



Environmental Product Declaration

KI | MyWay[®] Lounge Seating



Furnishing Knowledge®



Declaration Owner

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Products: MyWay[®] Lounge Seating

including models: MYHH, MYHW, MYLH, MYWH, MYHL

Functional Unit

One unit of seating to seat one individual, maintained for a 10-year period.

EPD Number and Period of Validity

SCS-EPD-07402 EPD Valid October 26, 2021 through October 25, 2026

Product Category Rule

Product Category Rule for Environmental Product Declarations. BIFMA PCR for Seating: UNCPC 3811, Version 3.

Program Operator

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Address:	1330 Bellevue Street, Green Bay, WI				
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Program Operator:	SCS Global Services				
Declaration URL Link:	https://www.scsglobalservices.com/certified-green-products-guide				
Product:	MyWay [®] Lounge Seating				
LCA Practitioner:	Gerard Mansell, PhD., SCS Global Services				
LCA Software:	OpenLCA v1.10 & ecoinvent v3.7				
Independent critical review of					
the LCA and data, according to	🗆 internal 🛛 🖾 external				
ISO 14044 and ISO 14071					
LCA Reviewer:	Thomas Gloria, Ph.D., Industrial Ecology Consultants				
	Product Category Rule for Environmental Product Declarations. BIFMA PCR for Seating: UNCPC				
Product Category Rule:	3811, Version 3.				
PCR Review conducted by:	Thomas Gloria Ph.D., Industrial Ecology Consultants				
Independent verification of the declaration and data,					
according to ISO 14025 and the PCR					
EPD Verifier:	Aromant Storin				
	Thomas Gloria, Ph.D., Industrial Ecology Consultants				
Declaration Contents:	About KI2Product Description2Key Environmental Parameters2Product Material Composition3Life Cycle Assessment Overview4Product Life Cycle Flow Diagram5Life Cycle Inventory and Environmental Parameters6Life Cycle Impact Assessment6Supporting Technical Information7Additional Environmental Information11References12				
Disclaimers: This EPD conforms to Scope of Results Reported: The F performance benchmarks and thre impacts related to greenhouse gas Accuracy of Results: Due to PCR of accuracy.	D ISO 14025, 14040 and 14044. PCR requirements limit the scope of the LCA metrics such that the results exclude environmental and social esholds, and exclude impacts from the depletion of natural resources, land use ecological impacts, ocean emissions, risks from hazardous wastes and impacts linked to hazardous chemical emissions. constraints, this EPD provides estimations of potential impacts that are inherently limited in terms of				

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.

About KI

Since 1941, we've positioned KI as the furniture company that best understands the contract furniture industry and is committed to providing customers with the smart solutions. Our contract furniture innovations reflect a desire to be our customers' market resource and to help them make smart contract furniture decisions. KI manufactures innovative furniture and movable pod system solutions for educational, university, business and government markets. KI continues to differentiate itself and establish enduring relationships throughout the world by personalizing products and service solutions to the specific needs of each customer through its unique design and "Market of One" manufacturing philosophy.

Product Description

MyWay[®] Lounge Seating is available in a variety of colors and optional features, including a writing tablet, base options, and various arm configurations and fabrics. The chair's asymmetrical design is available in several arm styles, making it ideal for a variety of postures. The models and product descriptions included in this EPD are provided in Table 1.

Table 1. MyWay[®] Lounge Seating models and configurations included in this EPD

Product Model	Product Description
МҮНН	MyWay Left Facing High Arm/Right Facing High Arm Sled Base Lounge Chair
MYHW/MYWH	MyWay Left Facing High Arm/Right Facing Work Arm Sled Base Lounge Chair MyWay Right Facing High Arm/Left Facing Work Arm Sled Base Lounge Chair
MYHL/MYLH	MyWay Left Facing Low Arm/Right Facing High Arm Sled Base Lounge Chair MyWay Right Facing Low Arm/Left Facing High Arm Sled Base Lounge Chair

MyWay[®] Lounge Seating is constructed to be accommodating for working, learning, or relaxing and can be used together or individually to complement a variety of education, business, and third-space environments. Chairs are constructed from a variety of materials including wood, polyurethane foam, plastics, polyester blend fabrics, and extruded steel and aluminum parts. For more information on the product, please visit: www.ki.com/products/name/myway-lounge-seating

Key Environmental Parameters

Table 2. Average key environmental parameters, over the life cycle of the MyWay® Lounge Seating products per functional unit.

Parameter	MyWay [®] Lounge Seating
Global Warming Potential	248 kg CO ₂ eq
Primary Energy Demand	5,940 MJ
Recycled content	10.2%

Product Material Composition

The following tables provide a description of the materials in MyWay[®] Lounge Seating. Table 3 provides this information by type of material while Table 4 describes the material content through classification of material resources based on their recyclability and renewability characteristics. Product packaging is the same for all chair models and consists of 2.81 kg cardboard and 0.671 kg of LDPE plastic packaging film.

Component 29.5 29.9 25.9 kg Wood % 75% 76% 73% 4.03 kg 4.48 4.48 Plastic % 11% 11% 11% kg 3.58 3.24 2.37 Recycled PET Fabric 9.1% 8.2% 6.7% % 0.737 0.773 2.19 kg Steel % 1.9% 2% 6.2% 0.669 0.692 kg 0.454 Cardboard % 1.7% 1.2% 1.9% 0.443 0.369 0.443 kg Fabric % 1.1% 1.1% 1% 5.44x10⁻² 5.44x10⁻² 0.00 kg Nylon % 0.14% 0.14% 0% 6.36x10⁻² 0.00 0.00 kg Stains/Coatings % 0% 0% 0.18% 35.6 39.4 39.3 kg **Total Product** % 100% 100% 100%

Table 3. Material content for the packaging of the MyWay[®] Lounge Seating products in kg per functional unit and percent of total mass.

Table 4. Material content for the MyWay[®] Lounge Seating products in kg per functional unit and percent of total mass.

Material Resource	МҮНН		MYHW/	мүwн	MYHL/MYLH	
Classification	Mass (kg)	% of Total Mass	Mass (kg)	% of Total Mass	Mass (kg)	% of Total Mass
Virgin Renewable Resources	29.5	74.7%	29.6	75.2%	25.9	72.8%
Recycled Resources	4.23	10.7%	4.11	10.4%	3.39	9.6%
Virgin Nonrenewable Resources	5.73	14.5%	5.63	14.3%	6.25	17.6%

Life Cycle Assessment Overview

System Boundary

The scope of the EPD is cradle-to-grave, including raw material extraction and processing, transportation, product manufacture, product delivery, installation and use, and product disposal. The life cycle phases included in the EPD scope are described below and illustrated in Figure 1.

- Raw Materials Processing (Sourcing/Extraction) This stage includes extraction of virgin materials and reclamation of non-virgin feedstock. Resource use and emissions associated with both extraction of the raw materials and product component manufacturing are included. The impacts associated with transport of the product component materials to the manufacturing facilities are also included in this stage.
- Manufacturing This stage includes all the relevant manufacturing processes and flows, including the impacts from energy use and emissions at the fabrication facilities. Production of capital goods, infrastructure, manufacturing equipment, and personnel-related activities are not included. This stage also includes the production of the product packaging materials. The products are manufactured at the KI facility in North Carolina utilizing primary data for annual production, resource use and electricity consumption and waste generation.
- Distribution, Installation and Use This stage includes delivery of the product to the point of installation (downstream transportation), and installation and use of the products. A production weighted average transportation distance to the installation site of 1,000 miles was used. The impacts associated with packaging disposal are also included with the installation phase as per PCR requirements. Impacts associated with the installation and use of the products are negligible.
- Disposal stage The end of life stage includes demolition of the products, transport of the products to waste treatment facilities, waste processing and associated emissions as the product degrades in a landfill or is burned in an incinerator. Assumptions for the product and packaging end-of-life are based on the US EPA's disposal statistics for municipal solid waste (MSW) for 2018. Transportation for end-of-life scenarios was modeled using the EPA WARM model assumption of 20 miles (~32 km), from the point of product use to a landfill, material recovery center, or waste incinerator.



Product Life Cycle Flow Diagram

A flow diagram of the product system, including system boundaries, is provided in Figure 1.



Figure 1. Flow diagram representing the major unit operations in the life cycle of the MyWay[®] Lounge Seating products.

Life Cycle Inventory and Environmental Parameters

The resource use and emissions from each step of the product life cycle are summed to obtain the life cycle inventory results. Table 5 presents the results for additional parameters (energy and waste flows) as specified in the PCR, averaged across the seating products assessed. The LCIA and inventory flow results were calculated using the OpenLCA model and summarized for the functional unit from cradle-to-grave. Where necessary, the lower heating value is used for energy flow calculations

Table 5. Average resource use and waste flows for one (the KI **MyWay®** Lounge Seating products over a 10-yr time horizon. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.

Impact Category	Units	Raw Material	Manufacturing	Distribution	Disposal	Total
Resources						
Primary Energy Demand	MJ	2,230	3,510	175	31.3	5,940
(MJ)	%	37%	59%	2.9%	0.53%	100%
Non-renewable Primary	MJ	886	2,140	171	30.7	3,230
Energy (MJ)	%	27%	66%	5.3%	0.95%	100%
Nuclear Fearmy (MI)	MJ	99.0	1,170	2.12	0.341	1,270
Nuclear Energy (MJ)	%	7.8%	92%	0.17%	0.03%	100%
Renewable Primary Energy	MJ	1,240	194	1.96	0.286	1,440
(MJ)	%	86%	14%	0.14%	0.02%	100%
Fresh Water Use	m ³	4.53	12.6	0.121	2.90x10 ⁻²	17.3
(m ³)	%	26%	73%	0.70%	0.17%	100%
Wastes						
Hazardous Waste Disposed	kg	1.02x10 ⁻³	1.78x10 ⁻³	4.53x10 ⁻⁴	7.41x10 ⁻⁵	3.33x10 ⁻³
(kg)	%	31%	54%	14%	2.2%	100%
Nonhazardous Waste	kg	7.12	35.4	9.00	29.7	81.2
Disposed (kg)	%	8.8%	44%	11%	37%	100%

Life Cycle Impact Assessment

The LCA conforms to ISO 14040/44 and the PCR. The following impact indicators, specified by the PCR, are reported below:

TRACI 2.1 Impact Category	Unit
Global Warming Potential (GWP)	kg CO2 eq
Ozone Depletion Potential (ODP)	kg CFC 11 eq
Acidification Potential (AP)	kg SO ₂ eq
Eutrophication Potential (EP)	kg N eq
Smog Formation Potential (SFP)	kg O₃ eq
Fossil Fuel Depletion Potential (ADP _{fossil})	MJ Surplus, LHV

Results of the Life Cycle Assessment are presented below as an average across product models. It is noted that LCA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Raw Material	Manufacturing	Distribution	Disposal	Total
Global Warming Potential	62.9	166	12.5	7.27	248
(kg CO ₂ eq)	25%	67%	5.0%	2.9%	100%
Ozone Depletion Potential	4.78x10 ⁻⁶	1.10x10 ⁻⁵	2.68x10 ⁻⁶	4.80x10 ⁻⁷	1.89x10 ⁻⁵
(kg CFC-11 eq	25%	58%	14%	2.5%	100%
Acidification Potential	0.339	0.538	5.26x10 ⁻²	1.44x10 ⁻²	0.944
(kg SO ₂ eq)	36%	57%	5.6%	1.5%	100%
Eutrophication Potential (kg N eq)	0.211	0.483	2.25x10 ⁻²	0.296	1.01
	21%	48%	2.2%	29%	100%
Smog Formation Potential	6.07	6.06	1.27	0.406	13.8
(kg O ₃ eq)	44%	44%	9.2%	2.9%	100%
Fossil Fuel Depletion	103	287	24.4	4.51	419
(MJ surplus)	25%	69%	5.8%	1.1%	100%

Table 6. Average Life Cycle Impact Assessment (LCIA) results for one (1) square meter of the KI MyWay[®] Lounge Seating products over a 10-yr time horizon. Results reported in MJ are calculated using lower heating values. All values are rounded to three significant digits.

Supporting Technical Information

Cut-off criteria

According to the PCR, processes contributing greater than 1% of the total environmental impact indicator for each impact are included in the inventory. No data gaps were allowed which were expected to significantly affect the outcome of the indicator results. No known flows are deliberately excluded from this EPD.



Period under review

The period of review is calendar year 2020.

Allocation

Manufacturing resource use was allocated to the products based on sale price (cost-based allocation). Impacts from transportation were allocated based on the mass of material and distance transported.

The product system includes some recycled materials, which were allocated using the recycled content allocation method (also known as the 100-0 cut-off method). Using the recycled content allocation approach, system inputs with recycled content do not receive any burden from the previous life cycle other than reprocessing of the waste material. At end-of-life, materials which are recycled leave the system boundaries with no additional burden.

Estimates and Assumptions

- The High Point, North Carolina facility is located in the SRVC eGRID EPA NERC sub-region. An Ecoinvent inventory dataset was modified to reflect the eGRID energy mix for the SRVC sub-region to estimate resource use and emissions from electricity use at the facility.
- Electricity and resource use at the production facility were allocated to the seating products based on product sales price utilizing annual revenue data for calendar year 2020 provided by the manufacturer.
- Primary data for upstream component fabrication were not available. Representative LCI datasets from the ecoinvent database were used to model processing for steel and plastic material components.
- For end-of-life, disposal of the product and product packaging is modeled based on 2018 statistics for municipal solid waste generation and disposal in the United States, from the US Environmental Protection Agency. These data provide recycling rate estimates for household and municipal waste, durable and non-durable goods, as well as for packaging and containers.
- For final disposal of the product and packaging materials at end-of-life, all materials are assumed to be transported 20 miles by diesel truck to either a landfill, incineration facility, or material reclamation facility (for recycling). Datasets representing disposal in a landfill and waste incineration are from Ecoinvent.
- Modeling of recycled materials follows the recycled content method (also known as 100-0 method or cut-off method) whereby only the burdens of reprocessing the waste material are allocated to the system from the use of the recycled material.

It should also be noted that LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

The PCR allows for the results for several inventory flows related to resource use and waste flows to be reported as "other parameters". These are aggregated inventory flows, and do not characterize any potential impact; results should be interpreted taking into account this limitation.

Background Data

Primary data were provided by KI for the High Point, North Carolina manufacturing facility. The sources of secondary LCI data are the Ecoinvent database.

Table 7. Data sources for the MyWay[®] Lounge Seating product system.

Component	Dataset	Data Source	Publication Date
PRODUCT			
Wood			
Plywood	plywood production plywood Cutoff, S/RoW	El v3.7	2020
Wood laminate	sawnwood production, hardwood, dried (u=10%), planed sawnwood, hardwood, dried (u=10%), planed Cutoff, S/RoW; ethylene vinyl acetate copolymer production ethylene vinyl acetate copolymer Cutoff, S/RoW; cellulose fibre production cellulose fibre Cutoff, S/RoW; urea formaldehyde resin production urea formaldehyde resin Cutoff, S/RoW; polyester resin production, unsaturated polyester resin, unsaturated Cutoff, S/RoW; polyurethane adhesive production polyurethane adhesive Cutoff, S/GLO	El v3.7	2020
Textiles			
Recycled PET fabric	polyethylene terephthalate production, granulate, amorphous polyethylene terephthalate, granulate, amorphous Cutoff, S/RoW; polyethylene terephthalate, granulate, amorphous, recycled to generic market for amorphous PET granulate polyethylene terephthalate, granulate, amorphous Cutoff, S/US; Electricity, medium voltage, per kWh - U.S./U.S.	El v3.7	2020
Polypropylene fabric	market for textile, non woven polypropylene textile, non-woven polypropylene Cutoff, S/GLO	El v3.7	2020
Cotton/Poly fabric	market for textile, non woven polyester textile, non-woven polyester Cutoff, S/GLO; market for textile, woven cotton textile, woven cotton Cutoff, S/GLO	El v3.7	2020
Plastics			
Polypropylene	polypropylene production, granulate polypropylene, granulate Cutoff, S/RoW	El v3.7	2020
Polyurethane	polyurethane production, flexible foam polyurethane, flexible foam Cutoff, S/RoW	El v3.7	2020
Nylon	nylon 6-6 production nylon 6-6 Cutoff, S/RoW	El v3.7	2020
Metals			
Steel	steel production, converter, low-alloyed steel, low-alloyed Cutoff, S/RoW; metal working, average for steel product manufacturing metal working, average for steel product manufacturing Cutoff, S/RoW	EI v3.7	2020
Other			
Cardboard	containerboard production, linerboard, testliner containerboard, linerboard Cutoff, S/RoW	El v3.7	2020
Stain/Powder coat	chemical production, organic chemical, organic Cutoff, S/GLO; powder coating, steel powder coat, steel Cutoff, S/RoW; market for titanium dioxide titanium dioxide Cutoff, S/RoW	El v3.7	2020
PACKAGING	PACKAGING		
Corrugated	containerboard production, linerboard, kraftliner containerboard, linerboard Cutoff, S/RoW	El v3.7	2020
Packaging plastic	packaging film production, low density polyethylene packaging film, low density polyethylene Cutoff, S/RoW	El v3.7	2020
RESOURCES	RESOURCES		
Grid electricity	Electricity, medium voltage, per kWh - SRVC/SRVC	EI v3.7; eGRID	2020; 2018
Natural gas	heat production, natural gas, at boiler modulating >100kW heat, district or industrial, natural gas Cutoff, S/RoW	El v3.7	2020
Fuel oil	heat production, heavy fuel oil, at industrial furnace 1MW heat, district or industrial, other than natural gas Cutoff, S/RoW; heat production, light fuel oil, at industrial furnace 1MW heat, district or industrial, other than natural gas Cutoff, S/RoW	EI v3.7	2020
Propane	propane, burned in building machine propane, burned in building machine Cutoff, S/GLO	El v3.7	2020
TRANSPORTATION	TRANSPORTATION		
Road transport	transport, freight, lorry 16-32 metric ton, EURO4 transport, freight, lorry 16-32 metric ton, EURO4 Cutoff, S/RoW	EI v3.7	2020

Data Quality

The data quality assessment addressed the following parameters: time-related coverage, geographical coverage, technological coverage, precision, completeness, representativeness, consistency, reproducibility, sources of data, and uncertainty.

Table 8. [Data quality	assessment	for the M	'yWay®	⁾ Lounge S	Seating p	product system.
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Data Quality Parameter	Data Quality Discussion				
Time-Related Coverage: Age of data and the minimum length of time over which data is collected	The most recent available data are used, based on other considerations such as data quality and similarity to the actual operations. Typically, these data are less than 5 years old (typically 2016). All of the data used represented an average of at least one year's worth of data collection, and up to three years in some cases. Manufacturer-supplied data (primary data) are based on annual production for 2020.				
Geographical Coverage: Geographical area from which data for unit processes is collected to satisfy the goal of the study	The data used in the analysis provide the best possible representation available with current data. Electricity use for product manufacture is modeled using representative data for the US. Surrogate data used in the assessment are representative of global or European operations. Data representative of European operations are considered sufficiently similar to actual processes. Data representing product disposal are based on regional statistics.				
Technology Coverage: Specific technology or technology mix	For the most part, data are representative of the actual technologies used for processing, transportation, and manufacturing operations. Representative fabrication datasets, specific to the type of material, are used to represent the actual processes, as appropriate.				
Precision: Measure of the variability of the data values for each data expressed	Precision of results are not quantified due to a lack of data. Data collected for operations were typically averaged for one or more years and over multiple operations, which is expected to reduce the variability of results.				
Completeness: Percentage of flow that is measured or estimated	The LCA model included all known mass and energy flows for production of the products. In some instances, surrogate data used to represent upstream and downstream operations may be missing some data which is propagated in the model. No known processes or activities contributing to more than 1% of the total environmental impact for each indicator are excluded.				
Representativeness: Qualitative assessment of the degree to which the data set reflects the true population of interest	Data used in the assessment represent typical or average processes as currently reported from multiple data sources and are therefore generally representative of the range of actual processes and technologies for production of these materials. Considerable deviation may exist among actual processes on a site-specific basis; however, such a determination would require detailed data collection throughout the supply chain back to resource extraction.				
Consistency: Qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis	The consistency of the assessment is considered to be high. Data sources of similar quality and age are used; with a bias towards Ecoinvent v3.7 data where available. Different portions of the product life cycle are equally considered.				
Reproducibility: Qualitative assessment of the extent to which information about the methodology and data values would allow an independent practitioner to reproduce the results reported in the study	Based on the description of data and assumptions used, this assessment would be reproducible by other practitioners. All assumptions, models, and data sources are documented.				
Sources of the Data: Description of all primary and secondary data sources	Data representing energy use at KI's manufacturing facility represents an annual average and are considered of high quality due to the length of time over which these data are collected, as compared to a snapshot that may not accurately reflect fluctuations in production. For secondary LCI data, Ecoinvent v3.7 LCI data are used.				
Uncertainty of the Information: Uncertainty related to data, models, and assumptions	Uncertainty related to materials in the products and packaging is low. Actual supplier data for upstream operations were not available and the study relied upon the use of existing representative datasets. These datasets contained relatively recent data (<10 years) but lacked geographical representativeness. Uncertainty related to the impact assessment methods used in the study are high. The impact assessment method required by the PCR includes impact potentials, which lack characterization of providing and receiving environments or tipping points.				

Additional Environmental Information



MyWay® Lounge Seating supports a healthy indoor environment through emissions testing. MyWay® Seating are certified Indoor Advantage[™] Gold, qualify for LEED low-emitting materials credits, comply with ANSI/BIFMA X7.1/M7.1, and meet CA 01350 air emissions requirements.



MyWay® Lounge Seating products included in this EPD are 3rd party certified level® 2.

MyWay® Lounge Seating is manufactured in High Point, North Carolina, at an ISO 9001 facility.

FSC® certified wood can be ordered upon request.



References

- 1. Life Cycle Assessment of KI MyWay Seating Products. SCS Global Services Report. Prepared for KI. September 2021.
- 2. ISO 14025:2006 Environmental labels and declarations Type III environmental declarations Principles and Procedures.
- 3. ISO 14040: 2006/Amd 1:2020 Environmental Management Life cycle assessment Principles and Framework
- 4. ISO 14044: 2006/AMD 1:2017/ AMD 2:2020 Environmental Management Life cycle assessment Requirements and Guidelines.
- 5. Product Category Rule for Environmental Product Declarations. BIFMA PCR for Seating: UNCPC 3811, Version 3.
- 6. SCS Type III Environmental Declaration Program: Program Operator Manual. V10.1 May 2021. SCS Global Services.
- 7. Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI). Dr. Bare, J., https://www.epa.gov/chemical-research/tool-reduction-and-assessment-chemicals-and-other-environmentalimpacts-traci
- 8. Ecoinvent Centre (2020) ecoinvent data from v3.7. Swiss Center for Life Cycle Inventories, Dübendorf, 2020, http://www.ecoinvent.org
- US EPA. Advancing Sustainable Materials Management:2018 Fact Sheet Assessing Trends in Materials Generation and Management in the United States. November 2020. https://www.epa.gov/sites/production/files/2020-11/documents/2018_ff_fact_sheet.pdf.





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