

Environmental Product Declaration

Series 2 Storage



Series 2 is a comprehensive scope of metal-case storage units designed to blend with Dividends Horizons and Morrison systems. The broad scope including pedestals, credenzas, storage towers, overhead cabinets, privacy screens and modesty panels provides the ability to create a complete storage solution for a range of user needs.

Recycled Content
14% Post-consumer recycled content

Functional Unit
The functional unit is 0.15m³ of storage capacity for a period of 10 years. As Series 2 has an expected service life of over 10 years, one product is needed to fulfil the functional unit.

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This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass.

LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



Certified
Environmental
Product Declaration
www.nsf.org

Program Operator	NSF Certification, LLC
Declaration Holder	Knoll
Declaration Number	EPD10333
Declared Product	Series 2 Storage
Reference PCR	NSF International-BIFMA PCR for Storage: UNCPC 3812
Date of Issue	December 13, 2017
Period of Validity	5 Years (Expiration: December 13, 2022)
Contents of the Declaration	Product definition and information about building physics Information about basic material and the material's origin Description of the products' manufacture Indication of product processing Information about the in-use conditions Life cycle assessment results Testing results and verifications

The PCR review was conducted by	PCR Review Panel Chair: Thomas P. Gloria ncss@nsf.org
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This declaration was independently verified in accordance with ISO14025 by NSF Certification, LLC

INTERNAL

EXTERNAL

Tony Favilla, NSF Certification, LLC

This life cycle assessment was independently verified in accordance with ISO14044 and the reference PCR by

Thomas Gloria, Industrial Ecology Consultants

This EPD conforms with ISO 21930-2007

Date of last revision: March 2021

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• Reference Product Description

Storage

1

Product Category

Occupants Supported
by Product

0.159 m³
(0.522 ft²)

39.4 kg/FU
(86.8 lb)

Volume

Reference Flow

41.7 kg
(1,942.3 lbs.)

14%

12%

Storage Mass

Post-Consumer
Recycled Content

Post-Industrial
Recycled Content

• Functional Unit

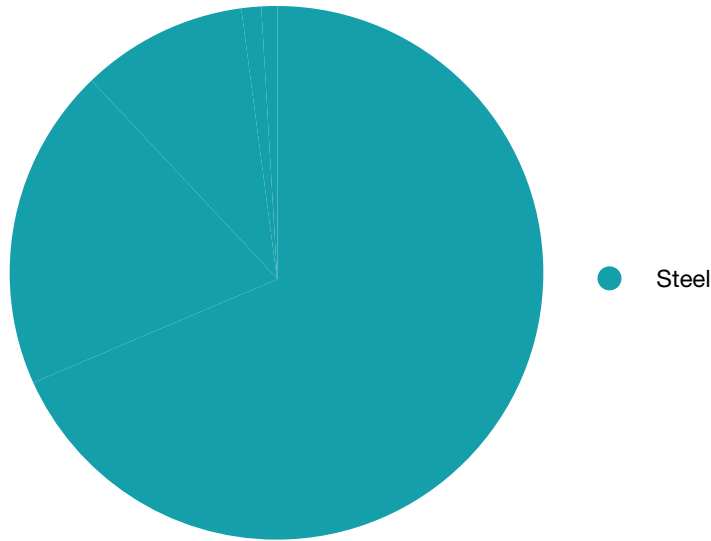
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0.15m³
storage for
10 years

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• **Materials Composition**



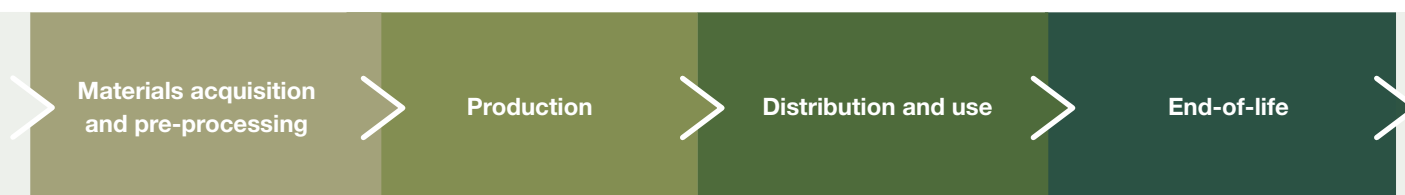
Material	% by mass	kg. per functional unit (FU)	kg. per storage unit
Steel	100%	39.4	41.7
Total	100%	39.4	41.7

This product material composition represents 80% virgin non-renewable, 20% recycled, and 0% virgin renewable resources.

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- **Life Cycle Stages**



A cradle-to-grave analysis was conducted for this EPD. Materials acquisition and pre-processing starts when the material is extracted from nature and ends when the material in component form reaches the gate of the production facility or service delivery operation. As such, it includes transportation between upstream suppliers and Knoll's production facility.

The production stage is a gate-to-gate stage that starts with the product components entering the production facility and ends with the final product, packaged for shipment, leaving the facility. This stage includes manufacturing processes that take place at Knoll, along with the production of packaging materials. For products with electrical components, use stage electricity consumption is also considered.

Product distribution and storage are included in the next stage, along with product use and maintenance. This stage can include multiple legs of distribution and storage. The use stage begins when the consumer takes possession of the product, and includes assembly, installation, repair, and maintenance as appropriate. For products with electrical components, use stage electricity consumption is also considered.

The end-of-life stage starts when the product is ready for disposal and ends when the product is landfilled, returned to nature, or transformed to be recycled or reused. This stage includes transportation of the used product to treatment or recycling facilities and emissions associated with disposal.

Life Cycle Assessment Results per functional unit (0.15m³ of storage capacity)

Inventory Metric	Units	Total
Net fresh water usage*	kg	659
Primary energy demand, total	MJ	2,807
Primary energy demand, renewable	MJ	704
Primary energy demand, non-renewable	MJ	2,103

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• **Life Cycle Assessment Results**

Impact Assessment Categories

Impact assessment results are calculated using the TRACI 2.1 methodology (Bare, 2012).

Global Warming Potential (100 yr)



Global Warming Potential (20 yr)



Acidification Potential



Eutrophication Potential



Ozone Depletion



Photochemical Ozone Creation Potential



● Materials Acquisition ● Production ● Distribution & Use ● End of Life

Life Cycle Assessment Results per functional unit (0.15m³ of storage capacity)

Impact Category	Units	Materials Acquisition	Production	Distribution & Use	End-of-Life	Total
Global warming potential (100 yr)	kg CO ₂ eq.	108	46.1	41.97	2.26	198
Global warming potential (20 yr)	kg CO ₂ eq.	122	50.7	109.67	2.85	285
Acidification potential	kg SO ₂ eq.	.32	0.107	0.0472	0.00685	0.481
Eutrophication potential	kg N eq.	0.0267	0.0059	0.00522	0.000498	0.0383
Ozone depletion	kg CFC-11 eq.	5.38E-007	2.17E-008	0.625E-11	5.8E-012	5.6E-007
Photochemical ozone creation potential	kg O ₃ eq.	4.29	1.11	1.054	0.126	6.58

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• Life Cycle Impact Assessment Categories, Emissions and Wastes

Emissions to Air

Sulphur oxides

=0
kg

Nitrogen oxides



Carbon dioxide



Methane



Nitrous Oxide (laughing gas)



Carbon monoxide



● Materials Acquisition ● Production ● Distribution & Use ● End of Life

Inventory Metric	Units	Materials Acquisition	Production	Distribution & Use	End-of-Life	Total
Sulphur oxides	kg	0	0	0	0	0
Nitrogen oxides	kg	0.153	0.0444	0.01277	0.00479	0.215
Carbon dioxide	kg	100	43.4	7.89	1.93	153
Methane	kg	0.247	0.0831	0.01506	0.0107	0.356
Nitrous oxide (laughing gas)	kg	0.00106	0.000766	0.0001935	4.13E-005	0.00206
Carbon monoxide	kg	0.975	0.0199	0.06546	0.00361	1.06

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• **Life Cycle Impact Assessment Categories, Emissions and Wastes**

Emissions to Fresh Water

Heavy metals



Nitrate



Phosphate



● Materials Acquisition ● Production ● Distribution & Use ● End of Life

Inventory Metric	Units	Materials Acquisition	Production	Distribution & Use	End-of-Life	Total
Heavy metals	kg	0.00813	0.0221	0.000364	0.000241	0.0309
Nitrate	kg	0.00356	0.00316	0.000617	0.000204	0.00754
Phosphate	kg	0.000229	6.65E-005	8.519E-005	6.01E-006	0.000387

Waste Management

At End-of-Life, 55.3% (by mass) of the product are assumed to be recycled, based on metal recycling statistics (US EPA, 2015).

Inventory Metric	Units	Materials Acquisition	Production	Distribution & Use	End-of-Life	Total
Waste (deposited) to landfill	kg	1.77	0.2	17.10338	44.3	63.40
Hazardous waste	kg	4.1E-006	3.02E-007	8.65E-007	1.62E-007	5.43E-006

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• References and Verification

Bare, J. (2012). *Tool for the Reduction and Assessment of Chemical and other Environmental Impacts - TRACI v2.1–Intergovernmental Panel on Climate Change (2013). 1PCC Fifth Assessment Report.*

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thinkstep. (2017). *Office Furniture Workspace Products–Background LCA Report in Support of Environmental Product Declarations (EPD)–on behalf of Knoll. Boston: thinkstep Inc.*

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This EPD 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 software tool used to conduct the study.