Environmental Product Declaration (EPD)

North America

Elective Elements

Elective Elements is a storage that delivers refined, sophisticated design with rich, extensive material options and flexible, purposeful applications. Elective Elements seamlessly blends style, craftsmanship and performance to support today's diverse and demanding workplaces. Elective Elements that provide the function of storage of office-based materials and supplies: e.g., books, files, media, digital media, office supplies, or other items potentially associated with storage within an office environment.

The model chosen for analysis is the most representative line (reference #E6KW243077) from the Steelcase Elective Elements range based on total sales. Standard features on this model include:

- The product analyzed is classified as a general storage with 0.25 m^3 storage per fcn unit
- Dimension of: 24" x 30" x 77" (609 X 762 X 1956 mm)
- Space enclosed is 0.91 m^3, the equivalent of 3.64 general storage units per Elective Elements product.
- The storage contains particleboard, steel, aluminum and plastics.
- No internal lighting are presented in this product

This EPD – Environmental Product Declaration – is valid for the above model.

Steelcase

Certified Environmental Product Declaration
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Environmental Product Declaration Summary

GENERAL SUMMARY	
Owner of the EPD	Steelcase International 901 44th St. SE Grand Rapids, MI USA
Product Group	General Storage
Product Name	Elective Elements
Product Definition	Elective Elements is a storage that delivers refined, sophisticated design with rich, extensive material options and flexible, purposeful applications. Elective Elements seamlessly blends style, craftsmanship and performance to support today's diverse and demanding workplaces. Elective Elements that provide the function of storage of office based materials and supplies: e.g., books, files, media, digital media, office supplies, or other items potentially associated with storage within an office environment.
Product Category Rule (PCR)	NSF Sustainability: "BIFMA PCR for storage: UNCPC 3812", valid through June, 30, 2021, National Center for Sustainability Standards, 2012.
Date of Issue	26 February, 2021
Period of Validity	5 years from the date of issue
Functional Unit	The functional unit is one unit of general storage with the features stated in the product description, maintained for a period of 10 years.
Declaration Number	EPD10538
EPD INFORMATION	
Program Operator	NSF Certification, LLC 789 N. Dixboro, Ann Arbor, MI 48105 www.nsf.org
Applicable Countries: United States, Canada and Mexico (North America)	
Product Applicability and Characteristics: Elective Elements is primarily used as an indoor storage that provides the function of storage of office based materials and supplies: e.g., books, files, media, digital media, office supplies, or other items potentially associated with storage within an office environment.	
This declaration was independently verified in accordance with ISO 14025: 2006. The BIFMA PCR for storage: UNCPC 3812 serves as the core PCR. **Internal** **External** **X**	 Tony Favilla, NSF afavilla@nsf.org
EPD PROJECT REPORT INFORMATION	
EPD Project report	LCA report Elective Elements NA
Prepared by	Steelcase Inc 901 44th St. SE Grand Rapids, MI USA

This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	 Jack Geibig, Ecoform jgeibig@ecoform.com
PCR INFORMATION	
Program Operator	NSF International 789 N. Dixboro Ann Arbor, MI 48105
Date of Issue	26 February 2021
PCR review was conducted by:	Thomas Gloria, PhD (chair) Jack Geibig, PE Michael Overcash, PhD

The PCR this EPD was based on was written to determine the potential environmental impacts of a storage product from cradle-to-grave. It 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 Identification

Elective Elements is a storage that delivers refined, sophisticated design. The model chosen for analysis is the most representative line (reference #E6KW243077) but also same results are valid for the following style number E6KW181245L/R, E6KW181255L/R, E6KW181265L/R, E6KW181272L/R, E6KW181277L/R, E6KW241245L/R, E6KW241255L/R, E6KW241265L/R, E6KW241272L/R, E6KW241277L/R, E6KW241565L/R, E6KW241572L/R, E6KW241577L/R, E6KW243065, E6KW243072. Results for these similar product configurations do not vary by more than 10% in any one category from the results presented, and thus are included in this EPD.

- Product Application

Elective Elements that provide the function of storage of office based materials and supplies: e.g., books, files, media, digital media, office supplies, or other items potentially associated with storage within an office environment.

- Functional Unit

The functional unit is one unit of general storage with the features stated in the product description, maintained for a period of 10 years. The conversion factor to get this functional unit is 0.27 Elective Elements general storage.

- Material Content

The material content for the product and packaging for 1 functional unit of Elective Elements (0.25 m^3 storage) is presented in table below:

Material	Material Resources	Weight (kg)	Share of total weight
Metals			
Steel	Recycled content	0.295	2.2%
Aluminium	Recycled content	0.323	2.4%
Plastics			
PA6	Virgin non-renewable	0.065	0.5%

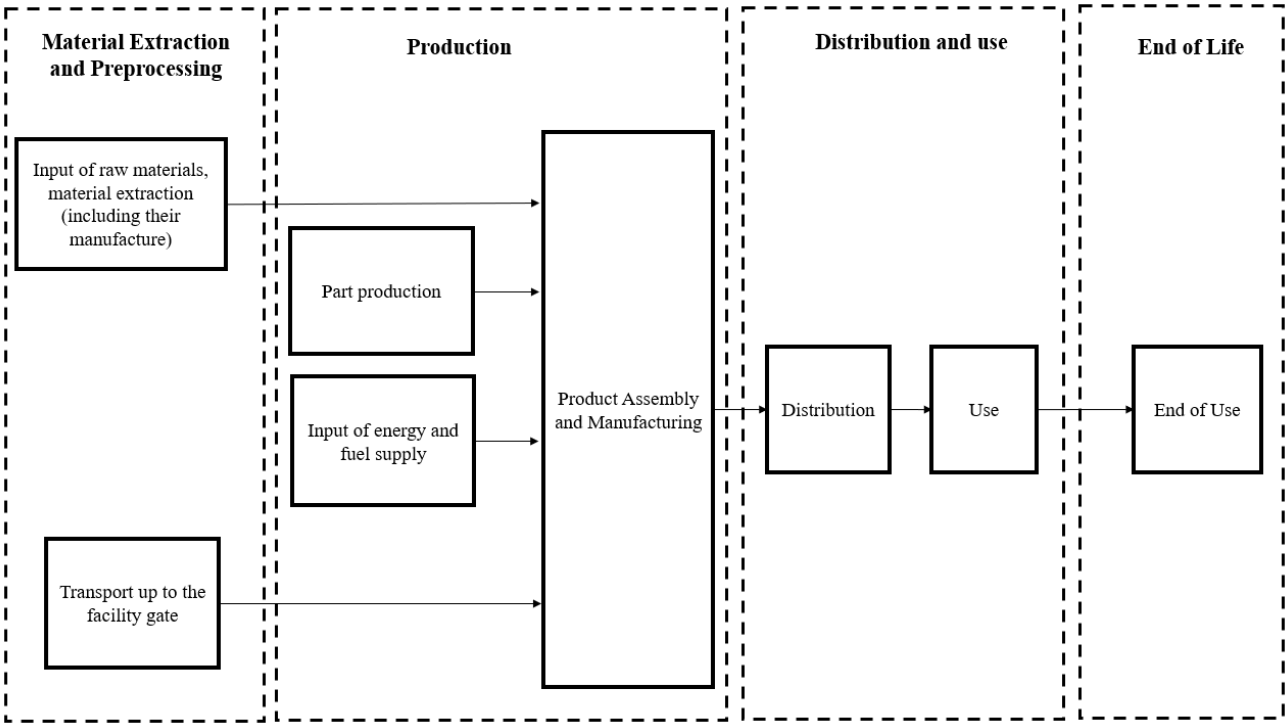
PU	Virgin non-renewable	0.049	0.4%
POM	Virgin non-renewable	0.001	0.0%
LDPE	Virgin non-renewable	0.250	1.8%
Other			
Hardwood	Virgin renewable	0.012	0.1%
Cardboard	Recycled content	0.741	5.5%
Particle Board	Virgin non-renewable	11.828	87.2%
Total		**13.564**	**100%**

- **EPD Boundaries**

The system boundary for the storage starts with the raw material acquisition and extends through the manufacturing of the desk, cradle-to-grave. All distribution distances for the raw materials, chemicals and the final product were included. Data included from storage manufacturing, emissions to air, water and soil, and any solid waste or wastewater. The table below describes the system boundary. The figures below illustrate the system boundary for Elective Elements storage manufacturing.

Description of the system boundary

Product Stage			Construction Process Stage		Use Stage							End-of-Life Stage				Benefits and loads beyond the system boundary
Raw Material Supply	Transport	Manufacturing	Transport	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X



Life cycle inventory

- **Cutoff Criteria**

The cut-off criteria follows the rules outlined in the BIFMA PCR for Storage: UNCPC 3812 and did not exceed 1% of the total mass, energy or environmental relevance.

- **Data Quality**

Steelcase storage collected primary data for the production of Elective Elements product. The data was validated by the plant managers at the facilities and by the internal LCA project team. All specific processes discussed in the BIFMA PCR are considered and modeled to represent Elective Elements storage produced at Steelcase Inc. The background process data were supplied by the Ecoinvent database v 3.5 LCI database and modeled in Simapro 9 with the 2019 database.

- **Representativeness**

The 2020 production data from 1 facility for Elective Elements represents 100% of total Elective Elements for North America in 2020. Secondary data from appropriate LCI datasets range from 2014-2020.

- **Allocation**

Elective Elements storage was performed according to the allocation rule outlined in the PCR Section 5.

Life cycle assessment

- **Results of the Life cycle assessment**

The LCA results for Elective Elements storage are shown in the table below. The U.S. Environmental Protection Agency's TRACI (Tool for the Reduction and Assessment of Chemical and other Environmental Impacts) life cycle impact assessment methodology (version 2.1) is applied to calculate environmental performance of standing desk. Per functional unit, impact indicator results, energy and material resource consumption, and waste are presented in the table below. Impact indicators used are global warming potential (GWP), acidification potential, eutrophication potential, smog potential, and ozone depletion potential. The mass-weighted average based on annual production of each facility

where Elective Elements storage is produced was used to determine these results. The LCIA results are relative expressions and do not predict impacts on category endpoints, the exceedance of thresholds, safety margins, or risks.

ENVIRONMENTAL IMPACTS						
PARAMETER	**UNIT**	**TOTAL OF LIFE CYCLE**	**MATERIAL ACQUISITION**	**PRODUCTION**	**DISTRIBUTION AND USE**	**END OF LIFE**
Global Warming	kg CO2 eq	5.07E+01	8.10E+00	2.92E+01	6.18E+00	7.20E+00
Acidification	kg SO2 eq	1.98E-01	4.24E-02	1.20E-01	2.73E-02	7.90E-03
Photochemical ozone creation potential	kg O3 eq	3.06E+00	5.50E-01	1.60E+00	7.39E-01	1.73E-01
Eutrophication	kg N eq	2.31E-01	2.07E-02	1.39E-01	5.55E-03	6.64E-02
Ozone Depletion	kg CFC-11 eq	5.38E-06	8.78E-07	2.78E-06	1.30E-06	4.26E-07

RESOURCE USE		
RENEWABLE ENERGY	**MJ**	**324**
Biomass	MJ	179
Hydropower	MJ	135
Wind	MJ	9.4
Other Renewable	MJ	0.835
NON-RENEWABLE ENERGY	**MJ**	**720**
Gas	MJ	265
Oil	MJ	220
Coal	MJ	162.5
Uranium	MJ	71.1
Other Non-Renewable	MJ	1.4
TOTAL PRIMARY ENERGY DEMAND	**MJ**	**1044**
WATER	**UNIT**	
Freshwater withdrawal	kg	20.7
WASTE MANAGEMENT		
Landfill (non haz waste)	kg	34.34
Hazardous waste	kg	8.59
Landfill avoidance (recycling)	kg	7.31

- **Interpretation**

The LCA study results found the production stage has the highest contribution in every stage mainly in the global warming and smog creation potential. The production had also the highest contribution to acidification potential, eutrophication potential, and ozone depletion potential. This stage includes the internal and external production of the storage. The materials stage is the second significant contributor to all impact categories especially because of aluminum, steel and particleboard. The distribution phase is also an important contributor to smog creation potential and ozone depletion potential.

Additional Environmental Information

This LCA analysis also provide an overview about resources and emissions following the PCR BIFMA. The recyclability of Elective Elements according to the available waste management infrastructures, we estimate is 99.6%. Recycled content is 75%.

OTHER ENVIRONMENTAL IMPACTS						
PARAMETER	UNIT	TOTAL OF LIFE CYCLE	MATERIAL ACQUISITION	PRODUCTION	DISTRIBUTION AND USE	END OF LIFE
Carcinogenics	CTUh	7.43E-06	1.49E-06	5.31E-06	1.40E-07	4.90E-07
Non Carcinogenics	CTUh	4.63E-05	2.94E-06	2.73E-05	8.86E-07	1.52E-05

Declaration type and product average declaration

The type of EPD is defined as a “Cradle-to-grave” EPD covering the product stage and is intended for use in Business-to-Business communication. This EPD represents an average performance for the product(s) included in the EPD, manufactured at Steelcase facilities.

Declaration comparability limitation statement

Environmental declarations from different programs may not be comparable. The comparison of the environmental performance of standing desk using the EPD information shall be based on the product's use in and its impact on or within the building and shall consider the complete life cycle (all information modules). EPDs are only comparable if they comply with the BIFMA PCR for Storage: UNCPC 3812, include all relevant information modules, and are based on equivalent scenarios with respect to the context of construction works. EPDs prepared from cradle-to-grave life cycle results and based on the same function, quantified by the same functional unit, and meeting all the conditions for comparability listed in ISO 14025:2006 and ISO 21930:2017 can be used for comparison between products. EPDs without a functional unit may not be compared.

EPD explanatory material

For any explanatory material, in regard to this EPD, please contact Steelcase Inc.

Steelcase International
901 44th St. SE Grand Rapids, MI USA
epd@steelcase.com

For any explanatory material, in regard to this PCR or EPD, please contact the program operator.

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References

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