

Environmental Product Declaration

A presentation of the environmental performance of **Westside**.
An environmental declaration according to the objectives
of ISO/TR 14025, based on Life Cycle Assessment (ISO 14040-43).



Product Description

The **Westside** chair is made with a single shell, with just the right shape, angle and flexibility to provide maximum comfort for the back.

The **Westside** chair is engineered for demanding spaces like informal office areas, cafeterias and hotels where traditional seating falls short.

The model chosen for analysis is the **Westside** chair reference 11 LUG 30:

- Plastic shell in plastic
- Tubular structure in steel
- Width: 545mm
- Depth: 590mm
- Height: 820mm

Manufacturer

The selected product **Westside** chair is manufactured in Sarrebourg, France, by Steelcase, for the EMEA market (Europe, Middle East and Africa).

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.

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



Material Declaration

The **Westside** chair consists of the materials listed below. The total weight is 5.057 kg, including packaging.

metals	kg	%	plastics	kg	%	other materials	kg	%
Steel	2.156	42.6	PP (polypropylene)	2.611	51.6	Cardboard for packaging	0.015	0.3
			LDPE film (low density polyethylene) for packaging	0.154	3.0			
			PC (polycarbonate)	0.094	1.9			
			PE foam (polyethylene) for packaging	0.015	0.3			
			PA6 (polyamide)	0.013	0.3			

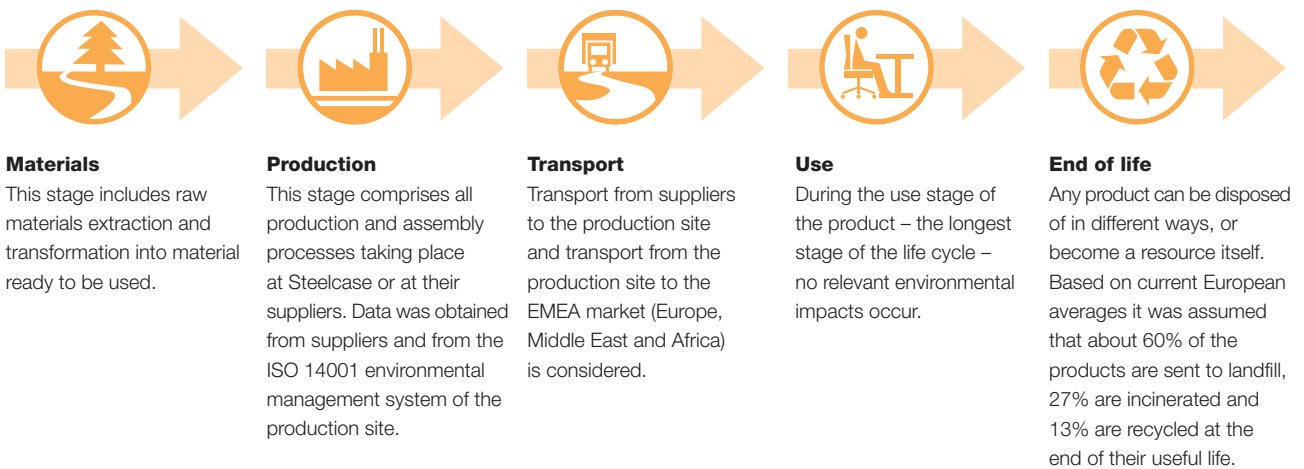
Environmental Product Declaration

The potential environmental impacts of the **Westside** chair (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 14040-43) in spring 2006. 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 seating – 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.

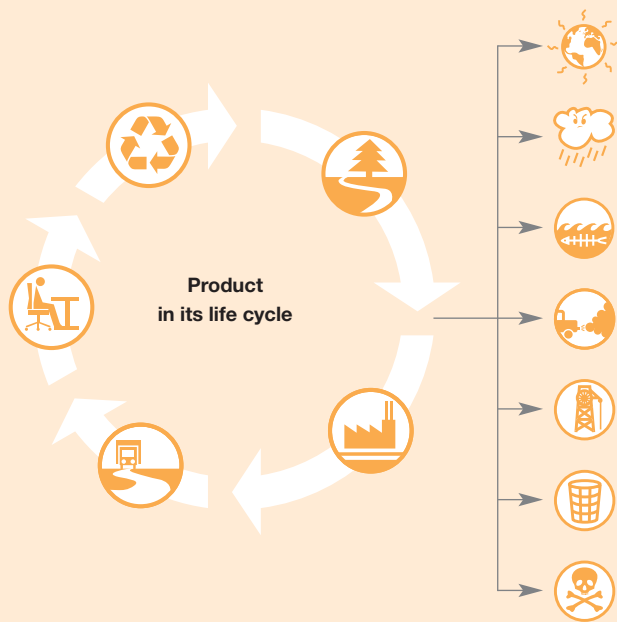


Distribution of the environmental impacts for the relevant life cycle stages

Category	Unit	Total	Materials	Production	Transport	Use	End of life
Global warming	[g CO ₂ -eq.]	18 844	5 910	10 100	2 550	No relevant environmental impacts occur	284
Acidification	[g SO ₂ -eq.]	194	72	101	23	No relevant environmental impacts occur	- 2
Eutrophication	[g NO ₃ -eq.]	164	57	72	37	No relevant environmental impacts occur	- 2
Photochemical smog	[g C ₂ H ₄ -eq.]	6	2	0	3	No relevant environmental impacts occur	0

Life Cycle Assessment

Environmental impact categories



Global warming

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

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 the Westside chair

The contributions of inventory parameters to different impact categories throughout the entire life cycle of the **Westside** chair are listed below. 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	CO ₂	(carbon dioxide)	17 019 g	Total 18 844 g	CO₂-eq.
	HC	(hydrocarbons)	3 g	90.4 %	
	CH ₄	(methane)	23 g	5.3 %	
				3.0 %	
 Acidification	SO _x	(sulphur oxides)	109 g	Total 194 g	SO₂-eq.
	NO _x	(nitrogen oxides)	122 g	56.3 %	
				44.1 %	
 Eutrophication	NO _x	(nitrogen oxides)	120 g	Total 164 g	NO₃-eq.
				99 %	
 Photochemical smog	NMVOOC*	(from diesel engines)	5 g	Total 6 g	C₂H₄-eq.
	CO	(carbon monoxide)	92 g	50.0 %	
	CH ₄	(methane)	23 g	45.0 %	
	VOC*	(from heating with natural gas)	0.5 g	2.6 %	
				1.5 %	
 Abiotic resource depletion	Coal		3 000 g	–	
	Oil		4 088 g	–	
	Iron	(in ore)	1 644 g	–	
	Lignite	(Brown coal)	260 g	–	
	Natural gas		2 527 g	–	
	Manganese	(in ore)	10 g	–	
 Waste	Bulk waste		535 g	–	
	Hazardous waste		1 g	–	
 Toxic substances	Toxic substances		3 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

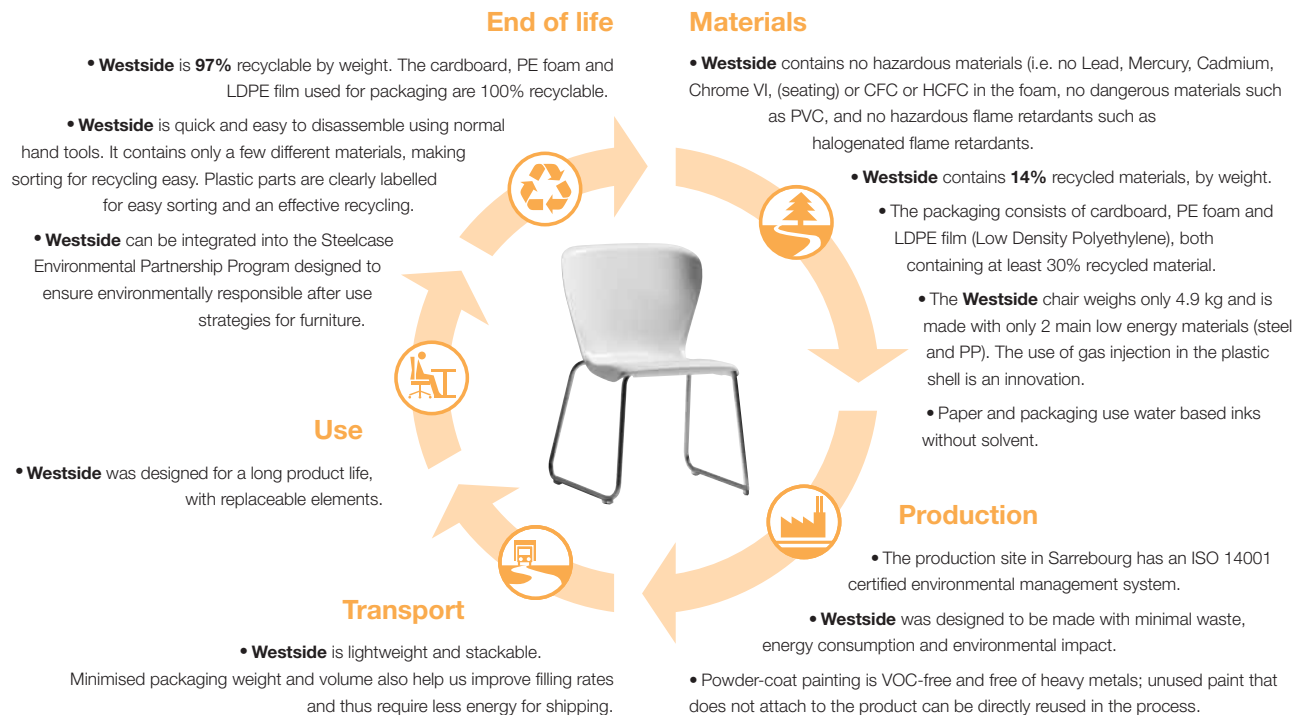
Additional environmental information

Environmental labels and declarations on products and materials



Westside complies with the French environmental certification "NF Environnement" (ISO 14024)

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



Compilation and Verification Process

- The LCA study of the **Westside** chair (reference 412 LUG 30) was carried out by Steelcase, according to ISO 14040-43, 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

For further questions contact: epd@steelcase.com