

# Environmental Product Declaration

## MultiGeneration by Knoll®

Side Chair



MultiGeneration by Knoll encourages collaboration with a responsive, open design that supports multiple postures and a diversity of people in shared, team and large group environments. MultiGeneration encourages natural movement, allowing us to focus, interact and communicate more effectively.

### Recycled Content

9.35% Post-consumer recycled content

### Functional Unit

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

MultiGeneration by Knoll has an expected service life of over 10 years, one product is needed to fulfill the functional unit. Analysis was conducted for a MultiGeneration chair with high-end specifications.

**Shown above:** MultiGeneration by Knoll stackable side chair with fixed arm option. Manufactured in East Greenville, PA.

# Environmental Product Declaration

## MultiGeneration by Knoll®

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.



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Environmental  
Product Declaration  
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<b>Program Operator</b>	NSF Certification, LLC
<b>Declaration Holder</b>	Knoll
<b>Declaration Number</b>	EPD10345
<b>Declared Product</b>	MultiGeneration by Knoll® Side Chair
<b>Reference PCR</b>	NSF International-BIFMA PCR for Office Furniture Workspace Products: UNCPC 3814
<b>Date of Issue</b>	August 9, 2018
<b>Period of Validity</b>	5 Years (Expiration: August 9, 2023)
<b>Contents of the Declaration</b>	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

<b>The PCR review was conducted by</b>	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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# Environmental Product Declaration

## MultiGeneration by Knoll®

### • Reference Product Description

Seating 1

Product Category

Occupants Supported  
by Product

10 × 8.4 × 13.2 cm  
(25.6" × 21.4" × 33.6")

Product Dimensions

W × H × D

8.53 kg  
(18.8 lbs.)

9.35%

Product Mass

Post-Consumer  
Recycled Content

Fixed Arms; no seat pad; stackable steel  
legs with powder coat paint

Additional Features

### • Functional Unit

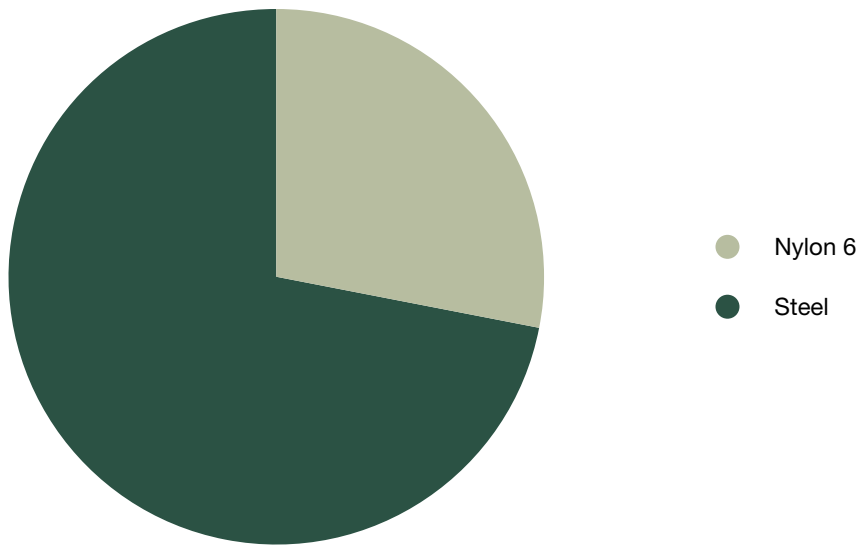
The functional unit is one unit of seating to seat one individual, maintained for a period of 10 years. As MultiGeneration by Knoll has an expected service life of over 10 years, one product is needed to fulfill the functional unit. The analysis was conducted for a MultiGeneration chair with high-end specifications.

1 seat  
per  
1 individual

# Environmental Product Declaration

## MutliGeneration by Knoll®

• **Materials Composition**



Material	% by mass	kg per chair	lbs. per chair
Nylon 6	28.1	2.4	5.29
Steel	71.9	6.13	13.5

*Total % may not equal 100% due to rounding errors*

# Environmental Product Declaration

## MultiGeneration by Knoll®

### • 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.

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 (1 chair)

Inventory Metric	Units	Total
Net fresh water usage*	kg	168
Primary energy demand, total	MJ	995
Primary energy demand, renewable	MJ	132
Primary energy demand, non-renewable	MJ	863

\*Specified, per the PCR: Water usage from electricity generation is included

# Environmental Product Declaration

## MultiGeneration by Knoll®

• **Life Cycle Assessment Results**

**Impact Assessment Categories**

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

Global Warming Potential



Acidification Potential



Eutrophication Potential



Ozone Depletion

*see below*

**= -5.9E-008**  
kg CFC-11 eq.

Photochemical Ozone Creation Potential



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

**Life Cycle Assessment Results per functional unit (1 chair)**

Impact Category	Units	Materials Acquisition	Production	Distribution & Use	End-of-Life	Total
Global warming potential	kg CO <sub>2</sub> eq.	41.5	15	1.24	0.318	<b>58.1</b>
Acidification potential	kg SO <sub>2</sub> eq.	0.079	0.0353	0.00581	0.00132	<b>0.121</b>
Eutrophication potential	kg N eq.	0.00549	0.00319	0.00049	0.00029	<b>0.00946</b>
Ozone depletion*	kg CFC-11 eq.	-6.53E-008	6.26E-008	4.15E-014	6.337E-014	<b>-5.9E-008</b>
Photochemical ozone creation potential	kg O <sub>3</sub> eq.	1.36	0.428	0.131	0.0258	<b>1.95</b>

\* Based on negative total impact for the Ozone Depletion, the Impact Assessment Category bar graph is not provided.

# Environmental Product Declaration

## MultiGeneration by Knoll®

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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–User's Manual.* Washington, DC: U.S. EPA.

**ISO. (2006).** ISO 14044: Environmental management–Life cycle assessment–Requirements and guidelines.

**ISO. (2009).** ISO 14040: Environmental management–Life cycle assessment–Principles and frameworks.

**ISO. (2011).** ISO 14025: Environmental labels and declarations–Type III environmental declarations–Principles and procedures.

**NSF International. (2014).** *BIFMA PCR for Seating: UNCPC 3811–Version 3.*

**thinkstep. (2018).** *Seating Products-Background LCA Report in Support of Environmental Product Declarations (EPD).*



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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.*