Leap

Environmental Product Declaration

A presentation of the environmental performance of **Leap**.
An environmental declaration according to the objectives
of ISO/TR 14025, based on Life Cycle Assessment (ISO 14044).

ENVIRONMENTAL PRODUCT DECLARATION

Product Description

The Leap office chair is our **most ergonomic chair.** User tests show it **reduces lower back pain, discomfort and musculo-skeletal disorders.** That means it will increase your productivity by allowing you to sit more comfortably for longer. It's all thanks to the Leap chair's advanced design with **innovative features** such as a flexible backrest, separate upper and lower back controls and a dynamic seat.

The model chosen for analysis is the most frequently ordered task chair (model 462 200 MP) from the Leap seating range.

It is a highly adjustable ergonomic chair equipped as follows:

- Dynamic seat
- Flexible back
- Variable back stop / tilt limiter
- Lumbar tension and height adjustment
- Upright position lock
- Tilt tension adjustment
- Height, width, pivot and depth adjustable armrests
- Seat height adjustment
- Seat depth adjustment
- Impact absorber
- Plastic base

Manufacturer

The selected product **Leap** is manufactured in Sarrebourg, France, by Steelcase, for the EMEA market (Europe, Middle East and Africa). A similar **Leap** chair is also manufactured in Grand Rapids, Michigan, for the North American Market.

Since 1912, Steelcase has been committed to continually reducing the environmental impacts of its products and activities on a global scale, by constantly seeking more effective ways to conserve resources, prevent pollution and nurture environmental consciousness in its people every day. Sustainable development is embedded in everything we do.

Steelcase has management systems for quality (ISO 9001) and for the environment (ISO 14001 and/or EMAS II), ensuring that our customers are guaranteed the same level of product performance, wherever they are in the world.

Steelcase has a multi-site PEFC certification; for its production facilities at four European sites. The certification acknowledges that Steelcase has gone to great lengths to ensure that the wood used in its products has been sourced from environmentally friendly suppliers.

To show continuous improvements, Steelcase communicates the environmental performance of its products through voluntary environmental labels and declarations. The Steelcase Environmental report looks at things that have helped spur our environmental thinking and commitment and the subsequent actions and results.

For further information see **www.steelcase.com**

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Material Declaration

Leap consists of the materials listed below. The total weight is 24.137 kg including packaging.

metals	kg	%
Steel	11.318	46.9
Spring steel	0.320	1.3
Zamak	0.050	0.2

plastics	kg	%
PP (Polypropylene)	4.099	17.0
PA6 GF33 (Polyamide 6 Glass Fibres 30%)	2.059	8.5
PE-type plastics	1.239	2.4
PU (Polyurethane) foam	0.690	2.9
PA6 (Polyamide 6)	0.405	1.7
Acetal	0.273	1.1
TPU (Thermoplastic Polyurethane)	0.164	0.7
ABS (Acrylonitrile-Butadiene Styrene)	0.058	0.2
Expanded PP (Polypropylene)	0.032	0.1

other materials	kg	%
Cardboard	3.313	13.7
Paper	0.078	0.3
Fibreglass	0.021	0.1
Lubricant	0.007	0.0

Environmental Product Declaration

The potential environmental impacts of **Leap** (incl. packaging) throughout its entire life cycle – including raw materials extraction, production, transport, use, and end of life – were assessed using Life Cycle Assessment (LCA – ISO 14044) in April 2007. Both method and product may have been subject to improvements since then. Environmental declarations from different programmes may not be comparable.
The **functional unit** – i.e. the quantified performance of the product for use as a reference unit – used in the Life Cycle Assessment was chosen as "Provision of comfortable office working – with the features stated in the product description – for 8 hours a day, 5 days a week over 15 years".

Life Cycle Inventory Analysis

The Life Cycle Inventory Analysis covers all life cycle stages as shown below.

Materials
This stage includes raw materials extraction and transformation into material ready to be used.

Production
This stage comprises all production and assembly processes taking place at Steelcase or at their suppliers. Data was obtained from suppliers and from the ISO 14001 environmental management systems of the production site.

Transport
Transport from suppliers to the production site and transport from the production site to the EMEA market (Europe, Middle East and Africa) is considered.

Use
During the use stage of the product – the longest stage of the life cycle – no relevant environmental impacts occur.

End of life
Any product can be disposed of in different ways, or become a resource itself. Based on current European averages it was assumed that about 60% of the products are sent to landfill, 27% are incinerated and 13% are recycled at the end of their useful life.

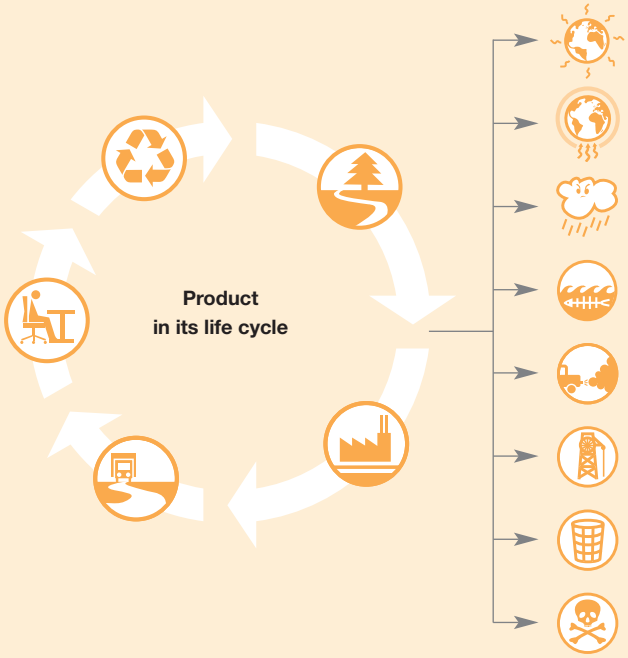
Distribution of the environmental impacts for the relevant life cycle stages

Category	Unit	Total	Materials	Production	Transport	Use	End of life
Global warming	[g CO_2-equ.]	87 782	51 880	25 880	7 900	No relevant environmental impacts occur	2 122
Stratospheric Ozone depletion	[g CFC11-equ.]	0.0122	0.00195	0.0111	0	No relevant environmental impacts occur	- 0.000912
Acidification	[g SO_2-equ.]	777	449	263	78	No relevant environmental impacts occur	- 13.1
Eutrophication	[g NO_3-equ.]	793	439	224	133	No relevant environmental impacts occur	- 3.57
Photochemical smog	[g C_2H_4-equ.]	52.4	35.4	9.07	8.09	No relevant environmental impacts occur	- 0.201

** This value is extremely lower than 0,0001 g CFC11-eq (Chloro-Fluoro-Carbon 11 equivalent).*

Life Cycle Assessment

Environmental impact categories



Global warming
is due to emissions of greenhouse gases, causing the rise of the global temperature.

Stratospheric ozone depletion
is due to aerosols and other gaseous pollutants, causing the destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life.

Acidification
is due to emissions of acids, causing the degradation of materials such as metals, limestone and concrete, and damage to trees and life in lakes and rivers.

Eutrophication
is due to emissions of nutrients, causing blooms of algae. The degradation of dead algae consumes oxygen leading to the loss of plants and animals.

Photochemical smog
is due to a mixture of pollutants which includes volatile organic components, particulates, nitrogen oxides, ozone… It's harmful to human health (causing inhalation irritations lung problems, coughing and wheezing) and the environment (damage to plants and crops).

Abiotic resource depletion
is due to extraction and consumption of non-renewable resources such as oil, coal and metals.

Waste
is the bulk waste and hazardous waste created during the whole life cycle of the product.

Toxic substances
are substances which cause harm to the natural environment or human health, emitted during the whole life cycle of the product.

Environmental aspects of Leap

The contributions of inventory parameters to different impact categories throughout the entire life cycle of **Leap** are listed below.
Contributions to Stratospheric Ozone Depletion are tracked but not mentioned below due to extremely low values.
Life cycle inventory parameters are mentioned only if they contribute more than 1% of the total impact in that impact category.

Category	Parameter		Inventory value *Unit*	Characterized impact value *Unit*
Global warming				**Total 87 782 g CO_2-eq.**
	CO_2	(Carbon dioxide)	76 805 g	87.5 %
	N_2O	(Nitrous oxide)	12 g	4.6 %
	CH_4	(Methane)	134 g	3.8 %
	HC	(Hydrocarbons)	9 g	3.1 %
Acidification				**Total 777 g SO_2-eq.**
	SO_x	(Sulfur oxides)	415 g	53.4 %
	NO_x	(Nitrogen oxides)	353 g	45.4 %
Eutrophication				**Total 793 g NO_3-eq.**
	NO_x	(Nitrogen oxides)	504 g	85.8 %
	Phosphates		4 g	5.7 %
	N_2O	(Nitrous oxide)	12 g	4.4 %
Photochemical smog				**Total 52.4 g C_2H_4-eq.**
	C_5H_{12}	(Pentane)	52 g	39.6 %
	$C_6H_5CH_3$	(Toluene)	467 g	26.8 %
	CO	(Carbon monoxide)	14 g	16.0 %
	NMVOCs*	(from diesel engines)	10 g	11.4 %
Abiotic resource depletion				
	Crude oil		14 236 g	–
	Coal		12 394 g	–
	Iron	(in ore)	10 700 g	–
	Natural gas		9 799 g	–
Waste				
	Bulk waste		1 900 g	–
	Hazardous waste		125 g	–
Toxic substances				
	Toxic substances		95 g	–

No characterized impacts were calculated for Abiotic resource depletion, Solid waste and Toxic substances, due to lack of credible, internationally agreed characterisation factors.
** VOCs = Volatile organic compounds, NMVOCs = non-methane VOCs*

Additional environmental information

Environmental labels and declarations on products and materials

Leap complies with the French environmental certification “NF Environnement” (ISO 14024)

Test-No.

The polyester fabric is labelled with the “Oeko-Tex 100 Standard”

The pure wool fabric is labelled with the “European Flower”

Actions for reducing the environmental impacts at each stage of the environmental life cycle

End of life

- **Leap** is 98% recyclable by weight.
- The cardboard and plastics used for packaging are 100 % recyclable.
- **Leap** is easy to disassemble using normal hand tools. Plastic parts are clearly labelled for easy sorting and an effective recycling.
- **Leap** is designed to ensure our clients environmentally responsible after use strategies for their furniture.

Materials

- Together with Steelcase, McDonough Braungart Design Chemistry (MBDC) looked in-depth at the **chemistry of materials** and selected those that are **safe, healthy, and ecologically sound** throughout their lifecycle.
- Like all the Steelcase products, Leap contains **no hazardous materials** (i.e. no Lead, Mercury, Cadmium, Chrome VI, or CFC or HCFC in the foam), no dangerous materials such as PVC, and **no hazardous flame retardants** such as halogenated flame retardants.
- **Leap** contains **20%** recycled materials by weight.
- The packaging consists of 30% recycled cardboard and 30% recycled LDPE film (Low Density Polyethylene).
- Paper and packaging have prints with water-based inks i.e. without solvent.

Use

- **Leap** was designed for a long product life, with replaceable parts and textiles that are easy to change.
- Maintenance information is available in the User’s manual.

Production

- The production site in Sarrebourg has an ISO 14001 certified environmental management system.
- Powder-coat painting is VOC-free and free of heavy metals; unused paint that does not attach to the product can be directly reused in the process.
- The urethane foam of the seat of the chair is water-based.

Transport

- Minimised packaging weight and volume help us improve filling rates and thus require less energy for shipping.

Compilation and Verification Process

- The LCA study of **Leap** (reference 462 200 MP) was carried out by Steelcase, according to ISO 14044, together with the ENSAM of Chambéry - France (Ecole Nationale Supérieure des Arts et Métiers). It was then critically reviewed by the IPU Product Development - Denmark.
- The independent verification of the environmental declaration (EPD – ISO/TR 14025) was carried out by IPU Product Development - Denmark.

References

Form of document

- ISO/TR 14025: Environmental labels and declarations – Type III environmental declarations.
- Lee, K.M., Park, P.: “Application of Life-Cycle Assessment to Type III Environmental Declarations”, Environmental Management, Vol. 28, No. 4, 2001, pp. 533-546.

LCA method and characterisation factors

- EDIP method: Wenzel, Hauschild, Alting: “Environmental Assessment of Products” Volume 1 (Methodology, tools and case studies in product development), Chapman and Hall, 1997, ISBN 0 412 80800 5.
- Intergovernmental Panel on Climate Change (IPCC), status reports, 1995 and 2001.

End of life scenario

- European Topic Centre on Waste and Material Flows, Copenhagen, Denmark, Sept. 2002, http://waste.eionet.eu.int

Contact

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