.

Packaging Material	BFM 30" (kg)	% of Total ¹	BFM 36" (kg)	% of Total ¹	BFOM 42" (kg)	% of Total ¹	BFOM 48" (kg)	% of Total ¹
Plastic (EPS/LDPE)	0.026	1.2%	0.036	1.9%	0.067	4.3%	0.090	6.0%
Corrugated Board	2.1	99%	1.9	98%	1.5	96%	1.4	94%
Total Packaging¹	2.1	100%	1.9	100%	1.6	100%	1.5	100%

¹Values may not sum to exact totals due to rounding.

Life Cycle Assessment Stages

Figure 1 below is a representation of the life cycle of Align. 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 the Align Credenza – Model BFM/BFOM product line.



Life Cycle Inventory

The life cycle inventory (LCI) flows by life cycle stage for Align are shown in Tables 4-8.

Table 4. Average air emissions by life cycle stage for the Align Credenza – Model BFM/BFOM product line. Results are shown in kg per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Sulfur Dioxide (SO ₂)	kg	0.14	0.10	4.1x10 ⁻²	1.8x10 ⁻³	2.2x10 ⁻⁴
Nitrogen Oxides (NO _x)	kg	0.15	0.11	3.3x10 ⁻²	8.6x10 ⁻³	2.1x10 ⁻³
Carbon Dioxide (CO ₂)	kg	38	31	5.7	1.2	0.15
Methane (CH ₄)	kg	0.13	0.10	2.6x10 ⁻²	1.6x10 ⁻³	3.4x10 ⁻⁴
Nitrous Oxide (N ₂ O)	kg	3.8x10 ⁻²	2.4x10 ⁻²	1.0x10 ⁻²	2.6x10 ⁻³	6.2x10 ⁻⁴
Carbon Monoxide (CO)	kg	12	10	1.8	0.37	5.0x10 ⁻²

Table 5. Average water emissions by life cycle stage for the Align Credenza – Model BFM/BFOM product. Results are shown in kg per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Phosphates	kg	8.8x10 ⁻⁵	2.2x10 ⁻⁵	6.5x10 ⁻⁵	6.2x10 ⁻⁷	2.4x10 ⁻⁸
Nitrates	kg	2.3x10 ⁻²	1.5x10 ⁻²	8.4x10 ⁻³	2.5x10 ⁻⁴	1.0x10 ⁻⁵
Dioxin	kg	4.5x10 ⁻⁴	3.9x10 ⁻⁴	4.9x10 ⁻⁵	1.0x10 ⁻⁶	6.5x10 ⁻⁶
Arsenic	kg	2.3x10 ⁻⁴	1.5x10 ⁻⁴	7.2x10 ⁻⁵	5.8x10 ⁻⁷	1.5x10 ⁻⁷
Lead	kg	1.1x10 ⁻³	9.0x10 ⁻⁵	9.9x10 ⁻⁵	7.8x10 ⁻⁷	9.4x10 ⁻⁴
Mercury	kg	3.7x10 ⁻⁴	3.4x10 ⁻⁵	3.7x10 ⁻⁵	2.5x10 ⁻⁷	3.0x10 ⁻⁴
Cadmium	kg	1.5x10 ⁻⁴	1.0x10 ⁻⁴	4.0x10 ⁻⁵	2.1x10 ⁻⁷	7.5x10 ⁻⁶
Chromium	kg	1.3x10 ⁻³	1.1x10 ⁻³	1.5x10 ⁻⁴	3.3x10 ⁻⁶	2.3x10 ⁻⁵

Life Cycle Inventory (continued)

Table 6. Average water usage by life cycle stage for the Align Credenza – Model BFM/BFOM product line. Results are shown in kg per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Water Consumption	kg	1,300	620	650	7.1	6.9

Table 7. Average energy usage by life cycle stage for the Align Credenza – Model BFM/BFOM product line. Results are shown in MJ per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Fossil Fuels	MJ	820	580	210	22	4.4
Nuclear	MJ	100	58	42	7.9x10 ⁻²	0.14
Renewable Energy	MJ	100	39	63	1.1	3.2x10 ⁻²
Miscellaneous Fuels	MJ	4.7x10 ⁻²	2.9x10 ⁻²	1.7x10 ⁻²	4.2x10 ⁻⁴	--

Table 8. Average waste type by life cycle stage for the Align Credenza – Model BFM/BFOM product line. Results are shown in kg per functional unit.

Parameter	Unit	Total	Material Acquisition	Production	Delivery, Installation & Use	Disposal
Incineration w/ Energy Recovery	kg	1.8x10 ⁻²	1.1x10 ⁻²	6.2x10 ⁻³	1.7x10 ⁻⁴	--
Incineration w/o Energy Recovery	kg	1.3	0.24	1.0	1.8x10 ⁻⁴	--
Recycling	kg	7.3	--	1.3	--	6.0
Hazardous	kg	8.9x10 ⁻³	4.4x10 ⁻³	4.5x10 ⁻³	1.9x10 ⁻⁶	3.9x10 ⁻⁶
Non-Hazardous (Landfill)	kg	33	17	2.4	5.8x10 ⁻³	13

Table 9. Translation of LCA results to familiar activities for select aggregated inventory results for the Align Credenza – Model BFM/BFOM product line.

Category Indicator	Life Cycle Impact Assessment for 0.15 m ³ of storage volume, maintained for 10-years	Life Cycle Impact Assessment for 1 storage unit, maintained for 10-years	Basis of Calculation	0.15 m ³ of storage volume, maintained for 10-years	1 storage unit, maintained for 10-years (1.7 units/FU)
Net Water Consumption	1,300 kg	2,200 kg	Number of cycles run in a dishwasher ¹	29	49
Primary Energy Demand	1,000 MJ	1,700 MJ	Number of days operating a refrigerator ²	54	91






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 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, photochemical ozone creation potential, ozone depletion potential, and global warming potential based on IPCC 2013.

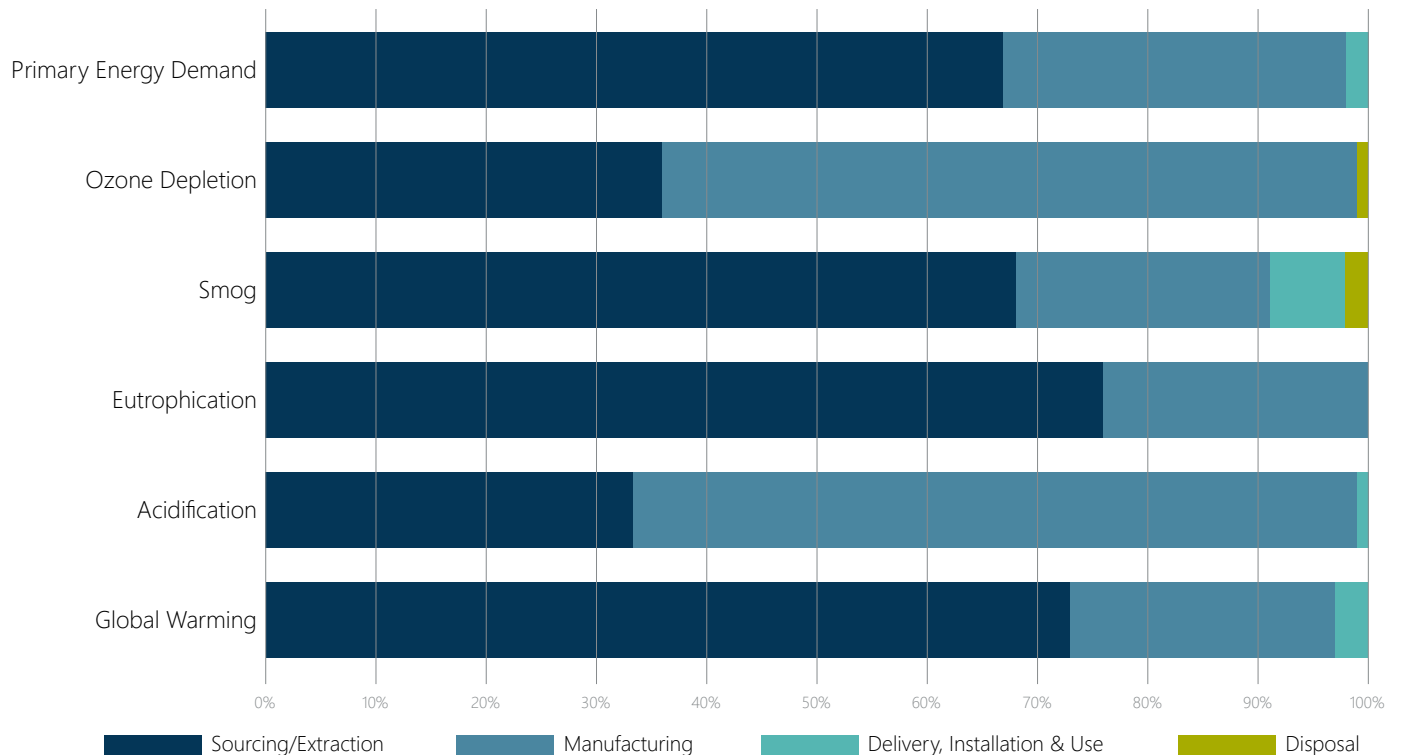
Table 10. Average life cycle impact assessment results for the Align Credenza – Model BFM/BFOM product line. Results are shown per functional unit (0.15 m³ storage capacity).

	Impact Category	Unit	Material Acquisition	Production	Distribution, Installation & Use	Disposal	Total
	Global Warming Potential	kg CO ₂ eq	44	14	1.7	0.22	61
	Acidification Potential	kg SO ₂ eq	0.18	0.37	8.4x10 ⁻³	2.1x10 ⁻³	0.56
	Eutrophication Potential	kg N eq	0.22	7.0x10 ⁻²	7.4x10 ⁻⁴	5.2x10 ⁻⁴	0.30
	Photochemical Ozone Creation Potential	kg O ₃ eq	2.5	0.87	0.27	6.4x10 ⁻²	3.7
	Ozone Depletion Potential	kg CFC-11 eq	1.7x10 ⁻⁶	3.0x10 ⁻⁶	2.8x10 ⁻⁹	4.9x10 ⁻⁸	4.7x10 ⁻⁶

On assessing the percentage contribution by life cycle phase, it is evident that the raw material extraction and processing phase is generally the most dominant phase with significant environmental impacts across all the category indicators except Ozone Depletion Potential and Acidification Potential – the manufacturing phase is the largest contributor to these indicators.

Figure 1. Contribution analysis graph representing % contribution to each impact category indicator by life cycle phase.

Life Cycle Impacts of Align Credenza – Model BFM/BFOM



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 LEO-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 Align Credenza – Model BFM/BFOM product line, according to LEO-SCS-002 standard.

Impact Category (LEO-SCS-002 Parameters)	Unit	Life Cycle Impact Results for 0.15m ³ of Storage Capacity	Life Cycle Impact Results for 1 Storage Unit
Global Climate Change	kg CO ₂ eq	68	120
Arctic Climate Change	kg CO ₂ eq	120	200
Ocean Acidification	kg H ₂ CO ₃ eq	98	170
Energy Resource Depletion	MJ eq	280	470

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 Align Credenza – Model BFM/BFOM product line.

Category Indicator	Life Cycle Impact Assessment results for 0.15 m ³ of storage volume, maintained for 10-years	Life Cycle Impact Assessment results for 1 unit of storage, maintained for 10-years	Basis of Calculation	0.15 m ³ of storage, maintained for 10-years	1 storage unit, maintained for 10-years (1.7 units/FU)
Global Warming Potential (IPCC, 100 year time horizon)	61 kg CO ₂ eq	100 kg CO ₂ eq	Number of miles driven in a typical passenger vehicle ³	140	230
Global Climate Change (LEO-SCS-002)	68 kg CO ₂ eq	115 kg CO ₂ eq	Number of miles driven in a typical passenger vehicle ³	150	260
Energy Resource Depletion (LEO-SCS-002)	280 MJ eq	470 MJ eq	Number of days operating a refrigerator ⁴	15	25

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>

⁴The 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>

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).

Align storage is LEVEL[®] 3 certified to the ANSI/BIFMA e3 Furniture Sustainability Standard, SCS Indoor Advantage Indoor Advantage[™] Gold certified for indoor air quality, and *Cradle to Cradle Certified[™]* Bronze. Align 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. Align is an SCS Indoor Advantage™ Gold and level® 2 certified product.

